GMAT - 1

(Version 7.1)

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WHAT IS THE GMAT ?

Business School applicants are required to take the Graduate Management Admissions Test (GMAT). The GMAT is a standardized test delivered in English. Unlike academic grades, which have varying significance based on each school's grading guidelines, the GMAT scores are based on the same standard for all test takers and they help business schools assess the qualification of an individual against a large pool of applicants with diverse personal and professional backgrounds. The GMAT scores play a significant role in admissions decisions since they are more recent than most academic transcripts of an applicant and they evaluate a person's verbal, quantitative and writing skills.

The GMAT is a 4-hour Computer Adaptive Test (CAT) and can be taken at any one of many test centers around the world 5 or 6 days a week. You may take the GMAT only once every 31 days and no more than five times within any 12-month period. The retest policy applies even if you cancel your score within that time period. All of your scores and cancellations within the last five years will be reported to the institutions you designate as score recipients.

The GMAT consists of four separately timed sections.

- **AWA**:: This is a 30 minute section consisting of an analytical writing task, also known as Analytical Writing Assessment (AWA).
- **IR**:: This is a 30 minute Integrated Reasoning section. It has 12 questions.
- **The remaining two** 75-minute sections (Quantitative and Verbal) consist of multiple-choice questions delivered in a computer-adaptive format. Questions in these sections are dynamically selected as you take the test to stay commensurate with your ability level. Therefore, your test will be unique. Just one question is shown on the screen at a given time. It is impossible to skip a question or go back to a prior question. Each problem needs to be answered before the next question.

In both the Verbal and Quantitative sections, everyone starts out with an average difficulty level. The difficulty of subsequent questions then increases or decreases based on the correct or incorrect answers a person submits in the test. For each correct answer you give, you are given a harder question for each subsequent question and for each incorrect answer you are given an easier question. This process will continue until you finish the section, at which point the computer will have an accurate assessment of your ability level in that subject area.

Your score is determined by three factors: 1) the number of questions you complete; 2) the number of questions you answer correctly and; 3) the level of difficulty and other statistical characteristics of each question. To derive a final score, these questions are weighted based on their difficulty and other statistical properties, not their position in the test.

For the AWA section, one person and one computer programmed for grading (E-rater) score each essay based on essay content, organization, grammar and syntactic variety. Your final, single score is an average of both individual cores obtained on the issue and argument essays. AWA scores are computed separately from other sections and have no effect on the Verbal, Quantitative, or Total scores.

The scores necessary to get into top schools are increasing year by year. In addition to the admissions process, GMAT scores are also considered in scholarship awards. A good GMAT score can save you thousands of dollars in tuition. Disciplined and dedicated preparation for the GMAT will allow you to get the best score possible on the exam and get into the school of your choice.

Although the GMAT score is considered as a reasonable indicator of future academic performance at business schools, it does not measure your job performance, knowledge of business, interpersonal skills, and personality traits such as motivation and creativity. Instead, your application, essays, recommendation letters and interviews will capture most of those aspects.

The test was designed to help admissions officers evaluate how suitable individual applicants are for their graduate business and management programs. It measures basic verbal, mathematical, and analytical writing skills that a test taker has developed over a long period of time through education and work.

The GMAT exam does not a measure a person's knowledge of specific fields of study. Graduate business and management programs enroll people from many different undergraduate and work backgrounds, so rather than test your mastery of any particular subject area, the GMAT exam will assess your acquired skills. Your GMAT score will give admissions officers a statistically reliable measure of how well you are likely to perform academically in the core curriculum of a graduate business program.

Of course, there are many other qualifications that can help people succeed in business school and in their careers—for instance, job experience, leadership ability, motivation, and interpersonal skills. The GMAT exam does not gauge these qualities. That is why your GMAT score is intended to be used as one standard admissions criterion among other, more subjective, criteria, such as admissions essays and interviews.

WHY TAKE THE GMAT?

GMAT scores are used by admissions officers in roughly 1,800 graduate business and management programs worldwide. Schools that require prospective students to submit GMAT scores in the application process are generally interested in admitting the best-qualified applicants for their programs, which means that you may find a more beneficial learning environment at schools that require GMAT scores as part of your application.

Because the GMAT test gauges skills that are important to successful study of business and management at the graduate level, your scores will give you a good indication of how well prepared you are to succeed academically in a graduate management program; how well you do on the test may also help you choose the business schools to which you apply. Furthermore, the percentile table you receive with your scores will tell you how your performance on the test compares to the performance of other test takers, giving you one way to gauge your competition for admission to business school.

Schools consider many different aspects of an application before making an admissions decision, so even if you score well on the GMAT exam, you should contact the schools that interest you to learn more about them and to ask about how they use GMAT scores and other admissions criteria (such as your undergraduate grades, essays, and letters of recommendation) to evaluate candidates for admission. School admissions offices, school websites, and materials published by the school are the best sources for you to tap when you are doing research about where you might want to go to business school.

For more information on the GMAT, registering to take the test, sending your scores to schools, and applying to business school, please visit www.mba.com .

GMAT TEST FORMAT

The GMAT exam consists of four separately timed sections. You start the test with a 30-minute Analytical Writing Assessment (AWA) questions that require you to type your responses using the computer keyboard. The writing section is followed by a 30 minute Integrated Reasoning section. This is followed by two 75-minute, multiple-choice sections: the Quantitative and Verbal sections of the test.

The GMAT is a computer-adaptive test (CAT), which means that in the multiple-choice sections of the test, the computer constantly gauges how well you are doing on the test and presents you with questions that are appropriate to your ability level. These questions are drawn from a huge pool of possible test questions. So, although we talk about the GMAT as one test, the GMAT exam you take may be completely different from the test the person sitting next to you.

Here's how it works. At the start of each GMAT multiple-choice section (Verbal and Quantitative), you will be presented with a question of moderate difficulty. The computer uses your response to that first question to determine which question to present next. If you respond correctly, the test usually will give you questions of increasing difficulty. If you respond incorrectly, the next question you see usually will be easier than the one you answered incorrectly. As you continue to respond to the questions presented, the computer will narrow your score to the number that best characterizes your ability. When you complete each section, the computer will have an accurate assessment of your ability.

Because each question is presented on the basis of your answers to all previous questions, you must answer each question as it appears. You may not skip, return to, or change your responses to previous questions. Random guessing can significantly lower your scores. If you do not know the answer to a question, you should try to eliminate as many choices as possible, then select the answer you think is best. If you answer a question incorrectly by mistake—or correctly by lucky guess—your answers to subsequent questions will lead you back to questions that are at the appropriate level of difficulty for you.

Each multiple-choice question used in the GMAT exam has been thoroughly reviewed by professional test developers. New multiple-choice questions are tested each time the exam is administered. Answers to trial questions are not counted in the scoring of your test, but the trial questions are not identified and could appear anywhere in the test. Therefore, you should try to do your best on every question.

WHEN YOU TAKE THE EXAM:

- Only one question at a time is presented on the computer screen.
- The answer choices for the multiple-choice questions will be preceded by circles, rather than by letters.
- Different question types appear in random order in the multiple-choice sections of the test.
- You must select your answer using the computer.
- You must choose an answer and confirm your choice before moving on to the next question.
- You may not go back to change answers to previous questions.

FORMAT OF THE GMAT

	Questions	Timing
Analytical Writing		
Analysis of an Argument	1	30 min
Integrated Reasoning		
Multi-Source Reasoning	12	30 min
Two-part Analysis		
Table Analysis		
Graphics Interpretation		
Optional break	8 min	
Quantitative	37	75 min
Problem Solving		
Data Sufficiency		
Optional break	8 min	
Verbal	41	75 min
Reading Comprehension		
Critical Reasoning		
Sentence Correction		
	Total Time:	2 10—220 min.

Each section requires its own specific strategy, but you may apply some techniques to all sections.

Please note that not all of the verbal and quantitative questions are scored. In the Verbal section, approximately 37 of the 41 questions are scored, and in the quantitative section, approximately 33 of the 37 questions are scored. The un-scored questions are there for the purpose of gauging results for future tests.

Total GMAT scores range from 200 to 800. About 66% of test takers score between 400 and 600. The Verbal and Quantitative scores range from 0 to 60. For the Verbal section, most people score between 9 and 44. For the Quantitative section, common scores are between 7 and 50. The Verbal and Quantitative scores measure different things and cannot be compared to each other, however, each section's score can be compared across different GMAT tests.

Your GMAT score is an important part of your overall application.

WHAT IS THE CONTENT OF THE TEST LIKE?

AWA: One person and one computer programmed for grading (E-rater) score each AWA based on essay content, organization, grammar and syntactic variety. E -rater is an electronic system that evaluates more than 50 structural and linguistic features. College and university faculty members trained as reviewers of the AWA essays consider the overall quality of your ideas,

your overall ability to organize, develop, and express those ideas, the relevant supporting reasons and examples you cited, and your ability to write in standard written English. In considering the elements of standard written English, reviewers are trained to be sensitive and fair in evaluating the essays of non-native English speakers.

E-rater and independent readers agree, on average, 87% to 94% of the time. If the two ratings differ by more than one point, another evaluation by an expert reader is required to resolve the discrepancy and determine the final score.

Graders assign scores out of 6.0 based on intervals of 0.5 points. Your final, single score is an average of both individual scores obtained on the issue and argument essays. AWA scores are computed separately and have no bearings on any other GMAT scores.

The AWA section is designed to directly measure your ability to think critically through the complexities of an issue and to communicate your ideas through substantiated reasoning. The Analysis of an Argument tests your ability to formulate an appropriate and constructive critique of a specific conclusion based on a rigorous approach. I n this section, you will need to analyze the supporting logics behind a given argument and write a critique of that argument. Remember your task to examine and critique the given argument, not to present your own views on the subject. Consider the following when developing your essay:

- The underlying debatable assumptions behind the argument
- The alternative explanations or counter-examples might weaken the conclusion
- The type of evidence could help strengthen or refute the argument

For the AWA section, we recommend that you make a consistent effort to:

- Brush up on your typing skills.
- Be careful not to make careless mistakes in spelling or grammar.
- Make the reader aware of your essay structure. This can be done through formatting. Underlining, numbering or making bullet points can reinforce your essay' s structure.

QUANTITATIVE SECTION

The GMAT Quantitative section measures your ability to reason quantitatively, solve quantitative problems, and interpret graphic data.

Two types of multiple-choice questions are used in the Quantitative section:

- Problem solving
- Data sufficiency

Problem solving and data sufficiency questions are intermingled throughout the Quantitative section. Both types of questions require basic knowledge of:

- Arithmetic
- Elementary algebra
- Commonly known concepts of geometry

VERBAL SECTION

The GMAT Verbal section measures your ability to read and comprehend written material, to reason and evaluate arguments, and to correct written material to conform to standard written English. Because the Verbal section includes reading sections from several different content areas, you may be generally familiar with some of the material; however, neither the reading passages nor the questions assume detailed knowledge of the topics discussed.

Three types of multiple-choice questions are used in the Verbal section:

- Reading comprehension
- Critical reasoning
- Sentence correction

These question types are intermingled throughout the Verbal section.

WHAT COMPUTER SKILLS WILL I NEED?

You only need minimal computer skills to take the GMAT Computer-Adaptive Test (CAT). You will be required to type your essays on the computer keyboard using standard word— processing keystrokes. In the multiple-choice sections, you will select your responses using either your mouse or the keyboard.

WHAT ARE THE TEST CENTERS LIKE?

The GMAT test is administered at a test center providing the quiet and privacy of individual computer workstations. You will have the opportunity to take two five-minute breaks—one after completing the essays and another between the Quantitative and Verbal sections. An erasable notepad will be provided for your use during the test.

HOW ARE SCORES CALCULATED?

Your GMAT scores are determined by:

- the number of questions you answer
- whether you answer correctly or incorrectly
- the level of difficulty and other statistical characteristics of each question

Your Verbal, Quantitative, and Total GMAT scores are determined by a complex mathematical procedure that takes into account the difficulty of the questions that were presented to you and how you answered them. When you answer the easier questions correctly, you get a chance to answer harder questions—making it possible to earn a higher score. After you have completed all the questions on the test—or when your time is up—the computer will calculate your scores. Your scores on the Verbal and Quantitative sections are combined to produce your Total score. If you have not responded to all the questions in a section (37 Quantitative questions or 41 Verbal questions), your score is adjusted, using the proportion of questions answered.

TEST DEVELOPMENT PROCESS

The GMAT exam is developed by experts who use standardized procedures to ensure high -quality widely appropriate test material. All questions are subjected to independent reviews and are revised or discarded as necessary. Multiple-choice questions are tested during GMAT test administrations. Analytical Writing Assessment tasks are tried out on first-year business school students and then assessed for their fairness and reliability. For more information on test development, see www.mba.com.

SCORE REPORT

Your Total score and Quantitative and Verbal section scores are available upon your completion of the test. The only opportunity that you will have to cancel your scores is immediately after you complete the test, but before you view your scores. A message will ask you if you want to cancel your scores. You cannot cancel your scores after they are displayed or reported to you.

If you cancel your scores, they cannot be reinstated later. A score cancellation notice will be sent to you and your selected schools. It will remain a part of your permanent record and will be reported on all of your future score reports. The test will not be refunded and will be accounted for as one taken test.

Official GMAT score reports, which include the AWA and IR scores, will be mailed to you and your designated score report recipients (schools) approximately two weeks after the test.

During the test, if you click “Section Exit” or “Test Quit,” you will have to confirm your choice. I f you clicked it by mistake or change your mind, just select the option “Return to Where I Was.” Once you exit a section or quit a test, you won’t be able to return to it and won’t receive a score for any section, regardless how many questions you have answered.

You may take the GMAT only once every 31 days and no more than five times within any 12-month period. The retest policy applies even if you cancel your score or quit a test within that time period. Official GMAT score results are kept on file for 10 years. All your scores and cancellations within the last five years will be reported to the institutions you designate as score recipients.

On your test day, you may select up to five schools to receive your scores before you take the test. Once you have made your selection, you will not be able to change or delete the list of schools. I f you would like to send your scores to more schools, you may order additional score reports at a cost of U.S.$28 per school.

You may request that your essays be rescored if you have reason to believe that your AWA scores are not accurate. The multiple-choice quantitative and verbal sections of the test cannot be rescored. Independent readers will rescore your essay for a fee of U.S.$45.

Requests for rescoring must be made within six months of your test date. Rescoring may result in increases or decreases in your original AWA score. The rescoring results are final. Revised results will be sent to you and the schools you designated as score recipients within three weeks of your request.

TEST FEE

The fee to take the GMAT is U.S.$250 worldwide. The fee for rescheduling the date, time, or location of the test is U.S.$50 for each appointment you change.

When you want to reschedule the GMAT, to avoid the forfeiture of your test fee, you must allow at least 7 calendar days between the day you reschedule your appointment and your test day. Appointments cannot be rescheduled for a date that is more than one year after the original appointment date.

When you cancel the test appointment, a partial refund of U.S.$80 will be given if it is canceled at least 7 calendar days before your original test day.

The rescheduling fee and cancellation refund amount are subject to change without notice.

When setting a test date and look up test centers at http://www.mba.com/mba/TakettheGMAT, keep in mind the following: Consider the times of day you tend to be able to concentrate best. Take your test in the morning or afternoon accordingly.

TEST ADMINISTRATION

We have summarized and prioritized the key changes affecting the test taker as follows:

- **You can take the GMAT only ONCE every 31 days.**

  The old rule allowed people to take the exam first on March 31st and again on April 1st, as the criterion was "once per calendar month". Now you are permitted to take the test only once every 31 days.

  Though we generally recommend our students to ace the test on their first try, it is wise to leave yourself some scheduling flexibility for a second attempt if necessary. Schedule your GMAT 5 to 6 weeks prior to your application deadline.

  ***Note**: If you receive a perfect score of 800, you may not retake the exam for 5 years.*

- **Replacement of Scratch Paper with Erasable Laminated Graph Paper**

  No longer will the test taker be permitted to use scratch paper, instead the testing center will provide each candidate with 5 pages of laminated legal-size graph paper and a special black-ink pen which resembles a fine point black-ink sharpie marker. Each page consists of 33 rectangular boxes across and 71 down, with some margins around the border.

  The ink is erasable, but the testing center does not provide erasers, therefore if you do fill up the whiteboard, the testing center will provide you with additional pages. Likewise, if the ink of your marker starts to fade or the tip flattens, you may request a new one.

  We think using graph paper is a good way to track the alphabetic choices given in a problem, sketch geometrical figures to scale, and keep calculation steps in order. To get yourself familiar with the new instruments, try to practice with laminated graph paper (or just graph paper or just laminated paper) and a sharpie style pen.

- **ON-screen calculator available for the IR section.**
- **You cannot skip AWA and must complete the entire test.**

No longer will you be permitted to ignore the essay section of the test. You must take the test in its set order and in its entirety, **including the essay section**, or your scores will not be processed.

- **All scores and cancellations in the past 5 years will be on your score report.**

  No longer will only your last 3 scores / cancellations be noted on your score report, but all of the scores you received or cancelled in the last 5 years will be noted on your score report.

  We recommend you only cancel your score if you are sure that your performance is not indicative of your normal and true ability, due to unusual reasons such as health, emotions, accident, disturbing testing environment, etc. By canceling the score, you avoid showing an inconsistency of your test performance which might be a red flag for admissions officers.

  Otherwise, you should get your score so that you can get an objective evaluation of what you stand against other GMAT test takers and your strengths and weaknesses. As long as you demonstrate consistent and improved test results, reporting the score is generally preferred over cancellation.

- **You will receive your official score report on-line via an email notification about 20 days after test day. Paper score report will be available via mail upon request only.**

  You will still receive an unofficial copy of your scores immediately after completing the exam and prior to leaving the testing center. Typically you may fax or bring in a copy of the unofficial GMAT score report to be used to process your MBA application until the official scores arrive from the testing services. MBA programs usually can use the unofficial score report to make a recommendation on an application, but the official GMAT scores must reach the school before an official offer of admission can be made.

TIPS FROM JAMBOREE

During your GMAT preparation, be sure to incorporate the following study skills:

- Use a systematic approach to your test. Take all questions seriously and answer them. Skipping questions is not possible on the GMAT CAT.
- Create a study environment that is as similar as possible to the actual testing setting, which typically includes a quiet space, possibly a computer room or office environment.
- Do not take breaks during a practice test. In the actual test center, you will not be allowed coffee breaks etc. during sections.
- Eliminate distractions and be conscious of time. Especially when you taking practice tests, be as aware of the clock as you will need to be on the actual exam.
- After completing a practice test, be sure to go over the questions you answered incorrectly. This is the only way to improve.
- You must understand your mistakes so that you will not make them on the test.
- AND practice, practice, practice!

Remember that the actual exam is on the computer so take advantage of opportunities to practice with Computer Based Tests. For many test-takers, reading large amounts of material on the screen is not easy. It not only dries out their eyes but also makes it hard to absorb the material. Simply practice reading etc. on the computer. The only way to improve is to practice.

High quality preparation is essential to achieving your best score on the GMAT. High quality preparation means becoming intimately acquainted with the test structure, format, and the types of questions that are being asked. It means improving upon your weak areas through practice and repetition. It means developing your ability to answer correctly the tougher questions. It also means becoming aware of the types of answers that tend to be the correct ones.

In terms of general GMAT taking strategies, **we recommend**:

- Learn the most typical problems and answer types.
- Answer all questions.
- Guess and estimate when necessary.
- Try your best on the initial questions.

If you aim to achieve a top score, **we recommend**:

- Make a special effort to improve your weaknesses along with strengthening your expertise during practice.
- Locate or set up a serious test-taking environment so that you can exclusively focus on taking the mock tests.
- Download the free GMAT-Prep software from www.mba.com for right before the actual test and practice the tests in a mock test setting of your choice so that your memory of the actual question types and difficulty levels which have appeared in prior GMAT tests stays fresh.
- Review all prior mistakes along with explanations.
- Make a list of those typical errors you tend to make and consciously remind yourself of them and refrain from making the same mistakes.
- Keep a light-hearted and positive attitude on the test day.
- Maintain strong momentum from beginning to end as the final problems can sometimes be equally as important as the initial ones.

Make sure the week before your test day will not be a stressful one. This will help you concentrate, be well rested, calm and in the right frame of mind to ace the GMAT.

Be aware of application deadlines and do your best to provide yourself with enough time after the exam to focus on the other parts of your Business School applications.

ON THE TEST DAY

Bring all necessary documents such as Identification Cards (valid passport with at least 6 months' validity), the registration ticket and the names of the schools to which you would like send your test score.

Bring something warm to put on in case the room is too cold. According to test center rules, you have to wear the sweater or coat instead of just putting it around your shoulders. So make sure that the additional layer of sweater or coat is comfortable in a test-taking setting.

Also be sure you can remove a layer of clothing in case the room is hot.

Bring something light to drink or eat. A bottle of water or a soft drink with a cap is preferred over a can so that you can minimize the chances of spilling. (Though you can not take anything into the testing room, you will be assigned a small locker. During your 5-minute breaks, you can have a few sips to stay hydrated or a bite to eat if you get hungry. Normally test centers allow you to put it outside on a desk or at an easily reachable spot or inside your locker so that you can quickly grab the drink or the food.)

No testing aids such as study notes, calculators and PDAs are allowed. Normally 1 booklet of 5 pages of laminated graph paper will be provided.

AT THE TEST CENTER:

- Follow your normal routine.
- Arrive at the test at least 30 minutes early.
- Do concentrate on the first 10 questions of each section most. At the beginning of each section, the total number of questions and the total time allowed are stated.
- Maintain a focused mind and a positive winning attitude throughout the entire test.
- Do not panic. Focus on one question at a time. Focus on one section at a time. Do not think beyond your current section and lose your concentration.
- Do not get ûxated and spend unreasonable time on any single question. It will not make or break your score. Because the score per section is partially based on the number of questions you answer, try to answer as many questions as you can.
- Do not leave any questions unanswered before the section time runs out. Always submit an answer after some educated or blind guesses. Remember that you cannot skip questions or change an answer once you confirm it.
- If a few questions or passages are difficult to understand, do not let that prompt you to cancel your score entirely. You never know.
- If something is wrong with the computer, or if someone is bothering you, or if it's miserably hot etc., signal to an exam proctor. The proctor walks around in the test room every 15-20 minutes.
- Pace yourself and keep track of your progress by checking the amount of time you have left on the test screen. Each section is 75 minutes. You have about two minutes per Quantitative question and about 1.75 minutes per Verbal question.
- Pay attention to the number of questions that remain in a section. There are 37 quantitative section questions. There are 41 verbal section questions.
- Clicking on "HELP" or hiding the "TIME" information doesn't pause or stop the time.
- Between test sections, replenish your supply of laminated graph paper. Take advantage of breaks. Rest your eyes, as the computer screen is difficult to stare at for 4 hours straight.

SENTENCE CORRECTION EXERCISE 1

1. To be a leading producer in the computer industry, a company must be international, achieve a turnover that makes efficient large-scale production possible, and secure information about technical advances.

   (A) and secure information about technical advances

   (B) and securing information about technical advances

   (C) while secure information about technical advances

   (D) and secure information of how to technically advance

   (E) and secure information in regards to technical advances

2. Of the people who brought about the Reformation, the religious revolution that grew out of objections to the doctrines of the medieval church, Martin Luther is the best known of them.

   (A) Martin Luther is the best known of them

   (B) the best known is Martin Luther

   (C) the better known of them was Martin Luther

   (D) Martin Luther is better known

   (E) the best known one was Martin Luther

3. Declining enrollments are forcing smaller private colleges to choose between raising tuition and reduction of the staff.

   (A) between raising tuition and reduction of the staff

   (B) among raising tuition and reducing staff

   (C) between raising tuition or reducing staff

   (D) between raising tuition and reducing staff

   (E) between the rise of tuition and the reduction of the staff

4. The bylaws of a corporation specify how the directors of the corporation are to be elected, whether the existing stockholders will have first right to buy any new stock issued by the firm, as well as duties of management committees.

   (A) as well as duties of management committees

   (B) as well as the duties that the management committees have

   (C) and that the management committees have duties

   (D) and the management committees have duties too

   (E) and what the duties of management committees will be

5. Although it is conceivable that certain electronic devices implanted in the brain may someday correct blindness caused by nerve damage, there is now no evidence of their ability to do it.

   (A) of their ability to do it

   (B) of their doing that

   (C) that they can do so

   (D) that they might one day be able to do it

   (E) to do so

6. Setting up a corporation requires more paper work and legal provision than to establish either a proprietorship or a partnership.

   (A) than to establish either a proprietorship or a partnership

   (B) than what it requires to establish either a proprietorship or a partnership

   (C) than to either establish a proprietorship or a partnership

   (D) than establishing either a proprietorship or a partnership

   (E) than establishing proprietorships and partnerships

7. Not scored.

8. In the Champagne region of France, wine growers still harvest grapes as they have done for centuries, hand-picking their crop and storing their delicious fruit in specially aged casks.

   (A) wine growers still harvest grapes as they have done

   (B) the wine grower still harvests grapes as he has

   (C) wine growers still harvest grapes as was done

   (D) wine growers still harvest grapes as has been done

   (E) wine growers still harvest grapes as they did

9. A new generation of sophisticated copy machines, capable of unprecedented detail and accuracy, are prompting the development of more complex currency design to prevent counterfeiting.

   (A) sophisticated copy machines, capable of unprecedented detail and accuracy, are

   (B) sophisticated copy machines, capable for unprecedented detail and accuracy, is

   (C) sophisticated copy machines, capable of unprecedented detail and accuracy, is

   (D) sophisticated copy machines, capable for unprecedented detail and accuracy, are

   (E) sophisticated copy machines that are capable of unprecedented detail and accuracy are

10. In an unusual move for a Republican, the president's directive established price controls.

    (A) the president's directive established price controls

    (B) the president's directive was to establish price controls

    (C) the president was successful in the establishment of controls on prices

    (D) the president had instituted controls on prices

    (E) the president established price controls

11. The United Automobile Workers returned to the A.F.L. - C.I.O. because of the wish of both groups to strengthen labor's role not only in politics but also industry.

    (A) of the wish of both groups to strengthen labor's role not only in politics but also industry

    (B) both groups wished to strengthen labor's role in politics and in industry

    (C) the strengthening of labor's role in politics as well as industry was wished for by both groups

    (D) it was wished by both groups to strengthen labor's role in politics and industry as well

    (E) both groups wished to strengthen labor's role in both of the two areas of politics and industry

12. Of all the countries contiguous to China, the Soviet Union's borders were most strongly defended.

    (A) the Soviet Union's borders were most strongly defended

    (B) the borders of the Soviet Union were defended more strongly than any of the others

    (C) the Soviet Union's borders stood out for the strength of their defensive capability

    (D) the Soviet Union had the most strongly defended borders

    (E) the Soviet Union's were the most strongly defended borders

13. Unlike the people whom settled the Western states after the passage of the Homestead Act of 1862, the hope of the prospectors and adventurers who came to California during the gold rush was to get rich quickly.

    (A) the people whom settled the Western states after the passage of the Homestead Act of 1862, the hope of the prospectors and adventurers who came to California during the gold rush was

    (B) the people who settled the Western states after the passage of the Homestead Act of 1862, the hope of the prospectors and adventurers who came to California during the gold rush was

    (C) that of the people who settled the Western states after the passage of the Homestead Act of 1862, the prospectors and the adventurers who came to California during the gold rush hoped

    (D) that of the people whom settled the Western states after the passage of the Homestead Act of 1862, the hope of the prospectors and adventurers who came to California during the gold rush was

    (E) the people who settled the Western states after the passage of the Homestead Act of 1862, the prospectors and adventurers who came to California during the gold rush hoped

14. Before George Eliot became the popular and respected novelist known as George Eliot, she was an anonymous translator and essayist.

(A) Before George Eliot became the popular and respected novelist known as George Eliot, she was

(B) Before she had been the popular and respected novelist, George Eliot she was

(C) George Eliot has been popular and respected novelist, George Eliot, after such time as she was

(D) Before George Eliot became the popular and respected novelist, George Eliot, she was

(E) George Eliot, before she was the popular and respected novelist, George Eliot, had been

15. Just like Congress is the legislative branch of the Federal government of the United States, so Parliament is the legislative body of the United Kingdom of Great Britain and Northern Ireland.

(A) Just like Congress is the legislative branch of the Federal government of the United States, so

(B) As Congress is the legislative branch of the federal government of the United States

(C) As Congress is the legislative branch of the Federal government of the United States, in the same way

(D) Just as Congress is the legislative branch of the federal government of the United States, so

(E) Just as the Federal government of the United States' legislative branch is Congress,

16. The reason Frances Willard founded the Women's Christian Temperance Union was because she believed that national prohibition of alcohol will empty the poorhouses, jails, and asylums of the United States.

(A) The reason Frances Willard founded the Women's Christian Temperance Union was because she believed that national prohibition of alcohol will empty the poorhouses, jails, and asylums of the United States

(B) Frances Willard founded the Women's Christian Temperance Union, the reason being that she believed that national prohibition of alcohol will empty the poorhouses, jails, and asylums of the United States

(C) The reason Frances Willard founded the Women's Christian Temperance Union was she believed that national prohibition of alcohol will empty the poorhouses, jails, and asylums of the United States

(D) Because she believed that national prohibition of alcohol would empty the poorhouses, jails, and asylums of the United States, so France Willard founded the Women's Christian Temperance Union

(E) Frances Willard founded the Women's Christian Temperance Union because she believed that national prohibition of alcohol would empty the poorhouses, jails, and asylums of the United States.

17. The combination of technical expertise, commercial enterprise, and that the government backs them judiciously should ensure Italian firms continuing to innovate and gain competitively in world markets.

(A) that the government backs them judiciously should ensure Italian firms continuing

(B) the government backing them judiciously should ensure Italian firms of being about to continue

(C) judicious government backing should ensure that Italian firms will continue

(D) the government's judicious backing should ensure Italian firms that they will continue

(E) the government to back them judiciously should ensure Italian firms of continuing

18. The sloth, which is a South American mammal related to armadillos and anteaters, live in tropical forests where they travel through the trees upside down.

(A) which is a South American mammal related to armadillos and anteaters, live in tropical forests where they travel

(B) a South American mammal related to armadillos and anteaters, live in tropical forests where they travel

(C) a South American mammal related to the armadillo and the anteater, lives in tropical forests where it travels

(D) a South American mammal related to the armadillo and the anteater, lives in tropical forests where they travel

(E) a South American mammal in relation to the armadillo and the anteater, lives in tropical forests where it travels

19. Early derisive reactions from art critics and established painters did not discourage the Primitivist painter Henri Rousseau to exhibit repeatedly, despite him completely lacking formal training and starting late as a professional artist.

(A) did not discourage the Primitivist painter Henri Rousseau to exhibit repeatedly, despite him completely lacking formal training and starting late

(B) did not discourage the Primitivist painter Henri Rousseau exhibiting repeatedly, completely lacking formal training though he was, and starting late

(C) did not discourage the Primitivist painter Henri Rousseau to exhibit repeatedly, despite their complete lack of formal training and late start

(D) did not discourage the Primitivist painter Henri Rousseau in exhibiting repeatedly, despite his complete lack of formal training and late start

(E) did not discourage the Primitivist painter Henri Rousseau from exhibiting repeatedly, despite his complete lack of formal training and late start

20. The poll taxes enacted in the Southern states between 1889 and 1910 disenfranchised many citizens, since payment of the tax was a prerequisite for voting.

(A) and 1910 disenfranchised many citizens, since

(B) to 1910 disenfranchised many citizens, since

(C) and 1910 have disenfranchised many citizens since

(D) to 1910 has been disenfranchising many citizens because

(E) and 1910 had the effect of disenfranchising many citizens, in as much as

21. With a population equal to Kansas in an area one three-hundredth its size, Singapore is the most densely populated nation in the world, averaging almost ten thousand people per square mile.

(A) With a population equal to Kansas in an area one three-hundredth its size, Singapore is the most densely populated nation in the world, averaging

(B) With a population equal to that of Kansas in an area one three-hundredth its size, Singapore is the most densely populated nation in the world, averaging

(C) With Kansas's population in one three-hundredth of its area, the densest population in the world is that of Singapore, with an average of

(D) Singapore has the same population as Kansas but only one three-hundredth of it area, and makes it the most densely populated nation in the world, averaging

(E) Singapore is the most densely populated nation in the world, with Kansas's population in one three-hundredth of its area, or an average of

22. Many medical schools are now offering courses in the ethics of treating terminal patients, partly to alert students about the legal implications involved in such treatment, but primarily to prepare students through discussion and forethought to make responsible decisions that respect terminal patients' dignity.

(A) but primarily to prepare students, through discussion and forethought, to make responsible decisions that respect terminal patients' dignity

(B) but primarily so as to prepare students, by discussing and by thinking ahead for responsible decision making that respects terminal patients' dignity

(C) but primarily for the purpose of preparing them, with discussion and forethought, to make responsible decisions that respect terminal patients' dignity

(D) but primarily for preparing them, through discussion and forethought, for deciding responsibly so that they respect terminal patients' dignity

(E) but primarily to prepare them, by discussing and thinking ahead, to responsibly decide so as to respect the dignity of terminal patients

SENTENCE CORRECTION EXERCISE 2

23. The Chairman of the board of directors have decided that this year's profits will be used for research and development, rather than for a share holder dividend.

(A) have decided that this year's profits will be used

(B) has decided that this year's profits will be used

(C) have decided on using this year's profits

(D) has decided on using this year's profits

(E) decided this year's profits will have been used

24. Not only do deep-sea divers risk nitrogen narcosis, often called "raptures of the deep," if they descend below 200 feet but they also fall prey to decompression sickness, commonly known as "the hands" if they ascend too quickly.

(A) Not only do deep-sea divers risk nitrogen narcosis, often called "raptures of the deep," if they descend below 200 feet, but

(B) Deep-sea divers risk nitrogen narcosis, often called "raptures of the deep," if they descend below 200 feet, but

(C) Nitrogen narcosis, often called "raptures of the deep," is risked by deep sea divers if they descend below 200 feet, in addition

(D) Descending below 200 feet causes deep-sea divers to risk nitrogen narcosis, often called "raptures of the deep," and

(E) Not only does deep-sea divers risk nitrogen narcosis, often called "raptures of the deep," if they descend below 200 feet, but

25. A 32% wage-hike, working four days a week, and above all a higher standard of factory safety is a demand that management must meet if it wishes to avoid a crippling strike.

(A) A 32% wage-hike, working four days a week, and above all a higher standard of factory safety is a demand

(B) A 32% wage-hike, a four-day workweek, and above all a higher standard of factory safety is a demand

(C) A 32% wage-hike, a four-day workweek, and above all a higher standard of safety in the factory are demands

(D) A 32% wage-hike, working four days a week, and above all a higher standard of factory safety are demands

(E) Hiking wages 32%, working four days a week, and above all highten the standard of factory safety are demands

26. Although new firm subsidy legislation is presently being considered in the House of Representatives, significant revision is to be expected if it is to be passed.

(A) significant revision is to be expected if it is to be passed

(B) they do not expect it passing without significant revision

(C) they do not expect it passing without it being significantly revised

(D) it is not expected to pass without it being significantly revised

(E) it is not expected to pass without significant revision

27. At a recent conference, the Transit Authority has stated that the provisions in the Clean Air Act fail to promote mass transit as an alternative to private transportation.

(A) has stated that the provisions in the Clean Air Act fail

(B) stated that the provisions of the Clean Air Act fail

(C) has stated that the provisions of the Clean Air Act will fail

(D) stated that the provisions of the Clean Air Act are a failure

(E) has stated that the provisions in the Clean Air Act failed

28. Like most religions, the teachings of Sikhism are codified in a book.

(A) Like most religions, the teachings of Sikhism are codified in

(B) Like most other religions, the teachings of Sikhism are codified in

(C) Sikhism's teachings, like those of most other religions, are codified in

(D) For their codification, like the teachings of most religions, Sikhism has

(E) Like those of most religions, Sikhism has codified its teachings in

29. A revolution has taken place in medical science as a result of the introduction of new methods of surgically implanting artificial and human organs.

(A) the introduction of new methods of surgically implanting artificial and human organs

(B) the introduction of new surgical implantation methods of human and artificial organs

(C) the surgical introduction of new artificial and human organ implantation methods

(D) the introduction of implantation methods of new artificial and human organs

(E) the introduction of methods of surgically implanting new artificial and human organs

30. Added to worries about budget cuts and cost of living increases, the administrators of public health care facilities must contend with the possibility of a strike by employees.

(A) Added to worries about budget cuts and cost of living increases

(B) Added to budget cuts and increases in the cost of living

(C) In addition to worry about cuts in the budget and as the cost of living increases

(D) Added to their worrying about budget cuts and cost of living increases

(E) In addition to worrying about budget cuts and increases in the cost of living

31. Renaissance scientist Copernicus found that his rejection of the Ptolemaic system placed him at odds not only with the Church and the scientific community of his day, but also with ship captains, who navigated according to a geocentric universe.

(A) not only with the Church and the scientific community of his day, but also with ship captains, who navigated according to a geocentric universe

(B) opposing the Church and the scientific community of his day, and also the ship captains, who navigated according to a geocentric universe

(C) not only in opposition to the Church and the scientific community of his day, but with ship captains, who navigated according to a geocentric universe

(D) not only with the Church and the scientific community of his day, but with ship captains, who navigations on a geocentric basis

(E) opposing not only churchmen and scientists, but the ship captains, who navigated according to a geocentric universe

32. Despite them attempting to do it, doctors have not yet found a cure for the common cold.

(A) them attempting to do it

(B) their attempts to do so

(C) them attempting to do so

(D) the fact that they have attempted to do it

(E) their attempts to do it

33. Unlike the Pulitzer, which is given for a specific work, an author receives the Nobel Prize for a lifetime's achievement in literature.

(A) an author receives the Nobel Prize for a lifetime's achievement in literature

(B) an author's lifetime achievement in literature receives the Nobel Prize

(C) the Noble prize is awarded to an author's lifetime's achievement in literature

(D) the Nobel prize is awarded to an author who has had a lifetime of achievement in literature

(E) the Nobel prize is awarded for a lifetime of achievement in literature by an author

34. Medical researchers, who have identified a genetic abnormality in parents of children with Down's syndrome, which they believe, instead of the age of the mother, may be the cause of this congenital birth defect.

(A) which they believe, instead of the age of the mother, may be

(B) which, they believe, may be more important than the age of the mother as

(C) believe this abnormality and not the age of mother as being

(D) believe that this abnormality, other than how old the mother is, may be

(E) believe that this abnormality, rather than the age of the mother, may be

35. Unable to walk without assistance, radio provided Franklin Roosevelt with a medium for conveying a message of vigor and confidence that would have been belied by the visual image presented on television.

(A) radio provided Franklin Roosevelt with a medium for conveying

(B) Franklin Roosevelt conveyed in radio

(C) Franklin Roosevelt used radio to convey

(D) radio allowed Franklin Roosevelt to convey

(E) through radio it was possible

36. Modern inventions such as the pneumatic drill may seem to have improved the work conditions of manual laborers, but in fact, have increased the incidence of health hazards such as silicosis because it has aggravated the dust hazard involved in excavation and demolition.

(A) have increased the incidence of health hazards such as silicosis because it has aggravated the dust hazard

(B) has increased the incidence of health hazards such as silicosis because it has aggravated the dust hazard

(C) have increased the incidence of health hazards such as silicosis because they have aggravated the dust hazard

(D) increased the incidence of health hazards such as silicosis because they aggravated the dust hazard

(E) increased the incidence of health hazards such as silicosis because of aggravating the dust hazard

37. The Federal Reserve Board assumes primary responsibility of the regulation for this nation's commercial banks and savings institutions.

(A) Board assumes primary responsibility of the regulation for

(B) Board's assumption of primary responsibility for the regulation of

(C) Board's assuming primary responsibility to regulate

(D) Board assumes primary responsibility for the regulation of

(E) Board regulates primary responsibility for

38. Not scored.

39. Though caterpillars transform large amounts of plant matter into animal tissue and wastes, and therefore hold an important place in the food chain, they are so voracious that they have become an economic threat to farmers whose crops they eat.

(A) they are so voracious that they have become an economic

(B) they are of such voracity, they have become an economical

(C) so voracious are they as to become an economical

(D) such is their voracity, they become an economic

(E) there is so much voracity that it has become an economical

40. The nations with nuclear capabilities have restrained the proliferation of nuclear weapons less by reaching military understanding than by the refusal to sell associated technologies.

(A) by the refusal to sell

(B) not selling

(C) the refusal to sell

(D) refusing to sell

(E) by refusing to sell

41. During and immediately after the California gold rush, the way for a merchant to generate the most profit was to move a limited amount of scarce goods to San Francisco as quickly as possible, rather than to carry larger loads more slowly, determining the design of the clipper ship.

(A) to carry larger loads more slowly, determining

(B) to carry larger loads more slowly, a situation that determined

(C) carry larger loads more slowly, which determined

(D) slowly carry larger loads which determined

(E) carrying larger loads more slowly, and this was a situation in determining

42. The analyst suggested that traders pay more attention to a broader measure of the money supply, known as x, but still not to ignore standard indicators.

(A) but still not to ignore

(B) and not to ignore any longer

(C) but that they still not ignore

(D) and not that they continue to ignore

(E) but that they are still not ignoring

43. According to the teachings of the Buddhist and Hindu religions, attaining nirvana is to enter a state of supreme liberation, leaving behind the desires that perpetuate the cycle of death and rebirth.

(A) attaining nirvana is to enter

(B) to attaining nirvana is entering

(C) to attain nirvana is entering

(D) to attain nirvana is to enter

(E) attaining nirvana is to be entering

44. The principal has sought approval for her plan to grant promotions to only those seventh-grade students proficient in reading without meeting with opposition.

(A) reading without meeting with opposition

(B) reading, having met with no opposition

(C) reading, without the opposition of others

(D) reading, and has not met with opposition

(E) reading without opposition

SENTENCE CORRECTION EXERCISE 3

45. More adeptly handling responsibilities than his predecessors were, the new owner of the property rapidly increased the production rate of the land.

(A) More adeptly handling responsibilities than his predecessors were

(B) Being that he was more adept at handling responsibilities than were his predecessors

(C) Handling more adeptly responsibilities than are his predecessors

(D) More adept than his predecessors at handling responsibilities

(E) Since he handled responsibilities in a manner more adeptly than had his predecessors

46. In general, people support cuts in government spending until they discover that it will affect their own day-to-day lives quite practically.

(A) it will affect

(B) it would affect

(C) the cuts will affect

(D) the cuts' affects will be on

(E) it will have an affect on

47. Before they will consider a settlement, the striking teachers demand that the school board fire the substitute teachers and establishes payment scales guaranteeing cost of living increases.

(A) and establishes payment scales guaranteeing cost of living increases

(B) and to establish payment scales that would guarantee cost of living increases

(C) and establishes payment scales to guarantee cost of living increases

(D) and establish payment scales to guarantee cost of living increases

(E) to establish payment scales that would guarantee cost of living increases

48. Each of the factory towns, which has pollution as a severe problem is in need of drastically reformed system of industrial waste disposal.

(A) which has pollution as a severe problem is

(B) where the pollution problem has become severe is

(C) where the pollution problem has become severe are

(D) in an area in which the pollution problem has become severe are

(E) in which the pollution problem has become severe are

49. Unlike George Washington, Thomas Jefferson, and other revolutionary heroes, the reputation of Thomas Paine suffered greatly, to the point where no church cemetery would accept Paine for burial when he died in 1809.

(A) Unlike George Washington, Thomas Jefferson, and other revolutionary heroes, the reputation of Thomas Paine suffered greatly, to the point where

(B) Unlike the reputations of George Washington, Thomas Jefferson, and other revolutionary heroes, Thomas Paine suffered greatly, to the point that, because of his reputation,

(C) In contrast to George Washington, Thomas Jefferson, and other revolutionary heroes, the reputation of Thomas Paine suffered greatly, such that

(D) The reputation of Thomas Paine, unlike those of George Washington, Thomas Jefferson, and other revolutionary heroes, suffered so greatly that

(E) Thomas Paine's reputation suffered greatly, so much so that, unlike George Washington, Thomas Jefferson, and other revolutionary heroes

50. The Moghul emperors of India devised an administrative machine, a system of land tenure, and a codified method of collecting revenue, all of which outlasted their rule.

(A) a codified method of collecting revenue

(B) codified a method of revenue collection

(C) codified a method of collecting revenue

(D) collected revenue by a codified method

(E) collected revenue by a method of codification

51. Among the safest of all perishable foods, pathogens cannot grow in yogurt because it is highly acidic.

(A) pathogens cannot grow in yogurt because it is highly acidic

(B) yogurt's high acidity prevents the growth of pathogens

(C) yogurt is highly acidic and does not support the growth of pathogens

(D) the high acidity of yogurt prevents the growth of pathogens

(E) it is hard for pathogens to grow in yogurt because it is highly acidic

52. Erno Rubik, the Hungarian entrepreneur and inventor of the Rubik's Cube, has come up with a new puzzle so complicated neither he or anybody else either has been able to calculate a formula for its solution.

(A) so complicated neither he or anybody else either has

(B) so complicated neither he and no one else either has

(C) so complicated that neither he nor anyone else have

(D) of such complication that he and no one else either has

(E) so complicated that neither he nor anyone else has

53. American children perform more poorly in athletic tests of speed, strength, and endurance than do their European contemporaries.

(A) American children perform more poorly in athletic tests of speed, strength, and endurance than do

(B) The American child performs more poorly in athletic tests of speed, strength, and endurance as does

(C) American children perform more poorly in athletic tests speed, strength, and endurance than does

(D) The American child performs more poorly in athletic tests of speed, strength, and endurance as do

(E) The American child performs more poorly in athletic tests of speed, strength, and endurance than do

54. Daunted by the threat of costly lawsuits, it was decided by most American pharmaceutical companies to abandon doing research in new forms of contraceptives.

(A) it was decided by most American pharmaceutical companies to abandon doing research in new forms of contraceptives

(B) the decision of most American pharmaceutical companies was to abandon doing research in new forms of contraceptives

(C) most American pharmaceutical companies have decided to abandon research in new forms of contraceptives

(D) research on new forms of contraceptives was abandoned by most American pharmaceutical companies

(E) most American pharmaceutical companies decide on abandoning research in new forms of contraceptives

55. By observing the techniques of medicine men, such as physical manipulation and the application of herbs, one has the capacity to learn things about the human body not normally taken into consideration by practitioners of Western medicine.

(A) By observing the techniques of medicine men, such as physical manipulation and the application of herbs, one has the capacity to learn things

(B) By observing the techniques of medicine men, such as physical manipulation and the application of herbs, one can learn things

(C) If you observe the techniques of medicine men, such as physical manipulation and the application of herbs, one can learn things

(D) Observing the techniques of medicine men, such as physical manipulation and the application of herbs, things can be learned

(E) Observing the techniques of medicine men, such as physical manipulation and the application of herbs, the capacity is given to one to learn things

56. Rockets, like the airplane and the jet, were rapidly improved during World War II.

(A) Rockets, like the airplane and the jet, were

(B) The rockets, like airplanes and jets, was

(C) Rockets, like airplanes and jets, was

(D) Rockets, like airplanes and jets, were

(E) The rocket, like the airplane and the jets, were

57. More than any other single event in the history of Europe, the Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, is remembered for the burning of persons condemned as heretics.

(A) More than any other single event in the history of Europe, the Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, is remembered

(B) More than any single event in the history of Europe, the Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, was remembered

(C) The Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, more than any event in the history of Europe, is remembered

(D) More than any other single event in the history of Europe, the Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, are remembered

(E) The Spanish Inquisition, instituted by Ferdinand and Isabella and controlled by the Spanish Kings, are remembered more than any single event in the history of Europe

58. Although the losing party disapproves of every aspect of the opponent's platform, they later conceded that there must be a basis for a cooperative government and agreed to compromise

(A) disapproves of every aspect of the opponent's platform, they later conceded that there must be a basis

(B) disapproves of every aspect of the opponent's platform, it later conceded that there must be a basis

(C) disapproved of every aspect of the opponent's platform, they later conceded that there have to be some ground

(D) had disapproved of every aspect of the opponent's platform, it later conceded that there must be a basis

(E) had disapproved of every aspect of the opponent's platform, they later conceded that there are grounds

59. When the first nuclear device was detonated in the desert of New Mexico, a new military era can be said to have begun as both the physical power of the atom and the psychological power of deterrence take their places in the world arsenal.

(A) as both the physical power of the atom and the psychological power of deterrence take their places in the world arsenal.

(B) as both the physical power of the atom and the psychological power of deterrence took their places in the world arsenal.

(C) as the physical power of the atom and the psychological power of deterrence both take their places in the world arsenal.

(D) as a result of the fact that both the physical power of the atom and the psychological power of deterrence took their respective places in the world arsenal.

(E) as a consequence of the fact that both the physical power of the atom and the psychological power of deterrence take their places in the world arsenal.

60. Not until 1932, nearly a century and a half after the first senatorial election, had a woman, Hattie Caraway of Arkansas been elected to be a United States Senator.

(A) had a woman, Hattie Caraway of Arkansas, been elected to be

(B) was a woman, Hattie Caraway of Arkansas, elected as

(C) was a woman, Hattie Caraway of Arkansas, elected to be

(D) had a woman, Hattie Caraway of Arkansas, been elected for

(E) had a woman, Hattie Caraway of Arkansas, been elected in order to be

61. Despite forceful legal pleas for the restitution of expropriated cultural artifacts to the place of their origin, the British Museum continues to rebuff the Greek authorities, requesting that it should return the Parthenon marbles removed from the Acropolis by Elgin in 1806.

(A) requesting that it should

(B) requesting them to

(C) and its request to

(D) who request that it

(E) who request them to

62. Any theory of grammar should answer three basic questions: what constitutes knowledge of grammar, how it is acquired, and how it is put to use.

(A) it is acquired, and how it is put to use

(B) is knowledge of grammar acquired how put to use

(C) it was acquired and put to use

(D) the acquisition of it is put to use

(E) the knowing of it is acquired and how it is put to use

63. Submarine exploration reveals both that hot water vents through the sea floor at great depths, but also that it supports diverse life forms in the complete absence of light.

(A) both that hot water vents through the sea floor at great depths, but also that it supports diverse life forms

(B) both hot water venting through the sea floor at great depths, as well as their supporting diverse life forms

(C) that the support of diverse life forms at great depths where hot water vents through the sea floor

(D) both that hot water vents through the sea floor at great depths, and that it supports diverse life forms

(E) that hot water both vents through the sea floor at great depths, and the support of diverse life forms

64. The Schlieffen Plan, which the German army used to invade France in 1914, required that the last man on the right of the German line literally brush the English Channel with his sleeve.

(A) literally brush

(B) was supposed to literally brush

(C) would have literally brushed

(D) will literally be brushing

(E) was to literally brush

65. This year's group of freshmen includes twice, or more, as many women than last year's

(A) includes twice, or more, as many women than last year's

(B) include twice or more the number of women as did last year's

(C) includes at least double the number of last year's women

(D) include at least twice the women as last year

(E) includes at least twice as many women as last year's

66. Founded by the Iranian prophet and reformer Zoroaster in the sixth century B.C. , Zoroastrianism, containing both monotheistic and dualistic features, were influencing the three other major Western religions.

(A) were influencing

(B) which influencing

(C) influenced

(D) which had influenced

(E) had influenced

SENTENCE CORRECTION EXERCISE 4

67. Bottle-nosed dolphins have a highly developed sense of taste, enabling them to detect various chemicals in the water; however, since this animal has no olfactory lobe, they apparently have no sense of smell.

(A) since this animal has
(B) these animals have
(C) those animals have
(D) since these animals have
(E) since the dolphin has

68. In the early days of the manned space program, three astronauts died in a fire before engineers discovered that a mixture of oxygen and nitrogen, rather than pure oxygen, will be breathable and less incendiary.

(A) will be breathable and less incendiary
(B) breathes better than it burns
(C) was less incendiary than breathable
(D) to be breathable rather than incendiary
(E) would be breathable and less incendiary

69. It has been demonstrated that individuals, who participated in competitive sports when they are in college, tend towards remaining physically active in their later years.

(A) when they are in college, tend towards remaining
(B) when they were in college, are likely to be
(C) when they were in college, were apt to be
(D) when they are in college, are apt to be
(E) when they were in college, were liable to be

70. Henry VIII changed from staunch defender to active opponent of the Church when Pope Clement VII barred his attempts to divorce Katherine of Aragon.

(A) staunch defender to active opponent of the Church
(B) staunchly defending to active opposition to the Church
(C) staunch defender to actively opposing the Church
(D) staunch defender of the Church to actively opposing it
(E) being a staunch defender to an active opponent of the Church

71. Upon receiving a summons for fare evasions or other traffic violations, the law requires paying the fine immediately or having a hearing

(A) the law requires paying the fine immediately or having a hearing
(B) the law requires that the fine is paid immediately or a hearing is held
(C) the law requires the immediate payment of the fine or a hearing
(D) the offender must meet the law's requirement of the fine being paid immediately or a hearing
(E) the offender is required by law to pay the fine immediately or have a hearing

72. Not scored.

73. Setting a distance record, in 1984 Joe Kittinger piloted his balloon from Maine to Italy, and he became the first balloonist to cross the Atlantic solo.

(A) Setting a distance record, in 1984 Joe Kittinger piloted his balloon from Maine to Italy, and he became the first balloonist to cross the Atlantic solo
(B) In 1984, Joe Kittinger setting a distance record, piloted his balloon from Maine to Italy, and he became the first balloonist to cross the Atlantic solo
(C) In 1984, Joe Kittinger piloted his balloon from Maine to Italy, setting a distance record and becoming the first balloonist to cross the Atlantic solo
(D) Having been first to cross the Atlantic solo, and with a voyage from Maine to Italy, Joe Kitinger set a balloon distance record in 1984
(E) Joe Kittinger, in 1984, piloted his balloon from Maine to Italy, setting a new distance record, becoming the first balloonist to cross the Atlantic solo

74. Crises in international diplomacy do not always result from malice; for nations, like individuals, can find themselves locked into difficult positions, unable to back down

(A) do not always result from malice; for nations, like individuals, can find

(B) does not always result from malice; nations, just as individuals, finding

(C) do not always result of malice; nations, such as individuals, can find

(D) aren't always the result of malice; nations in the same way that individuals can find

(E) aren't resulting always from malice; just like nations and individuals who can find

75. Every three months an index of leading economic indicators for the preceding quarter is released by the U.S. Commerce Department that provides economists with the basis for bleak or hopeful forecasts.

(A) Every three months an index of leading economic indicators for the preceding quarter is released by the U.S. Commerce Department, that provides economists with the basis for bleak or hopeful forecasts

(B) Every three months, the U.S. Department of Commerce, by providing economists with the basis for bleak or hopeful forecasts, releases an index of leading economic indicators for the preceding quarter

(C) Every three months, the U.S. Commerce Department releases an index of leading economic indicators for the preceding quarter, providing economists with the basis for bleak or hopeful forecasts

(D) Having released an index of leading economic indicators for the preceding quarter, every three months the U.S. Commerce Department provides economists with the basis for bleak or hopeful forecasts

(E) Every three months, the U.S. Commerce Department releases an index of leading economic indicators for the preceding quarter, provides the basis for economists' making bleak or hopeful forecasts

76. Young female ballet dancers and gymnasts sometimes fail to maintain good eating habits caused by the desire to be as thin as possible

(A) Young female ballet dancers and gymnasts sometimes fail to maintain good eating habits caused by the desire to be as thin as possible

(B) Good eating habits sometimes fail to be maintained by Young female ballet dancers and gymnasts caused by desiring to be as thin as possible

(C) Because they desire to be as thin as possible, good eating habits are sometimes not maintained by young female ballet dancers and gymnasts

(D) Because they desire to be as thin as possible, young female ballet dancers and gymnasts sometimes fail to maintain good eating habits

(E) Young female ballet dancers and gymnasts sometimes fail to maintain good eating habits because they desire to be as thin as possible

77. During her testimony, the witness referred to facts about the defendant that had been ruled inadmissible as evidence, so the judge ordered that her remarks were stricken from the record

(A) were stricken from the record

(B) are stricken from the record

(C) be stricken from the record

(D) are not recorded

(E) will not be recorded

78. Hubert Humphery's attempt in his campaign to dissociate himself from the Johnson Foreign policies was built around emphasis on Humphery's Senate career

(A) himself from the Johnson Foreign policies was built around emphasis on Humphery's Senate career

(B) him from the Johnson Foreign policies were built around emphasis on Humphery's Senate career

(C) him from the Johnson Foreign policies was built around emphasis on Humphery's Senate career

(D) himself from the Johnson Foreign policies were built around emphasis on Humphery's Senate career

(E) him from the Johnson Foreign policies was built around emphasizing the Senate career of the candidate

79. Since conscious patients often died of shock on the operating table, the invention of anesthesia was essential to the development of surgery as the invention of the propeller was to powered flight

(A) the invention of anesthesia was essential to the development of surgery as the invention of the propeller was to powered flight.

(B) inventing anesthesia was as essential for the development of surgery as the invention of the propeller was for powered flight

(C) the invention of anesthesia was essential in the development of surgery much as the invention of the propeller had been for powered flight

(D) the invention of anesthesia was as essential to the development of surgery as the invention of the propeller was to powered flight

(E) the invention of anesthesia was essential to the development of surgery, so was the invention of the propeller essential to powered flight

80. Of all insects, past and present, the cockroach stands out as the most resistant to change among them

(A) the cockroach stands out as the most resistant to change among them

(B) the cockroach stands out as the most resistant to change

(C) the cockroach alone stands out as the most resistant to change

(D) the cockroach stood out as the most resistant to change

(E) only the cockroach alone stands out as resistant to change

81. Shrouded by clouds, Venus has been mapped by radar from the Earth and from the spacecraft in orbit, and whose images suggest a geology intermediate between the Earth and Mars

(A) Shrouded by clouds, Venus has been mapped by radar from the Earth and from the Spacecraft in orbit, and whose images suggest a geology intermediate between the Earth and Mars.

(B) Radar, sent from Earth and orbiting spacecraft, has mapped cloud-shrouded Venus, and the images suggest a geology intermediate between that of Earth and that of Mars.

(C) Intermediate between Earth and Mars, Venus' geology has been mapped through its cloud by radar images from Earth and by orbiting spacecraft

(D) From the Earth and spacecraft in orbit, radar has mapped cloud-shrouded Venus, intermediate between Earth and Mars, and images suggest its geology

(E) Venus' geology, shrouded by clouds, is intermediate between Earth and Mars, which is suggested by maps that have been made by radar images from Earth and orbiting spacecraft

82. During World War II the German found it easy to seize Russian territory, but retaining it difficult

(A) retaining it difficult

(B) its retention difficult

(C) difficult in so far as retaining it was concerned

(D) difficulty was encountered in holding it

(E) difficult to retain it

83. Although the island is fairly secure, one should not attempt to explore it on one's own: the travel company will not be held responsible for injuries you incur outside the facilities provided for you

(A) one should not attempt to explore it on one's own

(B) one should not attempt the exploring of it on one's own

(C) you should not attempt to explore it on your own

(D) you should not attempt exploring it on your own

(E) you should not attempt the exploring of it on your own

84. Unlike football, which is played on a standardized field, baseball fields vary considerably in both size and shape.

(A) baseball fields vary considerably in both size and shape

(B) baseball fields vary considerably, in size as well as in shape

(C) baseball is played on a field that varies considerably in both size and shape

(D) baseball is played on fields that vary considerably in both size and shape

(E) baseball is played on a field that varies considerably in size as well as in shape

85. An important reason to be vaccinated would be that vaccination prevents the spread of infectious diseases, such as cholera, typhoid, and typhus, that are prevalent in areas of the world that lack proper sanitation.

(A) An important reason to be vaccinated would be that vaccination

(B) Vaccination is important because it

(C) An important reason to be vaccinated is because it

(D) You should be vaccinated and it is

(E) An important reason to be vaccinated is that vaccination

86. Citing a variety of other factors that may adversely affect tree growth, such as drought, disease, and ecological competition, reports by scientists show that the extent to which acid rain contributes to the decline of American forests has not been able to be determined

(A) reports by scientists show that the extent to which acid rain contributes to the decline of American forests has not been able to be determined

(B) reports by scientists have been unable in determining how much acid rain contributes to declining American forests

(C) the extent to which acid rain contributes to decline of American forests has not been determined by scientists

(D) scientists report that they have been unable to determine the extent to which acid rain contributes to the decline of American forests

(E) scientists have been unable to make a determination of the extent of acid rain's contribution in the decline of American forests

87. To restore fishing grounds damaged by pollution, marine engineers can create an artificial reef by towing old barges to an offshore location and sinking to the sandy bottom.

(A) and sinking

(B) and sinking them

(C) and sinking it

(D) where it sinks

(E) having sunk them

88. Although the people who live in India's villages and on the land are still very poor, the years since independence in 1947 have brought increased literacy, new roads, and have improved farming techniques in the hinterland.

(A) and have improved farming techniques in the hinterland

(B) and improved farming techniques to the hinterland

(C) and in the hinterland farming techniques have improved

(D) and, in the hinterland, farming techniques that are improved

(E) and farming techniques have been improved in the hinterland

SENTENCE CORRECTION EXERCISE 5

89. One student at the school was not yet fifteen, yet he was already a master in both chess and in bridge.

(A) master in both chess and in bridge
(B) master of both chess and in bridge
(C) master of both chess and of bridge
(D) master both chess and bridge
(E) master of both chess and bridge

90. Although modern roller coasters have loops in which they turn upside-down, old-fashioned roller coasters have more and longer straight drops.

(A) old-fashioned roller coasters have more and longer straight drops
(B) the old-fashioned roller coaster has more and longer straight drops
(C) whereas old-fashioned roller coasters have more and longer straight drops
(D) old-fashioned roller coasters having more and longer straight drops
(E) old-fashioned roller coasters drop longer and straighter

91. Unlike the Puritan ethic, extolling hard work as the supreme virtue, many modern psychologists focus on the goals of inner peace and self-discovery.

(A) Unlike the Puritan ethic, extolling hard work as the supreme virtue, many modern psychologists focus on the goals of inner peace and self-discovery
(B) Unlike believers in the Puritan ethic, which extols as the supreme virtue hard work, the goals of inner peace and self discovery are focused on by many modern psychologists
(C) Unlike the Puritan ethic, which extols hard work as the supreme virtue, the focus of the doctrines of many modern psychologists are the goals of inner peace and self discovery
(D) Unlike the Puritan ethic, which extols hard work as the supreme virtue, the doctrines of many modern psychologists focus on the goals of inner peace and self-discovery
(E) Unlike those of the Puritans, who extols hard work as the supreme virtue, many modern psychologists focus on the goals of inner peace and self-discovery

92. The customer will not be responsible for transactions made with lost or stolen credit cards after issuing replacement cards

(A) The customer will not be responsible for transactions made with lost or stolen credit cards after issuing replacement cards
(B) No customer will be responsible for transactions made with lost or stolen credit cards after they are issued replacement cards
(C) The customer will not be responsible for transactions made with lost or stolen credit cards after replacement cards have been issued
(D) Responsibility for transaction made with lost or stolen credit cards will not be the customer's after he is issued replacement cards
(E) The customer will not be responsible for transactions made with lost or stolen credit cards after such time as they will have been issued replacement cards

93. Despite that they were able to calculate faster than ever before possible, the earliest computers, built with tubes instead of transistors, were too bulky, expensive, and unreliable to be useful to business.

(A) Despite that they were able to calculate faster than ever before possible
(B) Even though it could calculate faster than previously possible
(C) Although faster in its calculating than ever before possible
(D) Despite their calculations being faster than ever before possible
(E) Despite their unprecedented speed of calculation

94. As genetics researchers achieve greater success in their attempt to map the exact locations and functions of human genes, the close connection between genes and birth defects has become increasingly clear

(A) close connection between genes and birth defects has become
(B) closeness of the connection between genes and birth defects has become
(C) close connection genes have with birth defects has been becoming
(D) close connection between genes and birth defects has been becoming
(E) close connection between genes and birth defects becomes

95. At Agincourt, Charles D' Albert's battle plan was thwarted as a direct result of the irrepressible desire the French nobility had to charge headlong into any enemy offering a challenge.

(A) as a direct result of the irrepressible desire the French nobility had to

(B) because the French nobility had an irrepressible desire to

(C) insofar as the French nobility desire to

(D) because the French nobility would have an irrepressible desire to

(E) by the French nobility's desire to irrepressibly

96. At their birth day party, the twins were eager to begin opening their presents, but finishing was hard for them.

(A) finishing was hard for them

(B) reluctant to finish

(C) finishing them reluctant

(D) were reluctant after finishing

(E) their finishing reluctant

97. That young girls score as well if not better than young boys on standardized tests disprove one prevalent male supremacy myth.

(A) That young girls score as well if not better than young boys on standardized tests disprove

(B) That young girls score as well if not better than young boys on standardized tests disproves

(C) That young girls score as well as if not better than young boys on standardized tests disproves

(D) That young girls score so well as if not better than young boys on standardized tests disprove

(E) The fact of young girls scoring as well if not better than young boys on standardized tests disprove

98. Lungfish have some characteristics similar to those of mammals, and in other ways they more closely resemble fish.

(A) and in other ways they more closely resemble fish

(B) and others similar to those of fish

(C) and some fish-like characteristics

(D) in addition to several fish characteristics

(E) and some characteristics similar as fish

99. Perhaps the most significant medical breakthrough of the twenties, the real story behind the isolation of insulin was not revealed for over fifty years

(A) Perhaps the most significant medical breakthrough of the twenties, the real story behind the isolation of insulin was not revealed for over fifty years

(B) The real story behind the isolation of insulin was not revealed for over fifty years, even though it was perhaps the most significant medical breakthrough of the twenties

(C) Although the isolation of insulin was perhaps the most significant medical breakthrough of the twenties, the real story behind it was not revealed for over fifty years

(D) The real story behind the isolation of insulin was not revealed for over fifty years, although insulin was perhaps the most significant medical breakthrough of the twenties

(E) Although insulin was perhaps the most significant medical breakthrough of the twenties, its isolation was not revealed for over fifty years

100. Popular child psychologists have advocated that parents discipline male children similarly to the fashion in which they discipline daughters.

(A) similarly to the fashion in which they discipline

(B) in the same manner that they would use with

(C) like they would handle

(D) as they discipline

(E) as they would

101. In the middle Ages, philosophers were so devoted to Aristotle that they neglected the evidence of their own senses and accepted whatever he wrote.

(A) were so devoted to Aristotle that they neglected

(B) were so devoted to Aristotle as to neglect

(C) were devoted to Aristotle to such a degree that they were to neglect

(D) were so devoted to Aristotle that they had to neglect

(E) were as devoted to Aristotle as to neglect

102. To rely on anecdotal evidence of social phenomena is ignoring decades of increasing sophistication in the use of statistics in sociology.

(A) To rely on anecdotal evidence of social phenomena is ignoring

(B) To rely on anecdotal evidence of social phenomena is to ignore

(C) To rely on anecdotes for demonstration of social phenomena is ignoring

(D) Relying on anecdotal evidence of social phenomena is to ignore

(E) Relying on anecdotal evidence of social phenomena amounts to the ignoring of

103. The team members streamed into the locker room, donned their uniforms, and, before commencing its first practice, they joined in a brief strategy session.

(A) and, before commencing its first practice, they joined in a brief strategy session

(B) and its first practice was preceded by a brief strategy session

(C) and a brief strategy session preceded its first practice

(D) and, before commencing their first practice, they joined in a brief strategy session

(E) and, before commencing their first practice, joined in a brief strategy session

104. The reason why Scipio Africanus wept after his defeat of Hannibal was because he knew that, having attained this stunning victory, his fortunes could only turn for the worse

(A) The reason why Scipio Africanus wept after his defeat of Hannibal was because he knew

(B) Scipio Africanus weeping after his defeat of Hannibal because he knew

(C) Scipio Africanus wept after his defeat of Hannibal because he knew

(D) The reason Scipio Africanus wept after his defeat of Hannibal was because he knew

(E) Scipio Africanus wept after his defeat of Hannibal, the reason being that he knew

105. A turning point in United States labor history was reached when most of the nation's air traffic controllers supported their union's strike and ignored President Reagan's demand that they go back to work.

(A) that they go back to work

(B) that these people go back to work

(C) for them to go back to work

(D) that they would go back to work

(E) they should go back to work

106. One of the informants eventually professed ignorant of the crime, having fear that his testimony would lead to reprisals against him by his former confederates.

(A) ignorant of the crime, having

(B) ignorantly to the crime, with

(C) ignorance of the crime, since

(D) ignorance of the crime, for

(E) to have ignorance of the crime, since

107. Not scored.

108. Although it persists as a kind of rampant, uncontrollably spreading plague in the popular imagination, which infects all who come near victims of it, in fact leprosy is usually transmitted only through close, prolonged contact and is thus not highly contagious at all.

(A) as a kind of rampant, uncontrollably spreading plague in the popular imagination, which infects

(B) in the popular imagination as a kind of rampant plague, spreading uncontrollably and infecting

(C) in the popular imagination like a kind of rampant plague that uncontrollably spreads and infecting

(D) like a kind of rampant plague to the popular imagination, uncontrollably spreading and infecting to

(E) to the popular imagination as a kind of plague does, which spreads uncontrollably and infects

109. Prosecutors use a reliable forensic method, graphology, in forgery cases, which may also be use by employers to uncover clues to prospective employees' characters.

(A) Prosecutors use a reliable forensic method, graphology, in forgery cases, which may also be use by

(B) Prosecutors in forgery cases that have used graphology as a reliable forensic method and may also be used by

(C) Graphology, a reliable forensic method used by prosecutors in forgery cases, may also be used by

(D) As a reliable forensic method, prosecutors use graphology in forgery cases, which may also be used by

(E) Prosecutors which use graphology in forgery cases, a reliably forensic method may also be used by

110. Until recently, parents whose teen-aged child had signed a purchase contract without their written agreement were not liable for the child's debt.

(A) without their written agreement were not

(B) that they do not agree in writing have not been

(C) and they had not agreed in writing had not been

(D) without them agreeing in writing had not been

(E) without their written agreement are not

SENTENCE CORRECTION EXERCISE 6

Directions : In each of the following sentence, some part of the sentence or the entire sentence is underlined. Beneath each sentence you will find five ways of phrasing the underlined part. The first of these repeats the original; the other four are different. If you think the original is better than any of the alternatives, choose answer A; otherwise choose one of the others. Select the best version and blacken the corresponding space on your answer sheet.

This is a test of correctness and effectiveness of expression . In choosing answers, follow the requirements of standard written English; that is, pay attention to grammar, choice of words, and sentence construction. Choose the answer that expresses most effectively what is presented in the original sentence; this answer should be clear and exact, without awkwardness, ambiguity, or redundancy.

111. In 1980, for the first time, the number of foreigners touring the United States were in excess of the number of Americans going abroad.

(A) were in excess of the number of Americans

(B) had an excess over the Americans who were

(C) exceeded the Americans who were

(D) numbered more than the Americans

(E) exceeded the number of Americans

112. Severe and increasing numerous critics are pointing to deficiencies in the British legal system, deficiencies that seem to deny a proper defense to many clients who are charged with crimes.

(A) Severe and increasing numerous critics are pointing to deficiencies in the British legal system, deficiencies that seem

(B) Severe and increasing numerous critics point to deficiencies in the British legal system, deficiencies seeming

(C) Severe and increasingly numerous critics are pointing to deficiencies in the British legal system that seem

(D) Severely and increasingly numerous critics point to deficiencies in the British legal system seeming

(E) Severely and increasingly numerous critics are pointing to deficiencies in the British legal system that seem

113. Without hearing a word of what is being said or shouted, an experienced trader on the floor of the stock exchange can listen to the hum of voices around them and tell what is happening.

(A) Without hearing a word of what is being said or shouted, an experienced trader

(B) Without hearing a word of what is being said or shouted, experienced traders

(C) Even though the person has not heard a word of what is being said or shouted, an experienced trader

(D) Even when the person has not heard a word that is being said or shouted, experienced traders

(E) In spite of not hearing a word of what is being said or shouted, an experienced trader

114. Degler does more than merely summarizing existing research; he constructs a coherent picture of two centuries of studies dealing with the changing roles of women.

(A) Degler does more than merely summarizing

(B) Degler's study is more than a mere summerizing of

(C) Degler has done more than a mere summarizing of

(D) Degler's study has done more than summarize merely

(E) Degler does more than merely summarize

115. In the Soviet Union the attorney's role is often played by the judge, who not only reserves time to hear citizens' legal complaints and also prepares their cases should the claims be valid.

(A) and also prepares their cases should the claim be

(B) but also does the preparation of their cases if the claims should be

(C) and their cases are prepared if the claims are

(D) but also prepares their cases if the claims are

(E) and prepares their cases if the claims are

116. Based on pinto beans and corn tortillas, the Pima Indians have a diet that derives 70 percent of its protein from vegetable sources and only 30 percent from animal foods, the reverse of the typical North American diet.

(A) Pima Indians have a diet that derives

(B) Pima Indians in their diet derive

(C) diet of the Pima Indians derives

(D) diet of the Pima Indians have derived

(E) diet of the Pima Indians, deriving

117. Cooperative apartment houses have the peculiar distinction of being dwelling that must also operate as businesses.

(A) of being dwellings that must also operate as businesses

(B) of dwelling that must also operate like business

(C) that they are dwellings that must operate like business

(D) that, as dwellings, they must also operate like businesses

(E) to be a dwelling that must also operate as a business

118. People who inherit the sickle cell anemia gene from only one parent seem to be resistant to malaria, an evolutionary advantage that may explain why a genetic condition so debilitating to many individuals has survived in the human population.

(A) seem to be resistant to malaria,

(B) seemingly are resistant to malaria,

(C) seem to be resistant to malaria and have

(D) seemingly are resistant to malaria and to have

(E) are, it seems, resistant to malaria, and they have

119. During the Renaissance, scholars were uncertain as to the location of Troy, and by the eighteenth century many historians doubted that Troy had ever existed.

(A) doubted that Troy had ever existed

(B) doubt that Troy has ever existed

(C) were in doubt as to the existence of Troy

(D) were doubtful concerning Troy's existence

(E) had doubts about Troy's ever existing

120. As a result of the continuing decline in the birth rate, less people will enter the labor force in the 1980's than did in the 1960's and 1970's, a twenty-year period during which people born after the war swelled the ranks of workers.

(A) less people will enter the labor force in the 1980's than

(B) less people will be entering the labor force in the 1980's as

(C) fewer people will enter the labor force in the 1980's as

(D) fewer people will be entering the labor force in the 1980's as

(E) fewer people will enter the labor force in the 1980's than

121. The fastest of mammals, cheetah's bodies are geared to accelerate from one to forty miles per hour in less than two seconds and reach speeds of seventy miles per hour.

(A) The fastest of mammals, cheetah's bodies are geared to

(B) The fastest of mammals, the body of the cheetah is able

(C) Faster than other mammals, the body of the cheetah is geared to

(D) The fastest of mammals, the cheetah can

(E) The cheetah, the fastest of mammals, have bodies that can

122. No state law forbids an employer from rejecting a job applicant or to dismiss an employee based on the results of a lie detector test.

(A) an employer from rejecting a job applicant or to dismiss

(B) an employer to reject a job applicant or dismiss

(C) that employers reject a job applicant or dismiss

(D) the rejection by an employer of a job applicant or dismissal of

(E) rejection by employers of a job applicant or dismissal of

123. The attorney turned down the law firm's offer of a position because she suspected that it was meant merely to fill an affirmative action quota with no commitment to minority hiring and eventually promoting.

(A) quota with no commitment to minority hiring and eventually promoting

(B) quota, having no commitment to minority hiring and eventually promoting

(C) quota and did not reflect a commitment to minority hiring and eventual promotion

(D) quota, not reflecting a commitment to minority hiring and eventual promotion

(E) quota, not one that reflected that minority hiring and eventual promotion was a commitment

124. Most corporations pay at least twice as much to full-time employees, if the value of benefits, sick days, and paid vacation days are included in earnings, than to part-time employees, whose hourly wages are often higher than those of their full-time colleagues.

(A) are included in earnings, than

(B) are included in earnings, as

(C) is included in earnings, than they pay

(D) is included in earnings, as is paid

(E) is included in earnings, as they pay

125. The school board ruling mandating that physically handicapped students be placed in regular classroom settings whenever possible also assured all children who have a reading problem of special aid.

(A) be placed in regular classroom settings whenever possible also assured all children who have a reading problem

(B) should be placed in regular classroom settings whenever possible also assures all children that have a reading problem

(C) are placed in regular classroom settings whenever possible also assures those children who are having reading problems

(D) be placed in regular classroom settings whenever possible also assured children with reading problems

(E) should be placed in regular classroom settings whenever possible also has assured all those children with a reading problem

126. The brain is something of a stimulus-reduction system, a means to reduce, in order to comprehend, the nearly infinite amount of stimuli that reach the senses at any given moment.

(A) a means to reduce, in order to comprehend, the nearly infinite amount

(B) a means to reduce, in order to comprehend, the nearly infinite number

(C) the means of reducing for comprehending the nearly infinite number

(D) the means that reduces, in order to comprehend, the nearly infinite amount

(E) the means for reducing in order to comprehend the nearly infinite amount

127. Unlike the Shiltes, who constitute the other major branch of Islam, the Sunnites do not await the Mahdi as a messenger from God, nor do they endow him with divine qualities or immunity from failure in judgment.

(A) nor do they endow him

(B) but they do not endow him

(C) neither do they endow him

(D) and they neither endow him

(E) while endowing him neither

128. Coronary angiography, a sophisticated method for diagnosing coronary disease involving the introduction of a dye into the arteries of the heart, is now administered selectively, because it uses x-rays to observe cardiac function.

(A) for diagnosing coronary disease involving the introduction of a dye into the arteries of the heart, is now administered selectively, because it uses

(B) for diagnosing coronary disease involving the introduction of a dye into the arteries of the heart, is now administered selectively, because of using

(C) for diagnosing coronary disease, involves the introduction of a dye into the arteries of the heart and is now administered selectively because it uses

(D) to diagnose coronary disease that involves the introduction of a dye into the arteries of the heart, is now administered selectively, because it uses

(E) to diagnose coronary disease involving the introduction of a dye into the arteries of the heart, which is now administered selectively, uses

129. Where once the union had acquiesced to the prejudices of its English-speaking members by supporting the imposition of an alien tax on immigrant workers, after 1897 the United Mine Workers made a determined effort to enlist Italians and slaves in its ranks.

(A) Where once the union had acquiesced to the prejudices of its English-speaking members by supporting

(B) Where once the union acquiesced to its English-speaking members' prejudice for the support of

(C) While once the union had acquiesced to the prejudices of its English-speaking members in support of

(D) While once the union acquiesced to its English speaking members' prejudice in supporting

(E) While once the union had acquiesced to the prejudices of its English-speaking members in its supporting of

130. Following the nutrition board's advice on salt consumption would mean a virtual end of the use of salt in cooking, an avoidance of obviously salty foods, and reducing the reliance on processed foods that contain significant amounts of often hidden sodium.

(A) reducing the reliance on processed foods that contain significant amounts of often hidden sodium

(B) reducing the reliance on processed foods containing often hidden but significant amounts of sodium

(C) a reduction of the reliance on processed foods, containing as they do often hidden sodium in significant amounts

(D) a reduced reliance on the significant amounts of hidden sodium often contained in processed foods

(E) a reduced reliance on processed foods that contain significant but often hidden amounts of sodium

131. It may be another fifteen years before spacecraft from Earth again venture to Mars, a planet now known to be cold, dry, and probably lifeless.

(A) again venture to Mars, a planet now known to be

(B) venture to Mars again, a planet now known for being

(C) will venture to Mars again, a planet now known as being

(D) venture again to Mars, a planet that is known now to be

(E) will again venture to Mars, a planet known now as being

132. In the last ten years, the dropout rate among Black high school students fell substantially over the past decade, while the number of Blacks who attend college is more than twice what it was.

(A) fell substantially over the past decade, while the number of Blacks who attend college is more than twice what it was

(B) fell substantially, while the the number of Blacks attending college is more than double what it was at that time

(C) has fallen substantially, while the number of Blacks attending college has more than doubled

(D) has fallen substantially over the past decade, while the number of Blacks attending college is more than twice what it was at that time

(E) has fallen substantially over the past decade, while the number of Blacks who are attending college are more than double what they were

133. Pensions are now viewed as a deferred payment of salary, money a worker is compelled to put away to take care of one's later years.

(A) a worker is compelled to put away to take care of one's

(B) that a worker is compelled to put away to take care of oneself in

(C) a worker is compelled to put away to take care of oneself in

(D) workers are compelled to put away to take care of them in

(E) workers are compelled to put away to take care of themselves in

134. The reports from the Department of Commerce indicated that the economy grew at an annual rate much higher than most economists had predicted may occur.

(A) had predicted may occur

(B) had predicted

(C) predicted the occurance of

(D) predicted may occur

(E) predicted

135. On stage, the force of Garrick's personality and the vividness of his acting disguised the fact he was, which his surviving velvet suit shows, a short man.

(A) he was, which his surviving velvet suit shows,

(B) he was, and it is his surviving velvet suit that shows it,

(C) of him being, as his surviving velvet suit shows,

(D) that Garrick was, as his surviving velvet suit shows,

(E) shown in his surviving velvet suit, that he was

GMAT READING COMPREHENSION VOCABULARY

Advocate / Endorse / Bolster / Make a case for	Support, Encourage
Ambiguous / Ambivalent / Equivocal	Unsure, In two minds
Amplify	Elaborate upon
Approbation	Approval
Arbitrary	Random
Articulate	Express clearly
Assertion / Contention	Declaration
Challenge / Question / Skeptical / Call into question	Doubt
Chronology	Time-wise order
Cite	Quote, Give an example
Clarify	To make clear
Counter	Oppose
Critique	Analyze (not criticize)
Dilemma	A difficult situation
Disparage	Find fault with
Empirical	Statistical
Enumerate	To list
Evaluate	Judge
Exemplify / Illustrate	Give examples
Hypothesis	Theory that is unproved
Juxtaposition	Place side by side to contrast
Laudable	Praiseworthy
Paradox / Irony	Self Contradictory
Plausible	Believable
Pragmatic	Practical
Presupposition	Assumption
Qualify	Not 100%, Conditional
Reconcile	Balance two conflicting view points
Refute / Discredit	Prove wrong or false
Rescind / Annul	Cancel
Rhetoric	Effective and persuasive speech
Simulate	Imitate
Speculate	Guess
Stipulate	Specify a condition
Substantiate	Prove
Tentative	Provisional
Underlying	Basis of something
Undermine	Weaken

READING COMPREHENSION EXERCISES

READING COMPREHENSION EXERCISES

PASSAGE 1

Kazuko Nakane's history of the early Japanese immigrants to central California's Pajaro Valley focuses on the development of farming communities there from 1890 to 1940. The Issei (first generation immigrants) were brought into the Pajaro Valley to raise sugar beets. Like Issei Laborers in American cities, Japanese men in rural areas sought employment via the "boss" system. The system comprised three elements: immigrant wage laborers; Issei boarding houses where laborers stayed; and labor contractors, who gathered workers for a particular job and then negotiated a contract between workers and employer. This same system was originally utilized by the Chinese laborers who had preceded the Japanese. A related institution was the "labor club", which provided job information and negotiated employment contracts and other legal matters, such as the rental or land, for Issei who chose to belong and paid an annual fee to the cooperative for membership.

When the local sugar beet industry collapsed in 1902, the Issei began to lease land from the Valley's strawberry farmers. The Japanese provided the Labor and the crop was divided between laborers and landowners. The Issei thus moved quickly from wage labor employment to sharecropping agreements. A limited amount of economic progress was made as some Issei were able to rent or buy farmland directly, while others joined together to form farming corporations. As the Issei began to operate farms, they began to marry and start families, forming an established Japanese American community. Unfortunately, the Issei's efforts to attain agricultural independence were hampered by government restrictions, such as the Alien Land Law of 1913. But immigrants could circumvent such exclusionary laws by leasing or purchasing land in their American-born children's names.

Nakane's case study of one rural Japanese American community provides valuable information about the lives and experiences of the Issei. It is, however, too particularistic. This limitation derives from Nakane's methodology— that of oral history- which cannot substitute for a broader theoretical or comparative perspective. Future research might well consider two issues raised by her study: were the Issei of the Pajaro Valley similar to or different from Issei in urban settings, and what variations existed between rural Japanese American communities?

1. The primary purpose of the passage is to

   (A) defend a controversial hypothesis presented in a history of early Japanese immigrants to California

   (B) dismiss a history of an early Japanese settlement in California as narrow and ill constructed

   (C) summarize and critique a history of an early Japanese settlement in California

   (D) compare a history of one Japanese American community with studies of Japanese settlements throughout California

   (E) examine the differences between Japanese and Chinese immigrants to central California in the 1890's

2. Which of the following best describes a "labor club," as defined in the passage?

   (A) An organization to which Issei were compelled to belong if they sought employment in the Pajaro Valley

   (B) An association whose members included labor contractors and landowning "bosses"

   (C) A type of farming corporation set up by Issei who had resided in the Pajaro Valley for some time

   (D) A cooperative association whose members were dues-paying Japanese laborers

   (E) A social organization to which Japanese laborers and their families belonged

3. Based on information in the passage, which of the following statements concerning the Alien Land Law of 1913 is most accurate?

   (A) lt excluded American-born citizens of Japanese ancestry from landownership.

   (B) lt sought to restrict the number of foreign immigrants to California.

   (C) It successfully prevented Issei from ever purchasing farmland.

   (D) lt was applicable to first-generation immigrants but not to their American-born children.

   (E) lt was passed under pressure from the Pajaro Valley's strawberry farmers.

4. Several Issei families join together to purchase strawberry field and the necessary farming equipment. Such a situation best exemplifies which of the following, as it is described in the passage?

(A) A typical sharecropping agreement

(B) A farming corporation

(C) A "labor club"

(D) The "boss" system

(E) Circumvention of the Alien Land Law

5. The passage suggests that which of the following was an indirect consequence of the collapse of the sugar beet industry in the Pajaro Valley?

(A) The Issei formed a permanent, family-based community.

(B) Boarding houses were built to accommodate the Issei.

(C) The Issei began to lease land in their children's names.

(D) The Issei adopted a labor contract system similar to that used by Chinese immigrants .

(E) The Issei suffered a massive dislocation caused by unemployment.

6. The author of the passage would most likely agree that which of the following, if it had been included in Nakane's study, would best remedy the particularistic nature of that study?

(A) A statistical table showing per capita income of Issei wage laborers and sharecroppers in the Pajaro Valley.

(B) A statistical table showing per capita income of Issei in the Pajaro Valley from 1890 to 1940.

(C) A statistical table showing rates of farm ownership by Japanese Americans in four central California counties from 1890 to 1940.

(D) A discussion of original company documents dealing with the Pajaro Valley sugar beet industry at the turn of the century.

(E) Transcripts of interviews conducted with members of the Pajaro Valley Japanese American community who were born in the 1920 and 1930's.

7. It can be inferred from the passage that, when the Issei began to lease land from the Valley's strawberry farmers, the Issei most probably did which of the following?

(A) They used profits made from selling the strawberry crop to hire other Issei.

(B) They negotiated such agricultural contracts using the "boss" system.

(C) They paid for the use of the land with a share of the strawberry crop.

(D) They earned higher wages than when they raised sugar beets.

(E) They violated the Alien Land Law.

READING COMPREHENSION EXERCISES

PASSAGE 2

Protein synthesis begins when the gene encoding a protein is activated. The gene's sequence of nucleotides is transcribed into a molecule of messenger RNA(mRNA), which reproduces the information contained in that sequence. Transported outside the nucleus to the cytoplasm the mRNA is translated into the protein it encodes by an organelle known as a ribosome, which strings together amino acids in the order specified by the sequence of elements in the mRNA molecule. Since the amount of mRNA in a cell determines the amount of the corresponding protein, factors affecting the abundance of mRNAs play a major part in the normal functioning of a cell by appropriately regulating protein synthesis. For example, an excess of certain proteins can cause cells to proliferate abnormally and become cancerous, a lack of the protein insulin results in diabetes.

Biologists once assumed that the variable rates at which cells synthesize different mRNA's determine the quantities of mRNA's and their corresponding proteins in a cell. However, recent investigations have shown that the concentrations of most mRNA's correlate best, not with their synthesis rate, but rather with the equally variable rates at which cells degrade the different mRNA's in their cytoplasm. If a cell degrades both a rapidly and a slowly synthesized mRNA slowly, both mRNA's will accumulate to high levels.

An important example of this phenomenon is the development of red blood cells from their unspecialized parent percent cells in bone marrow. For red blood cells to accumulate sufficient concentrations of hemoglobin (which transports oxygen) to carry out their main function, the cells' parent cells must simultaneously produces more of the constituent proteins of hemoglobin and less of most other proteins. To do this, the parent cells halt synthesis of nonhemoglobin mRNAs in the nucleus and rapidly degrade copies of the nonhemoglobin mRNA's remaining in the cytoplasm. Halting synthesis of mRNA alone would not affect the quantities of proteins synthesized by the mRNAs still existing in the cytoplasm. Biologists now believe that most cells can regulate protein production most efficiently by varying both mRNA synthesis and degradation, as developing red cells do, rather than by just varying one or the other.

8. The passage is primarily concerned with discussing the

(A) influence of mRNA concentrations on the development of red blood cells

(B) role of the synthesis and degradation of mRNA in cell functioning

(C) mechanism by which genes are transcribed into mRNA

(D) differences in mRNA concentrations in cell nuclei and in the cytoplasm

(E) way in which mRNA synthesis contributes to the onset of diabetes

9. The passage suggests that a biologist who held the view described in the first sentence of the second paragraph would most probably also have believed which of the following?

(A) The rate of degradation of specific mRNA's has little effect on protein concentrations.

(B) The rate of degradation of specific mRNA's should be studied intensively.

(C) The rates of synthesis and degradation for any given mRNA are normally equal.

(D) Different mRNA's undergo degradation at widely varying rates.

(E) Most mRNA's degrade very rapidly.

10. Which of the following best describes the relationship between the second and third paragraphs of the passage?

(A) The second paragraph presents arguments in support of a new theory and the third paragraph presents arguments against that same theory.

(B) The second paragraph describes a traditional view and the third paragraph describes the view that has replaced it on the basis of recent investigations.

(C) The third paragraph describes a specific case of a phenomenon that is described generally in the second paragraph.

(D) The third paragraph inscribes an investigation that was undertaken to resolve problems raised by phenomena described in the second paragraph

(E) Both paragraphs describe in detail specific examples of the phenomenon that is introduced in the first paragraph.

11. The accumulation of concentrations of hemoglobin in red blood cells is mentioned in the passage as an example of which of the following?

(A) The effectiveness of simultaneous variation of the rates of synthesis and degradation of mRNA

(B) The role of the ribosome in enabling a parent cell to develop property into a more specialized form

(C) The importance of activating the genes for particular proteins at the correct moment

(D) The abnormal proliferation of a protein that threatens to make the cell cancerous

(E) The kind of evidence that biologists relied on for support of a view of mRNA synthesis that is now considered obsolete

12. To begin to control a disease caused by a protein deficiency, the passage suggests that a promising experimental treatment would be to administer a drug that would reduce

(A) only the degradation rate for the mRNA of the protein involved

(B) only the synthesis rate for the mRNA of the protein involved

(C) both the synthesis and degradation rates for the mRNA of the protein involved

(D) the incidence of errors in the transcription of mRNA's from genetic nucleotide sequences

(E) the rate of activity of ribosome in the cytoplasm of most cells

13. According to the passage, which of the following best describes the current view on the relationship between the synthesis and the degradation of mRNA in regulating protein synthesis?

(A) Biologists have recently become convinced that the ribosome controls the rates of synthesis and degradation of mRNA

(B) There is no consensus among biologist as to the significance of mRNA degradation in regulating protein synthesis.

(C) The concept of mRNA degradation is so new that most biologists still believe that the vital role in protein regulation belongs to mRNA synthesis.

(D) Degradation of mRNA is now considered to be the key process and mRNA synthesis is no longer believed to play a significant role.

(E) Degradation of mRNA is now considered to be as important as mRNA synthesis has been, and still is, believed to be.

14. According to the passage, which of the following can happen when protein synthesis is not appropriately regulated?

(A) Diabetes can result from errors that occur when the ribosomes translate mRNA into protein

(B) Cancer can result from an excess of certain proteins and diabetes can result from an insulin deficiency.

(C) A deficiency of red blood cells can occur if bone marrow cells produce too much hemoglobin.

(D) Cancer can be caused by excessively rapid degradation of certain amino acids in the cytoplasm of cells.

(E) Excessive synthesis of one protein can trigger increased degradation of mRNA's for other proteins and create severe protein imbalances.

15. The passage suggests that a biologist who detected high levels of two proteins in a certain type of cell would be likely to consider which of the following as a possible explanation?

(A) The rate of mRNA degradation for one of the proteins increases as this type of cell develops a more specialized function.

(B) The two proteins are most likely constituents of a complex substance supporting the cells specialized function.

(C) The cells are likely to procreate abnormally and possibly become cancerous due to the levels of these proteins

(D) The mRNA's for both proteins are being degraded at a low rate in that type of cell.

(E) The mRNA's for the two proteins are being synthesized at identical rates in that type of cell.

READING COMPREHENSION EXERCISES

PASSAGE 3

It can be argued that much consumer dissatisfaction with marketing strategies arises from an inability to aim advertising at only the likely buyers of a given product.

There are three groups of consumers who are affected by the marketing process. First, there is the market segment—people who need the commodity in question. Second, there is the program target—people in the market segment with "the best fit", characteristics for a specific product. Lots of people may need trousers, but only a few qualify as likely buyers of very expensive designer trousers. Finally, there is the program audience—all people who are actually exposed to the marketing program without regard to whether they need or want the product.

These three groups are rarely identical. An exception occurs occasionally in cases where customers for a particular industrial product may be few and easily identifiable. Such customers, all sharing a particular need, are likely to form a meaningful target, for example, all companies with a particular application of the product in question, such as high speed fillers of bottles at breweries. In such circumstances, direct selling (marketing that reaches only the program target) is likely to be economically justified, and highly specialized trade media exist to expose members of the program target and only members of the program target—to the marketing program.

Most consumer-goods markets are significantly different. Typically there are many rather than few potential customers. Each represents a relatively small percentage of potential sales. Rarely do members of a particular market segment group put themselves neatly into a meaningful program target. There are substantial differences among consumers with similar demographic characteristics. Even with all the past decade's advances in information technology, direct selling of consumer goods is rare, and mass marketing— a marketing approach that aims at a wide audience— remains the only economically feasible mode. Unfortunately, there are few media that allow the marketer to direct a marketing program exclusively to the program target. Inevitably, people get exposed to a great deal of marketing for products in which they have no interest and so they become annoyed.

16. The passage suggests which of the following about highly specialized trade media?

(A) They should be used only when direct selling is not economically feasible.

(B) They can be used to exclude from the program audience people who are not part of the program target.

(C) They are used only for very expensive products.

(D) They are rarely used in the implementation of marketing programs for industrial products.

(E) They are used only when direct selling has not reached the appropriate market segment.

17. According to the passage, most consumer-goods markets share which of the following characteristics?

I. Customers who differ significantly from each other

II. Large numbers of potential customers

III. Customers who each represent a small percentage of potential sales

(A) I only

(B) II only

(C) I and II only

(D) II and III only

(E) I ,II, and III

18. The passage suggests which of the following about direct selling ?

(A) It is used in the marketing of most industrial products.

(B) It is often used in cases where there is a large program target.

(C) lt is not economically feasible for most marketing program.

(D) lt is used only for products for which there are many potential customers.

(E) lt is less successful at directing a marketing program to the target audience than are other marketing approaches.

19. The author mentions "trousers" most likely in order to

(A) make a comparison between the program target and the program audience

(B) emphasize the similarities between the market segment and the program target

(C) provide an example of the way three groups of consumers are affected by a marketing program

(D) clarify the distinction between the market segment and the program target

(E) introduce the concept of the program audience

20. Which of the following best exemplifies the situation described in the last two sentences of the passage ?

(A) A product suitable for women age 21-30 is marketed at meetings attended only by potential customers.

(B) A company develops a new product and must develop an advertising campaign to create a market for it.

(C) An idea for a specialized product remains unexplored because media exposure of the product to its few potential customers would be too expensive.

(D) A new product is developed and marketers collect demographic data on potential consumers before developing a specific advertising campaign.

(E) A product suitable for men age 60 and over is advertised in a magazine read by adults of all ages.

21. The passage suggests that which of the following is true about the marketing of industrial products like those discussed in the third paragraph?

(A) The market segment and program target are identical.

(B) Mass marketing is the only feasible way of advertising such products.

(C) The marketing program cannot be directed specifically to the program target.

(D) More customers would be needed to justify the expense of direct selling.

(E) The program audience would necessarily be made up of potential customers, regardless of the marketing approach that was used.

22. The passage supports which of the following statements about demographic characteristics and marketing?

(A) Demographic research is of no use in determining how successful a product will be with a particular group of consumers.

(B) A program audience is usually composed of people with similar demographic characteristics.

(C) Psychological factors are more important than demographic factors in defining a market segment.

(D) Consumers with similar demographic characteristics do not necessarily form a meaningful program target.

(E) Collecting demographic data is the first step that marketers take in designing a marketing program.

23. It can be inferred from the passage that which of the following is true for the most consumer-goods markets?

(A) The program audience is smaller than the market segment.

(B) The program audience and the segment are usually identical.

(C) The market segment and the program target are usually identical.

(D) The program target is larger than the market segment.

(E) The program target and the program audience are not usually identical.

READING COMPREHENSION EXERCISES

PASSAGE 4

During the past fifteen years, historians of Mexico American, or Chicano, experience have contributed significantly to understanding the early twentieth century history of the second largest ethnic minority group in the United States. Influenced greatly by trends in the nation's historiography—particularly "new" social, labor, and urban histories—historians focusing on the Mexican-American experience have begun to uncover a past long ignored by academic's recent books. Ricardo Romo's *East Los Angeles* and Mario Garcia's *Desert Immigrants,* make important contributions to Mexican-American history.

Romo's study documents the impact of urbanization from 1900 to 1930 on the Mexican-American poet society that had existed in the historical downtown area of Los Angeles, California, since the mid-nineteenth century, and on the development, after 1900, of new immigrant barrios(neighborhoods)in the east of the Los Angeles River. He shows convincingly how Mexicans were excluded from the jobs that would have provided them some avenue for upward occupational mobility after the First World War. Romo also effectively analyzes the process of migration, resettlement, and adjustment of Los Angeles' Mexican immigrants, who left Mexico after 1910 because of the Mexico Revolution. During this period a record number of Mexican-American immigrants came to the united States, particularly to Los Angeles, which had the highest Mexican-American population in the United States as early as 1930.

Overall, *East Los Angeles* bridges a critical gap in early twentieth- century Mexican-American urban history. Garcia's *Desert Immigrants* focuses primarily on the years 1900 to 1920 in El Paso, Texas and also in the formation of a Mexican-American urban community. Well researched and engaging, Garcia's study demonstrates that Mexican immigrants played an essential role in the dramatic expansion of the bad economy by becoming the back bone of the labor market. Garcia skillfully portrays the ethnic and class factors in El Paso society that created significant problems for early Mexican immigrants and that were over come only as the Mexican-American community in El Paso became more firmly established after 1920. *Desert Immigrants* also examines the special role that El Paso as a border city, played in the politics and culture of local Mexicans.

While advancing our understanding of Mexican-American urban history, the books do not raise the question of whether the history of these two urban communities provides a general understanding of Chicano life in American cities. Neither study offers useful comparisons to other southwestern communities, nor does either adequately compare the urban expenses of Mexican and other immigrant groups. Did El Paso's proximity to the border and its function as a labor depot for Mexican workers in the United States make its historical trajectory significantly different from that of other Mexican-American urban centers? Is East Los Angeles' meteoric rise as a Mecca for Mexican immigration comparable to developments in San Antonio, Texas— the second largest urban community of Mexicans—during the first decades of the twentieth century?

24. In the passage. the author is primarily interested in

(A) criticizing academic historiography

(B) evaluating recent studies of urban history

(C) comparing different historical methodologies

(D) describing the development of Chicano history

(E) explaining the historical importance of south-western cities

25. According to the passage, which of the following is true of Mexican-American communities in Los Angeles?

(A) The earliest settlement was in the area east of the Los Angeles River

(B) The oldest Mexican-American community in the United States was in Los Angeles

(C) There was a Mexican-American community in Los Angeles well before the Mexican Revolution of 1910

(D) The largest Mexican- American community in the United States in 1900 was in Los Angeles

(E) Los Angeles' Mexican-American communities had a significant impact on Mexican culture early in the twentieth century.

26. It can be inferred from the last paragraph of the passage that the author would regard which of the following studies as a valuable addition to Romo's and Garcia's work?

(A) A study of changes in the family structure of non-English speaking immigrant families as the children become bilingual

(B) A study of the growth of the political influence of the East Los Angeles barrio

(C) A study examining the impact of current immigration laws on Mexican-American communities in the Southwest

(D) A study of Mexican-American immigrants' experiences from 1900 to 1930 in all major southwestern cities

(E) A study of the role of Mexican and Mexican-American workers in the economic development of El Paso

27. The author of the passage would be most likely to agree with which of the following statements about recent historians accounts of Mexican-American urban history?

(A) They have shown that Mexican-American immigrants experienced most of the same problems that other groups of immigrants to the United States did.

(B) They have documented the similarities among southwestern cities with established Mexican-American communities.

(C) They have concentrated primarily on labor histories of Mexican-American urban communities.

(D) They have followed recent historiographical trends and ventured into areas unexplored by traditional academic historians.

(E) They have provided a thorough analysis of the ways in which Mexican-American urban immigrants' life experiences are representative of all Mexican-American immigrants experiences.

28. The passage provides support for which of the following statements?

(A) Romo's and Garcia's books were the first accounts of the history of urban Mexican-American communities.

(B) Texas and California are currently the states with the two largest urban Mexican-American communities.

(C) Social and labor histories were not written until about fifteen years ago.

(D) El Paso is the only southwestern border city that has had any influence on Mexican culture.

(E) The only numerically significant Mexican immigration after 1910 occurred in Texas and California

29. All of the following are mentioned in the passage as topics treated in Romo's book EXCEPT

(A) discrimination in the labor market

(B) adjustment of newly arrived immigrants to a foreign culture

(C) the effects of the Mexican Revolution on Los Angeles

(D) the formation of the pueblo society of downtown Los Angeles

(E) the establishment of immigrant neighborhoods in Los Angeles

30. The attitude of the author of the passage toward Romo's and Garcia's books can be best described as

(A) reluctant acceptance

(B) qualified enthusiasm

(C) unrestrained admiration

(D) perplexity

(E) impatience

31. According to the passage, *East* Los *Angeles* and *Desert Immigrants* have which of the following in Common ?

I. They are urban histories

II. They provide a general understanding of Mexican-American history in southwestern communities

III. They place Mexican-American immigrants experiences in the larger context of other American immigrants' experiences

(A) I only

(B) II only

(C) I and III only

(D) II and III only

(E) I,II and III

32. It can be inferred from the passage that the publication of East Los Angeles made which of the following available for the first time?

(A) An account of the geographical origins of the immigrants who fled from the Mexican Revolution of 1910

(B) The history of the downtown plaza area of Los Angeles from its beginnings.

(C) An analysis of the similarities between the Mexican-American communities in Los Angeles and San Antonio.

(D) An effective analysis of Mexican-American immigrant experiences in early-twentieth century Los Angeles

(E) A comparison of the experiences of the Mexican-Americans in California with those of Asian Americans

ANSWERS KEYS

SENTENCE CORRECTION EXERCISES 1-6

EXERCISE 1	EXERCISE 2	EXERCISE 3	EXERCISE 4	EXERCISE 5	EXERCISE 6
1 A	23 B	45 D	67 D	89 E	111 E
2 B	24 A	46 C	68 E	90 A	112 C
3 D	25 C	47 D	69 B	91 D	113 B
4 E	26 E	48 B	70 A	92 C	114 E
5 C	27 B	49 D	71 E	93 E	115 D
6 D	28 C	50 A	72 NS	94 E	116 C
7 NS	29 A	51 C	73 C	95 B	117 A
8 A	30 E	52 E	74 A	96 B	118 A
9 C	31 A	53 A	75 C	97 C	119 A
10 E	32 B	54 C	76 D	98 B	120 E
11 B	33 D	55 B	77 C	99 C	121 D
12 D	34 E	56 D	78 A	100 E	122 B
13 E	35 C	57 A	79 D	101 A	123 C
14 A	36 C	58 D	80 B	102 B	124 E
15 D	37 D	59 B	81 B	103 E	125 D
16 E	38 NS	60 B	82 E	104 C	126 B
17 C	39 A	61 D	83 C	105 A	127 A
18 C	40 E	62 A	84 D	106 D	128 C
19 E	41 B	63 D	85 B	107 NS	129 A
20 A	42 C	64 A	86 D	108 B	130 E
21 B	43 D	65 E	87 B	109 C	131 A
22 A	44 D	66 C	88 B	110 A	132 C
					133 E
					134 B
					135 D

READING COMPREHENSION EXERCISES

Passage 1	Passage 2	Passage 3	Passage 4
1 C	8 B	16 B	24 B
2 D	9 A	17 E	25 C
3 D	10 C	18 C	26 D
4 B	11 A	19 D	27 D
5 A	12 A	20 E	28 B
6 C	13 E	21 A	29 D
7 C	14 B	22 D	30 B
	15 D	23 E	31 A
			32 D

SENTENCE CORRECTION TIPS

1) **Eliminate wrong answers:** For an answer choice to be correct, all the words of the underlined portion need to be correct. But for it to be wrong, only one wrong word is enough.
2) Use vertical or horizontal scanning to look for differences in the answer choices.
3) Use a tick-cross system with a pencil rather than keeping it in your memory.
4) Remember 'A' choice is the same as the original underlined portion.
5) Errors commonly occur in 4 places -
   a) The first few words of the underlined portion
   b) The last few words of the underlined portion
   c) One word after the underlined portion
   d) One word before the underlined portion

Grammar Rules

Common Errors

1) Verb- Subject mismatch - Singular-Plural matching.

a) Words such as 'each', 'every', 'any' are singular.

b) Either/or, Neither/nor- the verb takes the form of the closest noun, i.e. whatever comes after Or /Nor.

c) When a sentence has a phrase between two commas, look at the part before the first comma and match it with the part after the second comma. If there are multiple commas, remove the part in between the 2 commas and then read. The sentence should still make sense. There is usually a singular-plural mismatch error.

Trap- On the GMAT, the subject and the verb are placed as far apart as possible.

d) Collective nouns without an 's' are singular. Example : a group of girls

2) Comma Subject rule: The subject should either be at the beginning of the sentence or immediately after the comma. When the sentence does not start with the subject, then immediately after the comma insert the subject of the action done before the comma.

Example: *Incorrect* - Coming out of the store, John's wallet fell.

Correct - Coming out of the store, John dropped his wallet.

Remember - A good way to spot this error - Whenever there is a long sentence fully underlined or when the underlined portion starts after the comma.

3) Tenses:

a) Present tense:

- It is used for actions that take place in the present.

  Example: Mary is in the market now.

- It is used for general truths.

  Example: The earth is round.

b) Past tense:

- It is used to denote an action that was completed in the past.

Example: Mary went to the market yesterday.

c) Present Perfect Tense : Past coming into present:

- It denotes an action that starts in the past and continues in the present.

Example: Mary has gone to the market.

Remember- This tense is always denoted by has/ have.

Some key words for present perfect: since, ever, never, for years, in the last few centuries…

d) Double Past:

- When two actions took place in the past, the action that took place earlier in the past is denoted by a 'had'.

Example: When her aunt had come, Mary went to the market. (The aunt came before Mary left. Hence 'had' for aunt.)

Example: Mary had gone to the market when her aunt came. (Mary left before the aunt came. Hence 'had' for Mary)

Remember- Use 'had' only if both actions are in the past.

e) Future tense: The word 'Will' is used when the action is definite.

Example: Mary will go to the market tomorrow.

f) 'Would' is used when the action is conditional or unsure. It is used in both Future and Past tenses. A common syntax is – If *x* happened, then *y* would happen.

Example: Mary would go the market only if the bus comes.

Remember – If we talk across multiple tenses, use present tense

4) Pronouns

a)

Who / Whom	=	used for people (Who is used for subject; Whom is used for object)
Which	=	animals/ things
In which	=	places/ phenomenon/ situations / time period
Where	=	places
When	=	time
That	=	Which

b) That/ which/ it / they/ who/ whose: These pronouns refer to the subject coming immediately before them. Substitute the pronoun for the actual word and see if it fits.

Example: *Incorrect* - The house overlooked the lake, which was painted pink in color.

Correct - The house, which was painted pink in color, overlooked the lake.

Remember – If **and/ but/ although** are used in a sentence, then the pronouns refer to the first noun or the main subject.

Example: Although Mary is younger than Susan, she is more mature. (Here 'she' refers to Mary)

Example: The dog tried to hide under the table, but it was found. (Here it refers to the dog).

5) Parallelism- Type I - pairs

between – and	both - and	from - to
either - or	neither - nor	just as - so
not only- but also	not - but (rather)	not so much - as
as - as	same - as	more/greater/fewer/less… - than

Remember-

a) These words always come in pairs.

b) These words always follow parallelism. The word immediately after the first part of the pair will be the same as the word immediately after the second part of the pair.

Example - Between the dog and the cat.

Not only in ... but also in.

Not only is it hot ... but it is also humid.

Parallelism- Type-II - Conjunctions

and	as well as	but
yet	although	or

Remember- Whenever any of these words are present in a sentence, make sure to join similar things.

Example - John is intelligent and honest.

Example - Mary is tall but her sister is short.

Parallelism- Type-III

Example - <u>The longer</u> the hair, <u>the more</u> the effort required to maintain it.

Parallelism- Type-IV

Example - Some anthropologists believe <u>that</u> ..... <u>that</u> at some time .....

6) Cause and Effect- When first action leads to the second action, it is denoted by

Format - First action followed by resultant action in 'ing' form

Example: The volcano erupted, blotting out the sun.

7) Comparisons-

a) '**Like/ Unlike/ Whereas**' is used to compare similar things. The words after 'like/ unlike' must match the words after the comma.

Example: Like John, Marc has a black car.

Example: Unlike Mary, Susan is tall.

b) '**Like**' is used to compare nouns.

Example: Like John, Mary is tall.

c) '**As/ Just as**' is used to compare actions.

Example: John is as tall as Mary is.

Example: This room is treated as a garage.

d) '**Such as**' is used together when we are giving examples.

Example: I like citrus fruits such as oranges.

'**Such – as**' is split up when we are proving a point or showing a degree.

Example: Such people as lawyers

Example: *Incorrect* – People such as lawyers.

Correct - Such people as lawyers.

e) **Compare similar things**: When key comparison words are there – like, as compared to, other, that of, those of, more than, less than - compare similar things.

Example: *Incorrect* - The Delhi government contributes more to the national tax collection than any other government.

Correct - The Delhi government contributes more to the national tax collection than **does** any other government.

Example: *Incorrect* - The host paid more attention to his business clients than the others.

Correct - The host paid more attention to his business clients than **to** the others.

Example: *Incorrect* - The rules of Rugby are more liberal than Soccer.

Correct - The rules of Rugby are more liberal than **those of** Soccer.

Example: *Incorrect* - Mary is taller than **any** girl in the class.

Correct - Mary is taller than **any other** girl in the class.

8)

	Count	**Non - Count**
a)	Number	Amount
b)	Few/Fewer	Less/Little
c)	Many	Much

Remember-Things that can be counted or are plural, come in the Count category and those that are singular come in the Non Count category.

9) Difference between:

	2 things	**More than 2 things**		**2 things**	**More than 2 things**
a)	between	among	b)	each other	one another
c)	as well as/ and	and	d)	better	best
e)	more	most	f)	other	another

10) Redundancy- Whenever these pairs come together in a sentence, that answer choice is wrong.

since - from then on	whereby - under a provision	cause - attribute
result - consequence	try - attempt	decade - ten years
annual - each year	can - potential	likely - would occur
and - also	and - as well	and - too
rising - soaring	and - in addition	currently - now
although - yet	claimed - alleged	explain - because of
fall - down	previous - past	rise - higher
although - but	although - whereas	if - would

same - like	like - also	as - in the same way
raised - increased	increased - twice	rates - times
grow - up	decline - fall	at least or more
with - included	other one	another one
reason - because	reason - being	because - so
so - enough	substitute - in place of	damaged - impaired
enable - to be able	more - compared	less - compared
rivals - against	caused - result	whether - not
would - likely	regain - again	require - must
decline - down	expert - authority	but - only if

11) Words followed by 'that' (whether in past or present tense) :

agree	express	find	suggest
clear	urge	contend	fact
hypothesis	reason	reveal	predict
propose	demand	evidence	recommend
convince	hold	doubt	expect
reflect			

12) Words **followed by 'to be'/ 'to'/ 'that':**

seem	known	likely	unlikely
thought	appear	believe	qualify
project	equip	require	attribute
estimate	order		

13) Words that do not exist on the EXAM:

a) just like	b) such like	c) hopefully
d) owing to	e) seeming	f) lesser
g) not any	h) occurring (to be used only for natural calamity)	

14) Prefer	**Avoid**	**Prefer**	**Avoid**
so	enough	because	due to
although	but	result from	as a result of
whether	if	compared with	compared to
once	one time	twice/double	two times
quadruple	four times	economic	economical
likely	liable	it is hoped	hopefully
try to	try and	do so	do it
so that	so as to		

15) Prepositions:

consider – (no preposition)	discouraged – from	difficult – to
confusion – about	prevent – from	efforts – to
information – about	prohibit – from	encourage – to
worry – about	withhold – from	enough – to
modeled – after	aid – in	essential – to
act – as	domains – in	expected – to
conceive – as	increase – in	extent – to
defined – as	invest – in	failed – to
depicted – as	precision – in	forbid – to
elect – as	skilled – in	inferior – to
perceive – as	aid – in(doing)	in order – to
regard – as	perceive – in/as	known – to
saw/see – as	capable – of	means – to
think – as	danger – of	permit – to
think of – as	descendant – of	possible – to
view – as	evidence – of	prefer – to
adept – at	in danger – of	refers – to
aim – at	loss – of	related – to
dated – at	master – of	superior – to
estimate – at	native – of (people)	threat – to
target – at	promise – of (something)	train – to
connection – between	possibility – of/for	try – to
differentiate – between	conceive – of X as Y	use – to
discriminate – between	authority – on	native – to (animals/plants)
distinguish – between	expended – on	method – to (do something)
determined – by	have an impact – on	responsible – to (someone)
argue – for	debate – over	decide – to/upon
demand – for	dispute – over	fashionable – to be
endured – for	corridor – through	occur – when
mistook – for	able/ability – to	associate – with
need – for	allocated – to	correlates – with
rates – for	allow – to	credited – with
safeguards – for	attempt – to	merged – with
substitute – for	attribute – to	united – with
responsible – for (something)	claim – to	

16) Favored Rules:

i) Start with the word 'Because'

ii) Start with the word 'Although' / 'Though'

iii) Start with the 'Time period'

iv) Start with the 'Subject'

v) Choices with 'that' (used as a preposition)

vi) Adverb (normally end in 'ly') coming after the verb.

vii) Active voice > Passive voice

viii) 'To do' > 'ing'. E.g : 'To eat' > 'eating'

ix) Verb Form > Noun Form – words ending in – 'ance', 'ence', 'ment', 'ion', 'ity'.

Example:- can > capability
able > ability
reduce > reduction
require > requirement

17) Avoid:

i) 'Being'

ii) 'Because of'

iii) Apostrophe

iv) Passive voice

18) Idioms/Phrase meanings:

a) as = for instance
b) for all = despite
c) in that = because
d) since = because
e) for x = because of x / because x
f) make do = manage
g) due to = caused by
h) along with = in addition to.
i) should = advice / ought to

19) Miscellaneous situations:

a) Words such as Only/ Once/ Always/ Never/ Actually always refer to the item coming immediately after them.

Example: – Only Mary went to the market.
Mary went only to the market.
Mary only went to the market.

Example: – *Incorrect* – Dinosaurs existed ***once***.
Correct **–** Dinosaurs ***once*** existed.

Example: – *Incorrect* – The Dollar is ***only*** second to the Euro.
Correct **–** The Dollar is second ***only*** to the Euro.

Example: – *Incorrect* – It would ***always*** be insecure.
Correct **–** It would ***never*** be secure.

b) Try to keep the Infinitive 'to' and verb together.

Example: – *Incorrect* –To almost radically alter.
Correct – To alter almost radically.

c) If there is a choice between **not until** and **until**, go for **not until**. Similarly, if there is choice between **not all** and **all**, prefer **not all**.

Example: *Incorrect* – All the movies were NOT shown.

Correct – NOT all the movies were shown.

Example: *Incorrect* – Until almost 5 pm nothing happened.

Correct – NOT until almost 5 pm did something happen.

d) 'While' is for two actions happening simultaneously, 'Where/ Whereas' is ued to show contrast.

e) Even though = Although = Though

f) Maybe = Perhaps = Can= Possibly

g) Semi-colon = Full Stop.

h) After an apostrophe we cannot have verb in 'ing' format.

Example: *Incorrect*—Organism's trying

Correct – Organism's attempt.

i) For wishful thinking, we do not use 'was'. We use 'were' for present or future.

Example: *Incorrect* – I wish I was tall.

Correct – I wish I were tall.

For the past tense, use 'had'.

Example: If I had the money…

j) 'However' is used in between punctuation marks.

k) Replace the given verb with 'Do' or 'Does' instead of repeating the verb.

Example: Sometimes I do not eat and sometimes I **do**. (eat)

Example: A has more cars than **does** B.

l) Words such as First/ Never/ Again/ Now are placed between the subject and the verb.

Example: Soap operas were **first** aired in 1970.

Example: Sunspots have **never** been sighted.

m)

Wrong usage	**Right usage**
timber wolf density	density of timber wolf
ocean changes	changes in the ocean
water access	access to water
phosphate amount	amount of phosphate
health injury	injurious to health
food allergy	allergy to food
never have been	have been never
human misery toll	toll in human misery

n) Look for answers which make use of words such as 'situation', 'practice', 'event', 'findings', 'phenomenon', 'such' followed by a noun.

FORMULA SHEET

Equations & Fractions

1) Fraction of work left = _____ when a does 2/3, b 1/5 of the remaining, c 1/4 of remainder.

2) The best way to compare fractions is to _____ .

3) Ratio/fraction = 2/7. Add 10 to both the numerator & denominator of the given number. What is the new fraction?

4) Ratio of a to b is 7 : 1. Ratio of 'b' to 'c' is 2:5. Ratio of a to c is =

5) In a quadratic equation $ax^2 + bx + c = 0$
   (a) Sum of the roots = _____.
   (b) Product of the roots = _____.

6) Identical equations have _____ solutions.

7) x = ?
   a) $xy = 6$
   b) $x + 2y = 10$

Exponents

8) $(256)^{0.18} \times (256)^{0.07}$ = _____ .

9) x is positive integer x^0 = _____ : $(x)^{-2}$ = _____

10) The lowest value of x^2, where x is any number _____ .

Progressions

11) (a) Sum of the first 'n' terms of an arithmetic progression _____ .

    (b) The n^{th} term of an arithmetic progression _____.

12) Sum of all consecutive integers between 35 and 70 (inclusive) = _____ .

13) (a) Sum of the first 'n' terms of a geometric progression _____ .

    (b) The n^{th} term of a geometric progression _____ .

14) The Concept of Harmonic Progession. _____

15) (a) There are _____ spaces between 'n' things on a straight line.
    (b) There are _____ spaces between 'n' things on a circle.

Inequalities & Modulus

16) $x^{0.5} > x > x^2$. Give the range of x's value.

17) $a^2 > 6^2$. Give the range of a's value.

18) Relationship between

$\frac{M}{N}$ _____ (<, >, =) $\frac{M+a}{N+a}$,

where M, N,and a are positive integers

19) (a) $x^2 = 4$

$\Rightarrow x =$ _____

(b) $x = \sqrt{4}$

$\Rightarrow x =$ _____

20) $|(-\frac{1}{2})\, x + 3| < 10$ _____ solve for x

21) $|x+2| = 2\,|x - 2|$. Solve for x.

Number System

22) Is 0 odd / even? ____

Is it positive / negative ?

23) How many repeating decimals will we get if 1 is divided by

(a) 3 = _____ , (b) 11 = _____

(c) 5 = _____ , (d) 2 = _____

(d) 7 = _____

24) a x $b = c$ where a & b are different prime numbers. How many positive factors does 'c' have?

25) Divisors & multiples of 10 = _____.

26) Relationship between divisor, dividend, quotient & remainder _____.

27) If a number is divisible by 'x' & by 'y', the number must be divisible by _____ .

28) (a) The product of 2 consecutive integers is always divisible by _____.

(b) The product of 3 consecutive integers is always divisible by_____ .

(c) The product of 2 consecutive even integers is always divisible by _____.

(d) The product of 3 consecutive even integers is always divisible by_____ .

29) The product of 2 positive integers = G.C.F. x _____ .

30) a & b are consecutive integers. What is their HCF?

31) What is the divisibility test for 3, 4, 8 & 9?

32) Which numbers are consecutive odd integers of –3?

33) The sum of the positive factors of a prime number is _____ .

34) There are _____ prime numbers from 1 to 50 & _____ from 1 to 100.

35) Which digits raised to any positive integer end in themselves?

36) Squares of integers must never end in_____.

37) Concept of cyclicity

38) If m is a 2 digit number and n is obtained by interchanging the digits of m, the sum of m and n is a multiple of _____ & their difference is divisible by _____.

39) 253.846. Which digit is in the hundredths place?

40) If the sum of 'n' consecutive integers is '0' then 'n' is an (odd/even) integer?

Geometry

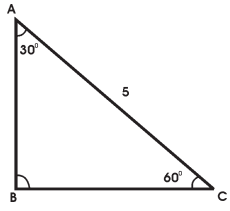
41) Sum of the exterior angles of any n-sided polygon=

42) Sum of the interior angles of any n-sided polygon=

43) Which of the following can be the dimensions of the three sides of a triangle

a) 6, 6, 12 b) 7, 3, 11

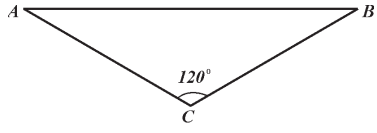
c) 5, 6, 10

44) 

$AC = 5$

$AB =$

$BC =$

45) (a) 

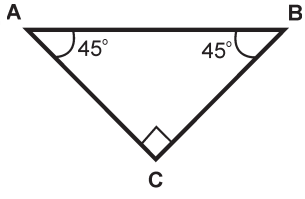
ABC is a triangle, in which

$\angle A = 30^0$

$\angle B = 30^0$

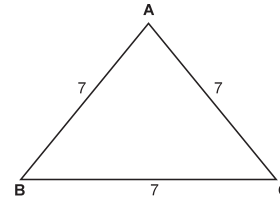
$\angle C = 120^0$

What is the ratio of 'AB' : 'BC' : 'AC'

(b) 

What is the ratio of 'AB' : 'BC' : 'AC'

46) Triangle ABC is an equilateral triangle

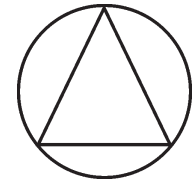


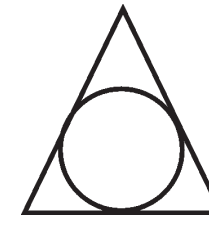
Area =

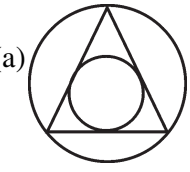
Altitude =

48) In an isosceles / equilateral triangle, the perpendicular is also the _____

49) The given triangles are equilateral. Calculate the ratio of the height of the triangle to the radius of the circle.

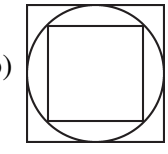
a) 

b) 

50) (a) 

Given triangle is equilateral

$$\frac{\text{Area of the smaller circle}}{\text{Area of the larger circle}} = ?$$

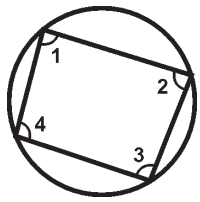
(b) 

$$\frac{\text{Area of the smaller square}}{\text{Area of the larger square}} = ?$$

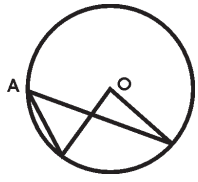
51) Length of the arc of a circle =

52) Area of a sector of a circle =

Notes:

53) 

$\angle 2 + \angle 4 =$

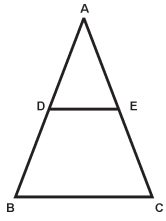
54) 

$\angle O = 132^0$, $\angle A =$

'O' is the centre of the circle

'A' is the point on the circle.

55) Angle in a semicircle is = _____(measure).

56) 

AD = 1/3 AB

AE = 1/3 AC

$$\frac{\text{Area of } \Delta \text{ ADE}}{\text{Area of quadilateral DECB}}$$

57) Area of a square (using diagonal) = _____ .

58) When is the area of a triangle largest, if 2 of the sides are given?

59) What are legs of a triangle ?

60)	Rectangle	Square	Rhombus
Diagonals are always equal			
Diagonals always bisect at 90^0			
Diagonals are always angle bisectors			

61) When is the area of a parallelogram highest for the given dimensions of the sides?

62) Which formula?

melting of a sphere =

painting of a sphere =

painting of cuboid =

cutting of cuboid =

63) Amount of cloth for a conical tent =

surface area of a cube =

amount of air inside a conical tent =

volume of a cube =

volume of a cylinder =

64) When is the volume of a cylinder highest for the given dimensions?

65) Diagonal of a cube =

66) Area of a trapezium =

67) Any equilateral triangle can be broken up into _____ smaller equilateral triangles by joining the midpoints, each having _____ the dimensions & _____ the area.

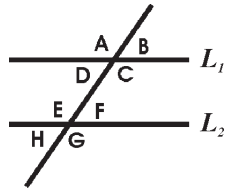
68) In which all diagrams, if only one dimension is known, we can calculate all the other dimensions.

69) A regular hexagon is made up of _____.

70) A fly walks along all the edges of a cube 3.5m on a side. What is the total length it walks?

71) A room is l0 x 12 x 15. What is the longest rod that can fit in it?

Notes:

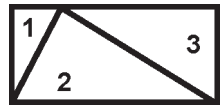
72) 

Given $L_1 // L_2$

$\angle A$ $= \angle$ $= \angle$ $= \angle$

73) Perimeter of a rhombus = 40. One diagonal is 16. Find the area.

74) The given figure is a rectangle



Relation between the areas of regions 1, 2 & 3

(<, >, =, +)

75) Lines a, b, c lie in same plane & $a \perp b, b \perp c$. Then a__c.

76) Two wheels of circumferences x and y make 9 and 12 revolutions respectively to cover the same distance. Ratio of their areas = _____.

77) Two tangents from a point outside the circle are _____.

78) Pythagorean triplets.

(a) _____, (b) _____,

(c) _____

Statistics

79) When is mean = median?

80) When is standard deviation = 0?

81) Weighted mean concept :

Coordinate Geometry

82) (a) Distance formula = _____.

(b) Distance of a point with coordinates (x, y) from the origin = _____

83) (a) Equation of a circle = _____ .

(b) Equation of a line = _____ .

84) Relationship between the slopes of two lines when they are :

(a) parallel

(b) perpendicular

85) When is the slope of a line

(a) 0 = _____

(b) 1 = _____

(c) –1 = _____

(d) not defined = _____

(e) positive = _____

(f) negative = _____

86) Mirror image of (4, –6)

(a) across y axis _____

(b) across x axis _____

(c) across $x = y$_____

(d) across $x = -y$ _____

87) (a) Equation of a Parabola = _____ .

(b) $y = x^2 + 5$ means. _____.

(c) $y = x^2 - 5$ means. _____.

(d) $y = (x - 5)^2$ means. _____.

(e) $y = (x + 5)^2$ means. _____.

(f) $y = x^2$ means. _____.

Percentage

88) Discount of $x\%$ + discount of $y\%$ (>, <, =) _____ discount of $(x+y)$ %

89) Increase of $x\%$ + increase of $y\%$ (>, <, =) _____ increase of $(x+y)$ %

Notes:

90) $\uparrow x\% + \downarrow x\%$ _____ $\downarrow x\% + \uparrow x\%$ (<,>,=).

91) a) $\uparrow 50\% = \downarrow x\%$

b) $\downarrow 33.33\% = \uparrow y\%$.

What are 'x' and 'y' for the net effect to be zero?

92) a increased by 300% of a. Final value = _____ . (in terms of a)

a increased to 300% of a. Final value = _____ .

Speed, Time & Distance

93) If X & Y, each do a job in A & B hrs. respectively. How much time will they take together to finish the same job?

94) I. Average speed

(a) if the distance is the same =

(b) if the distance is not the same =

II. If a leaves and b follows, then time taken by b to catch up is _____?

Permutation & Combination

95) The no. of diagonals in a decagon =

96) a) ${}^{n}C_{1}$=_____

b) ${}^{n}C_{n}$=_____

c) ${}^{n}C_{r}$ =_____

d) ${}^{5}C_{2}$ =_____

Miscellaneous

97) 1 billion = _____ million,
1 trillion = _____ billion.

98) 2 dimes + 3 nickels = $ _____ .

99) 20 pints = _____ gallons
= _____ fluid ozs
= _____ quarts

100) A cuboid is 3 yards x 7 yards x 9 yards. What is the volume in cubic feet?

101) The three smallest integers which are both squares & cubes of integers are _____, _____ and_____.

102) a) a's speed is 1.5 times b's speed. Then the ratio of speeds is _____.

b) a is 1.5 times faster than b. Ratio of their speeds = _____ .

103) $13 \times 15 \times 17 \times 19 = n$
Which number should you change for the least effect in 'n' ?

104) How many digits are needed to express 10^{100} in the decimal notation ?

105) The minimum and maximum values of probability are _____

106) a) Venn diagram formula for 2 cases = _____.

b) Venn diagram formula for 3 cases = _____.

Notes:

Notes

Notes

Notes

Notes

Notes

Notes

PROBLEM SOLVING

1. If Mario was 32 years old 8 years ago, how old was he x years ago?

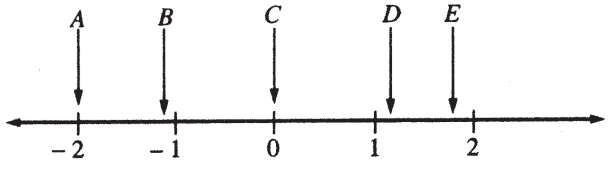
   (A) $x - 40$
   (B) $x - 24$
   (C) $40 - x$
   (D) $24 - x$
   (E) $24 + x$

2. Running at the same constant rate, 6 identical machines can produce a total of 270 bottles per minute. At this rate, how many bottles could 10 such machines produce in 4 minutes?

   (A) 648
   (B) 1,800
   (C) 2,700
   (D) 10,800
   (E) 64,800

3. Three business partners, Q, R, and S, agree to divide their total profit for a certain year in the ratios 2 : 5 : 8, respectively. If Q's share was \$4,000, what was the total profit of the business partners for the year?

   (A) \$26,000
   (B) \$30,000
   (C) \$52,000
   (D) \$60,000
   (E) \$300,000



4. Of the five coordinates associated with points A, B, C, D, and E on the number line above, which has the greatest absolute value?

   (A) A
   (B) B
   (C) C
   (D) D
   (E) E

5. A restaurant meal cost \$35.50 and there was no tax. If the tip was more than 10 percent but less than 15 percent of the cost of the meal, then the total amount paid must have been between

   (A) \$40 and \$42
   (B) \$39 and \$41
   (C) \$38 and \$40
   (D) \$37 and \$39
   (E) \$36 and \$37

6. Harriet wants to put up fencing around three sides of her rectangular yard and leave a side of 20 feet unfenced. If the yard has an area of 680 square feet, how many feet of fencing does she need?

   (A) 34
   (B) 40
   (C) 68
   (D) 88
   (E) 102

7. If $u > t$, $r > q$, $s > t$, and $t > r$, which of the following must be true?

   I. $u > s$
   II. $s > q$
   III. $u > r$

   (A) I only
   (B) II only
   (C) III only
   (D) I and II
   (E) II and III

8. Increasing the original price of an article by 15 percent and then increasing the new price by 15 percent is equivalent to increasing the original price by

   (A) 32.25%
   (B) 31.00%
   (C) 30.25%
   (D) 30.00%
   (E) 22.50%

9. If k is an integer and 0.0010101×10^k is greater than 1,000, what is the least possible value of k?

   (A) 2
   (B) 3
   (C) 4
   (D) 5
   (E) 6

10. If $(b-3)\left(4+\frac{2}{b}\right)=0$ and $b \neq 3$, then $b =$

(A) -8

(B) -2

(C) $-\frac{1}{2}$

(D) $\frac{1}{2}$

(E) 2

11. In a weight-lifting competition, the total weight of Joe's two lifts was 750 pounds. If twice the weight of his first lift was 300 pounds more than the weight of his second lift, what was the weight, in pounds, of his first lift?

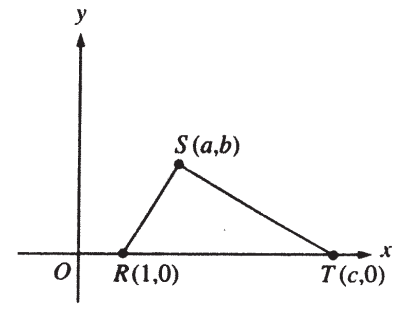
(A) 225
(B) 275
(C) 325
(D) 350
(E) 400

12. One hour after Yolanda started walking from X to Y, a distance of 45 miles, Bob started walking along the same road from Y to X. If Yolanda's walking rate was 3 miles per hour and Bob's was 4 miles per hour, how many miles had Bob walked when they met?

(A) 24
(B) 23
(C) 22
(D) 21
(E) 19.5

13. The average (arithmetic mean) of 6 numbers is 8.5. When one number is discarded, the average of the remaining numbers becomes 7.2. What is the discarded number?

(A) 7.8
(B) 9.8
(C) 10.0
(D) 12.4
(E) 15.0



14. In the rectangular coordinate system above, the area of ΔRST is

(A) $\frac{bc}{2}$

(B) $\frac{b(c-1)}{2}$

(C) $\frac{c(b-1)}{2}$

(D) $\frac{a(c-1)}{2}$

(E) $\frac{c(a-1)}{2}$

15. Which of the following equations has a root in common with $x^2 - 6x + 5 = 0$?

(A) $x^2 + 1 = 0$
(B) $x^2 - x - 2 = 0$
(C) $x^2 - 10x - 5 = 0$
(D) $2x^2 - 2 = 0$
(E) $x^2 - 2x - 3 = 0$

16. One inlet pipe fills an empty tank in 5 hours. A second inlet pipe fills the same tank in 3 hours. If both pipes are used together, how long will it take to fill $\frac{2}{3}$ of the tank?

(A) $\frac{8}{15}$ hr

(B) $\frac{3}{4}$ hr

(C) $\frac{5}{4}$ hr

(D) $\frac{15}{8}$ hr

(E) $\frac{8}{3}$ hr

17. During the first week of September, a shoe retailer sold 10 pairs of a certain style of oxfords at $35.00 a pair. If, during the second week of September, 15 pairs were sold at the sale price of $27.50 a pair, by what amount did the revenue from weekly sales of these oxfords increase during the second week?

(A) $62.50
(B) $75.00
(C) $112.50
(D) $137.50
(E) $175.00

18. The number 2 – 0.5 is how many times the number 1 – 0.5 ?

(A) 2
(B) 2.5
(C) 3
(D) 3.5
(E) 4

19. If $x = -1$, then $-(x^4 + x^3 + x^2 + x) =$

(A) −10
(B) −4
(C) 0
(D) 4
(E) 10

20. Coins are dropped into a toll box so that the box is being filled at the rate of approximately 2 cubic feet per hour. If the empty rectangular box is 4 feet long, 4 feet wide, and 3 feet deep, approximately how many hours does it take to fill the box?

(A) 4
(B) 8
(C) 16
(D) 24
(E) 48

21. $\left(\frac{1}{5}\right)^2 - \left(\frac{1}{5}\right)\left(\frac{1}{4}\right) =$

(A) $-\frac{1}{20}$
(B) $-\frac{1}{100}$
(C) $\frac{1}{100}$
(D) $\frac{1}{20}$
(E) $\frac{1}{5}$

22. A club collected exactly $599 from its members. If each member contributed at least $12, what is the greatest number of members the club could have?

(A) 43
(B) 44
(C) 49
(D) 50
(E) 51

23. A union contract specifies a 6 percent salary increase plus a $450 bonus for each employee. For a certain employee, this is equivalent to an 8 percent salary increase. What was this employee's salary before the new contract?

(A) $21,500
(B) $22,500
(C) $23,500
(D) $24,300
(E) $25,000

24. If n is a positive integer and $k + 2 = 3^n$, which of the following could NOT be a value of k ?

(A) 1
(B) 4
(C) 7
(D) 25
(E) 79

25. Elena purchased brand X pens for $4.00 apiece and brand Y pens for $2.80 apiece. If Elena purchased a total of 12 of these pens for $42.00, how many brand X pens did she purchase?

(A) 4
(B) 5
(C) 6
(D) 7
(E) 8

26. If the length and width of a rectangular garden plot were each increased by 20 percent, what would be the percent increase in the area of the plot?

(A) 20%
(B) 24%
(C) 36%
(D) 40%
(E) 44%

27. The population of a bacteria culture doubles every 2 minutes. Approximately how many minutes will it take for the population to grow from 1,000 to 500,000 bacteria?

(A) 10
(B) 12
(C) 14
(D) 16
(E) 18

28. When 10 is divided by the positive integer n, the remainder is $n - 4$. Which of the following could be the value of n ?

(A) 3
(B) 4
(C) 7
(D) 8
(E) 12

29. For a light that has an intensity of 60 candles at its source, the intensity in candles, S, of the light at a point d feet from the source is given by the formula $S = \frac{60k}{d^2}$, where k is a constant. If the intensity of the light is 30 candles at a distance of 2 feet from the source, what is the intensity of the light at a distance of 20 feet from the source?

(A) $\frac{3}{10}$ candle
(B) $\frac{1}{2}$ candle
(C) $1\frac{1}{3}$ candles
(D) 2 candles
(E) 3 candles

30. If x and y are prime numbers, which of the following CANNOT be the sum of x and y ?

(A) 5
(B) 9
(C) 13
(D) 16
(E) 23

31. Of the 3,600 employees of Company X, $\frac{1}{3}$ are clerical. If the clerical staff were to be reduced by $\frac{1}{3}$, what percent of the total number of the remaining employees would then be clerical?

(A) 25%
(B) 22.2%
(C) 20%
(D) 12.5%
(E) 11.1%

32. In which of the following pairs are the two numbers reciprocals of each other?

I. 3 and $\frac{1}{3}$

II. $\frac{1}{17}$ and $\frac{-1}{17}$

III. $\sqrt{3}$ and $\frac{\sqrt{3}}{3}$

(A) I only
(B) II only
(C) I and II
(D) I and III
(E) II and III

33. What is 45 percent of $\frac{7}{12}$ of 240 ?

(A) 63
(B) 90
(C) 108
(D) 140
(E) 311

34. If x books cost \$5 each and y books cost \$8 each, then the average (arithmetic mean) cost, in dollars per book, is equal to

(A) $\frac{5x + 8y}{x + y}$
(B) $\frac{5x + 8y}{xy}$
(C) $\frac{5x + 8y}{13}$
(D) $\frac{40xy}{x + y}$
(E) $\frac{40xy}{13}$

35. If $\frac{1}{2}$ of the money in a certain trust fund was invested in stocks, $\frac{1}{4}$ in bonds, $\frac{1}{5}$ in a mutual fund, and the remaining \$10,000 in a government certificate, what was the total amount of the trust fund?

(A) \$100,000
(B) \$150,000
(C) \$200,000
(D) \$500,000
(E) \$2,000,000

36. Marion rented a car for \$18.00 plus \$0.10 per mile driven. Craig rented a car for \$25.00 plus \$0.05 per mile driven. If each drove d miles and each was charged exactly the same amount for the rental, then d equals

(A) 100
(B) 120
(C) 135
(D) 140
(E) 150

37. Machine A produces bolts at a uniform rate of 120 every 40 seconds, and machine B produces bolts at a uniform rate of 100 every 20 seconds. If the two machines run simultaneously, how many seconds will it take for them to produce a total of 200 bolts?

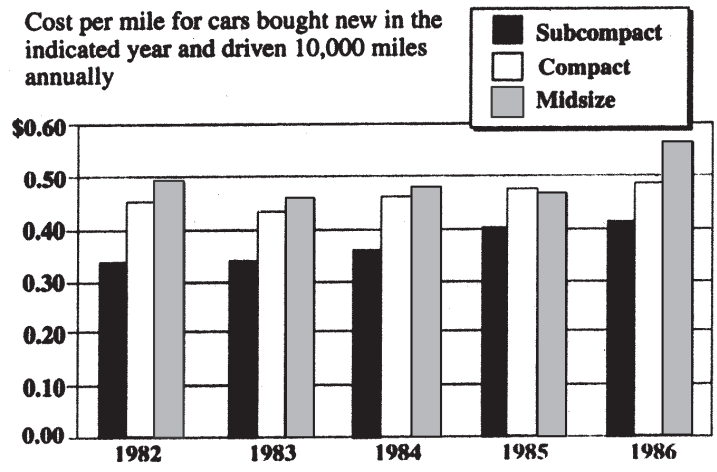
(A) 22
(B) 25
(C) 28
(D) 32
(E) 56

38. $\frac{3.003}{2.002} =$

(A) 1.05
(B) 1.50015
(C) 1.501
(D) 1.5015
(E) 1.5

Questions 39-41 refer to the following graph.

AVERAGE COSTS OF OPERATING SUBCOMPACT, COMPACT, AND MIDSIZE CARS IN THE UNITED STATES, 1982-1986



39. In 1982 the approximate average cost of operating a subcompact car for 10,000 miles was

(A) $360
(B) $3,400
(C) $4,100
(D) $4,500
(E) $4,900

40. In 1984 the average cost of operating a subcompact car was approximately what percent less than the average cost of operating a midsized car?

(A) 12%
(B) 20%
(C) 25%
(D) 33%
(E) 48%

41. For each of the years shown, the average cost per mile of operating a compact car minus the average cost per mile of operating a subcompact car was between

(A) $0.12 and $0.18
(B) $0.10 and $0.15
(C) $0.09 and $0.13
(D) $0.06 and $0.12
(E) $0.05 and $0.08

42. What is the decimal equivalent of $\left(\frac{1}{5}\right)^5$?

(A) 0.00032
(B) 0.0016
(C) 0.00625
(D) 0.008
(E) 0.03125

43. Two hundred gallons of fuel oil are purchased at \$0.91 per gallon and are consumed at a rate of \$0.70 worth of fuel per hour. At this rate, how many hours are required to consume the 200 gallons of fuel oil?

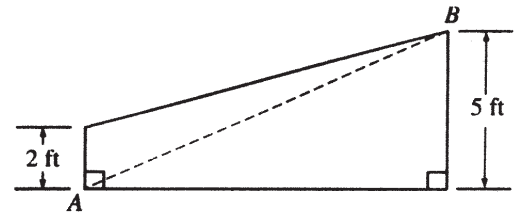
(A) 140
(B) 220
(C) 260
(D) 322
(E) 330

44. If $\frac{4-x}{2+x} = x$, what is the value of $x^2 + 3x - 4$?

(A) -4
(B) -1
(C) 0
(D) 1
(E) 2

45. If $b < 2$ and $2x - 3b = 0$, which of the following must be true?

(A) $x > -3$
(B) $x < 2$
(C) $x = 3$
(D) $x < 3$
(E) $x > 3$



46. The trapezoid shown in the figure above represents a cross section of the rudder of a ship. If the distance from A to B is 13 feet, what is the area of the cross section of the rudder in square feet?

(A) 39
(B) 40
(C) 42
(D) 45
(E) 46.5

47. $\frac{(-1.5)(1.2) - (4.5)(0.4)}{30} =$

(A) -1.2
(B) -0.12
(C) 0
(D) 0.12
(E) 1.2

48. If n is a positive integer, then $n(n + 1)(n + 2)$ is

(A) even only when n is even
(B) even only when n is odd
(C) odd whenever n is odd
(D) divisible by 3 only when n is odd
(E) divisible by 4 whenever n is even

49. If Jack had twice the amount of money that he has, he would have exactly the amount necessary to buy 3 hamburgers at \$0.96 apiece and 2 milk shakes at \$1.28 apiece. How much money does Jack have?

(A) \$1.60
(B) \$2.24
(C) \$2.72
(D) \$3.36
(E) \$5.44

50. If a photocopier makes 2 copies in $\frac{1}{3}$ second, then, at the same rate, how many copies does it make in 4 minutes?

(A) 360
(B) 480
(C) 576
(D) 720
(E) 1,440

51. The price of a certain television set is discounted by 10 percent, and the reduced price is then discounted by 10 percent. This series of successive discounts is equivalent to a single discount of

(A) 20%
(B) 19%
(C) 18%
(D) 11%
(E) 10%

52. If $\frac{2}{1 + \frac{2}{y}} = 1$, then $y =$

(A) -2
(B) $-\frac{1}{2}$
(C) $\frac{1}{2}$
(D) 2
(E) 3

53. If a rectangular photograph that is 10 inches wide by 15 inches long is to be enlarged so that the width will be 22 inches and the ratio of width to length will be unchanged, then the length, in inches, of the enlarged photograph will be

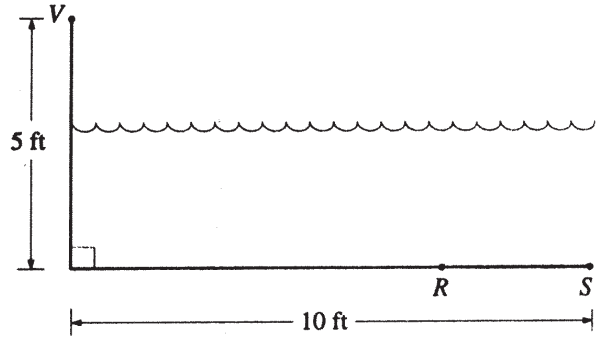
(A) 33
(B) 32
(C) 30
(D) 27
(E) 25

54. If m is an integer such that $(-2)^{2m} = 2^{9-m}$, then $m =$

(A) 1
(B) 2
(C) 3
(D) 4
(E) 6

55. If $0 \leq x \leq 4$ and $y < 12$, which of the following CANNOT be the value of xy ?

(A) -2
(B) 0
(C) 6
(D) 24
(E) 48



56. In the figure above, V represents an observation point at one end of a pool. From V, an object that is actually located on the bottom of the pool at point R appears to be at point S. If $VR = 10$ feet, what is the distance RS, in feet, between the actual position and the perceived position of the object?

(A) $10 - 5\sqrt{3}$
(B) $10 - 5\sqrt{2}$
(C) 2
(D) $2\frac{1}{2}$
(E) 4

57. If the total payroll expense of a certain business in year Y was \$84,000, which was 20 percent more than in year X, what was the total payroll expense in year X?

(A) \$70,000
(B) \$68,320
(C) \$64,000
(D) \$60,000
(E) \$52,320

58. If a, b, and c are consecutive positive integers and $a < b < c$, which of the following must be true?

I. $c - a = 2$

II. abc is an even integer.

III. $\frac{a + b + c}{3}$ is an integer.

(A) I only
(B) II only
(C) I and II only
(D) II and III only
(E) I, II, and III

59. A straight pipe 1 yard in length was marked off in fourths and also in thirds. If the pipe was then cut into separate pieces at each of these markings, which of the following gives all the different lengths of the pieces, in fractions of a yard?

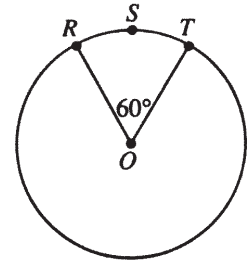
(A) $\frac{1}{6}$ and $\frac{1}{4}$ only
(B) $\frac{1}{4}$ and $\frac{1}{3}$ only
(C) $\frac{1}{6}$, $\frac{1}{4}$, and $\frac{1}{3}$
(D) $\frac{1}{12}$, $\frac{1}{6}$, and $\frac{1}{4}$
(E) $\frac{1}{12}$, $\frac{1}{6}$, and $\frac{1}{3}$

60. What is the least integer that is a sum of three different primes each greater than 20 ?

(A) 69
(B) 73
(C) 75
(D) 79
(E) 83

61. A tourist purchased a total of \$1,500 worth of traveler's checks in \$10 and \$50 denominations. During the trip the tourist cashed 7 checks and then lost all of the rest. If the number of \$10 checks cashed was one more or one less than the number of \$50 checks cashed, what is the minimum possible value of the checks that were lost?

(A) \$1,430
(B) \$1,310
(C) \$1,290
(D) \$1,270
(E) \$1,150



62. If the circle above has center O and circumference 18π, then the perimeter of sector $RSTO$ is

(A) $3\pi + 9$
(B) $3\pi + 18$
(C) $6\pi + 9$
(D) $6\pi + 18$
(E) $6\pi + 24$

63. If each of the following fractions were written as a repeating decimal, which would have the longest sequence of different digits?

(A) $\frac{2}{11}$
(B) $\frac{1}{3}$
(C) $\frac{41}{99}$
(D) $\frac{2}{3}$
(E) $\frac{23}{37}$

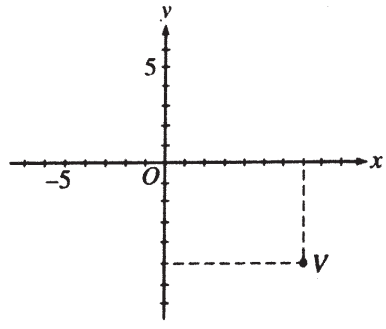
64. Today Rose is twice as old as Sam and Sam is 3 years younger than Tina. If Rose, Sam, and Tina are all alive 4 years from today, which of the following must be true on that day?

I. Rose is twice as old as Sam.
II. Sam is 3 years younger than Tina.
III. Rose is older than Tina.

(A) I only
(B) II only
(C) III only
(D) I and II
(E) II and III

65. The average (arithmetic mean) of 6, 8, and 10 equals the average of 7, 9, and

(A) 5
(B) 7
(C) 8
(D) 9
(E) 11



66. In the figure above, the coordinates of point V are

(A) (−7, 5)
(B) (−5, 7)
(C) (5, 7)
(D) (7, 5)
(E) (7, − 5)

67. Tickets for all but 100 seats in a 10,000-seat stadium were sold. Of the tickets sold, 20 percent were sold at half price and the remaining tickets were sold at the full price of $2. What was the total revenue from ticket sales?

(A) $15,840
(B) $17,820
(C) $18,000
(D) $19,800
(E) $21,780

68. In a mayoral election, Candidate X received $\frac{1}{3}$ more votes than Candidate Y, and Candidate Y received $\frac{1}{4}$ fewer votes than Candidate Z. If Candidate Z received 24,000 votes, how many votes did Candidate X receive?

(A) 18,000
(B) 22,000
(C) 24,000
(D) 26,000
(E) 32,000

69. René earns $8.50 per hour on days other than Sundays and twice that rate on Sundays. Last week she worked a total of 40 hours, including 8 hours on Sunday. What were her earnings for the week?

(A) $272
(B) $340
(C) $398
(D) $408
(E) $476

70. In a shipment of 120 machine parts, 5 percent were defective. In a shipment of 80 machine parts, 10 percent were defective. For the two shipments combined, what percent of the machine parts were defective?

(A) 6.5%
(B) 7.0%
(C) 7.5%
(D) 8.0%
(E) 8.5%

71. $\dfrac{2\frac{3}{5}-1\frac{2}{3}}{\frac{2}{3}-\frac{3}{5}} =$

(A) 16
(B) 14
(C) 3
(D) 1
(E) −1

72. If $x = -1$, then $\dfrac{x^4 - x^3 + x^2}{x - 1} =$

(A) $-\dfrac{3}{2}$

(B) $-\dfrac{1}{2}$

(C) 0

(D) $\dfrac{1}{2}$

(E) $\dfrac{3}{2}$

73. Which of the following equations is NOT equivalent to $25x^2 = y^2 - 4$?

(A) $25x^2 + 4 = y^2$

(B) $75x^2 = 3y^2 - 12$

(C) $25x^2 = (y + 2)(y - 2)$

(D) $5x = y - 2$

(E) $x^2 = \dfrac{y^2 - 4}{25}$

74. A toy store regularly sells all stock at a discount of 20 percent to 40 percent. If an additional 25 percent were deducted from the discount price during a special sale, what would be the lowest possible price of a toy costing \$16 before any discount?

(A) \$5.60
(B) \$7.20
(C) \$8.80
(D) \$9.60
(E) \$15.20

75. If there are 664,579 prime numbers among the first 10 million positive integers, approximately what percent of the first 10 million positive integers are prime numbers?

(A) 0.0066%
(B) 0.066%
(C) 0.66%
(D) 6.6%
(E) 66%

76. A bank customer borrowed \$10,000, but received y dollars less than this due to discounting. If there was a separate \$25 service charge, then, in terms of y, the service charge was what fraction of the amount that the customer received?

(A) $\dfrac{25}{10{,}000 - y}$

(B) $\dfrac{25}{10{,}000 - 25y}$

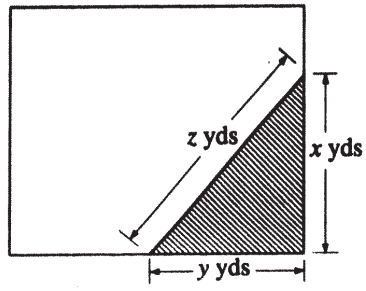
(C) $\dfrac{25y}{10{,}000 - y}$

(D) $\dfrac{y - 25}{10{,}000 - y}$

(E) $\dfrac{25}{10{,}000 - (y - 25)}$

77. An airline passenger is planning a trip that involves three connecting flights that leave from Airports A, B, and C, respectively. The first flight leaves Airport A every hour, beginning at 8:00 a.m., and arrives at Airport B $2\frac{1}{2}$ hours later. The second flight leaves Airport B every 20 minutes, beginning at 8:00 a.m., and arrives at Airport C $1\frac{1}{6}$ hours later. The third flight leaves Airport C every hour, beginning at 8:45 a.m. What is the <u>least</u> total amount of time the passenger must spend between flights if all flights keep to their schedules?

(A) 25 min
(B) 1 hr 5 min
(C) 1 hr 15 min
(D) 2 hr 20 min
(E) 3 hr 40 min



78. The shaded portion of the rectangular lot shown above represents a flower bed. If the area of the bed is 24 square yards and $x = y + 2$, then z equals

(A) $\sqrt{13}$
(B) $2\sqrt{13}$
(C) 6
(D) 8
(E) 10

79. How many multiples of 4 are there between 12 and 96, inclusive?

(A) 21
(B) 22
(C) 23
(D) 24
(E) 25

80. Jack is now 14 years older than Bill. If in 10 years Jack will be twice as old as Bill, how old will Jack be in 5 years?

(A) 9
(B) 19
(C) 21
(D) 23
(E) 33

81. In Country X a returning tourist may import goods with a total value of \$500 or less tax free, but must pay an 8 percent tax on the portion of the total value in excess of \$500. What tax must be paid by a returning tourist who imports goods with a total value of \$730 ?

(A) \$58.40
(B) \$40.00
(C) \$24.60
(D) \$18.40
(E) \$16.00

82. Which of the following is greater than $\frac{2}{3}$?

(A) $\frac{33}{50}$
(B) $\frac{8}{11}$
(C) $\frac{3}{5}$
(D) $\frac{13}{27}$
(E) $\frac{5}{8}$

83. A rope 40 feet long is cut into two pieces. If one piece is 18 feet longer than the other, what is the length, in feet, of the shorter piece?

(A) 9
(B) 11
(C) 18
(D) 22
(E) 29

84. If 60 percent of a rectangular floor is covered by a rectangular rug that is 9 feet by 12 feet, what is the area, in square feet, of the floor?

(A) 65
(B) 108
(C) 180
(D) 270
(E) 300

85. The Earth travels around the Sun at a speed of approximately 18.5 miles per second. This approximate speed is how many miles per hour?

(A) 1,080
(B) 1,160
(C) 64,800
(D) 66,600
(E) 3,996,000

86. A collection of books went on sale, and $\frac{2}{3}$ of them were sold for \$2.50 each. If none of the 36 remaining books were sold, what was the total amount received for the books that were sold?

(A) \$180
(B) \$135
(C) \$90
(D) \$60
(E) \$54

87. If "basis points" are defined so that 1 percent is equal to 100 basis points, then 82.5 percent is how many basis points greater than 62.5 percent?

(A) 0.02
(B) 0.2
(C) 20
(D) 200
(E) 2,000

88. The amounts of time that three secretaries worked on a special project are in the ratio of 1 to 2 to 5. If they worked a combined total of 112 hours, how many hours did the secretary who worked the longest spend on the project?

(A) 80
(B) 70
(C) 56
(D) 16
(E) 14

89. If the quotient $\frac{a}{b}$ is positive, which of the following must be true?

(A) $a > 0$
(B) $b > 0$
(C) $ab > 0$
(D) $a - b > 0$
(E) $a + b > 0$

90. If $8^{2x+3} = 2^{3x+6}$, then $x =$

(A) -3
(B) -1
(C) 0
(D) 1
(E) 3

91. Of the following, the closest approximation to $\sqrt{\frac{5.98(601.5)}{15.79}}$ is

(A) 5
(B) 15
(C) 20
(D) 25
(E) 225

92. Which of the following CANNOT be the greatest common divisor of two positive integers x and y?

(A) 1
(B) x
(C) y
(D) $x - y$
(E) $x + y$

93. An empty pool being filled with water at a constant rate takes 8 hours to fill to $\frac{3}{5}$ of its capacity. How much more time will it take to finish filling the pool?

(A) 5 hr 30 min
(B) 5 hr 20 min
(C) 4 hr 48 min
(D) 3 hr 12 min
(E) 2 hr 40 min

94. A positive number x is multiplied by 2, and this product is then divided by 3. If the positive square root of the result of these two operations equals x, what is the value of x?

(A) $\frac{9}{4}$
(B) $\frac{3}{2}$
(C) $\frac{4}{3}$
(D) $\frac{2}{3}$
(E) $\frac{1}{2}$

95. A tank contains 10,000 gallons of a solution that is 5 percent sodium chloride by volume. If 2,500 gallons of water evaporate from the tank, the remaining solution will be approximately what percent sodium chloride?

(A) 1.25%
(B) 3.75%
(C) 6.25%
(D) 6.67%
(E) 11.7%

96. A certain grocery purchased x pounds of produce for p dollars per pound. If y pounds of the produce had to be discarded due to spoilage and the grocery sold the rest for s dollars per pound, which of the following represents the gross profit on the sale of the produce?

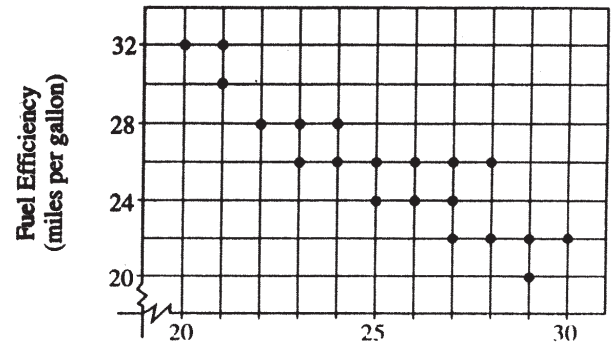
(A) $(x - y)s - xp$
(B) $(x - y)p - ys$
(C) $(s - p)y - xp$
(D) $xp - ys$
(E) $(x - y)(s - p)$

97. If $x + 5y = 16$ and $x = -3y$, then $y =$

(A) -24
(B) -8
(C) -2
(D) 2
(E) 8

98. An empty swimming pool with a capacity of 5,760 gallons is filled at the rate of 12 gallons per minute. How many hours does it take to fill the pool to capacity?

(A) 8
(B) 20
(C) 96
(D) 480
(E) 720



99. The dots on the graph above indicate the weights and fuel efficiency ratings for 20 cars. How many of the cars weigh more than 2,500 pounds and also get more than 22 miles per gallon?

(A) Three
(B) Five
(C) Eight
(D) Ten
(E) Eleven

100. $\dfrac{90 - 8(20 \div 4)}{\frac{1}{2}} =$

(A) 25
(B) 50
(C) 100
(D) 116
(E) 170

101. If a, b, and c are nonzero numbers and $a + b = c$, which of the following is equal to 1 ?

(A) $\dfrac{a-b}{c}$
(B) $\dfrac{a-c}{b}$
(C) $\dfrac{b-c}{a}$
(D) $\dfrac{b-a}{c}$
(E) $\dfrac{c-b}{a}$

102. Bill's school is 10 miles from his home. He travels 4 miles from school to football practice, and then 2 miles to a friend's house. If he is then x miles from home, what is the range of possible values for x?

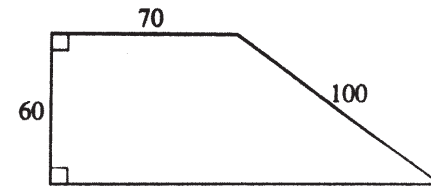
(A) $2 \leq x \leq 10$
(B) $4 \leq x \leq 10$
(C) $4 \leq x \leq 12$
(D) $4 \leq x \leq 16$
(E) $6 \leq x \leq 16$

103. Three machines, individually, can do a certain job in 4, 5, and 6 hours, respectively. What is the greatest part of the job that can be done in one hour by two of the machines working together at their respective rates?

(A) $\frac{11}{30}$
(B) $\frac{9}{20}$
(C) $\frac{3}{5}$
(D) $\frac{11}{15}$
(E) $\frac{5}{6}$

104. In 1985, 45 percent of a document storage facility's 60 customers were banks, and in 1987, 25 percent of its 144 customers were banks. What was the percent increase from 1985 to 1987 in the number of bank customers the facility had?

(A) 10.7%
(B) 20%
(C) 25%
(D) $33\frac{1}{3}\%$
(E) $58\frac{1}{3}\%$



105. What is the perimeter of the figure above?

(A) 380
(B) 360
(C) 330
(D) 300
(E) 230

106. A committee is composed of w women and m men. If 3 women and 2 men are added to the committee, and if one person is selected at random from the enlarged committee, then the probability that a woman is selected can be represented by

(A) $\frac{w}{m}$
(B) $\frac{w}{w+m}$
(C) $\frac{w+3}{m+2}$
(D) $\frac{w+3}{w+m+3}$
(E) $\frac{w+3}{w+m+5}$

107. Last year Carlos saved 10 percent of his annual earnings. This year he earned 5 percent more than last year and he saved 12 percent of his annual earnings. The amount saved this year was what percent of the amount saved last year?

(A) 122%
(B) 124%
(C) 126%
(D) 128%
(E) 130%

108. Jan lives x floors above the ground floor of a high-rise building. It takes her 30 seconds per floor to walk down the steps and 2 seconds per floor to ride the elevator. If it takes Jan the same amount of time to walk down the steps to the ground floor as to wait for the elevator for 7 minutes and ride down, then x equals

(A) 4
(B) 7
(C) 14
(D) 15
(E) 16

109. A corporation that had \$115.19 billion in profits for the year paid out \$230.10 million in employee benefits. Approximately what percent of the profits were the employee benefits? (1 billion = 10^9)

(A) 50%
(B) 20%
(C) 5%
(D) 2%
(E) 0.2%

Questions 110-111 refer to the following definition.

For any positive integer n, $n > 1$, the "length" of n is the number of positive primes (not necessarily distinct) whose product is n. For example, the length of 50 is 3 since $50 = (2)(5)(5)$.

110. Which of the following integers has length 3 ?

(A) 3
(B) 15
(C) 60
(D) 64
(E) 105

111. What is the greatest possible length of a positive integer less than 1,000 ?

(A) 10
(B) 9
(C) 8
(D) 7
(E) 6

112. A dealer originally bought 100 identical batteries at a total cost of q dollars. If each battery was sold at 50 percent above the original cost per battery, then, in terms of q, for how many dollars was each battery sold?

(A) $\frac{3q}{200}$

(B) $\frac{3q}{2}$

(C) $150q$

(D) $\frac{q}{100} + 50$

(E) $\frac{150}{q}$

113. Two oil cans, X and Y, are right circular cylinders, and the height and the radius of Y are each twice those of X. If the oil in can X, which is filled to capacity, sells for \$2, then at the same rate, how much does the oil in can Y sell for if Y is filled to only half its capacity?

(A) \$1
(B) \$2
(C) \$3
(D) \$4
(E) \$8

114. If x, y, and z are positive integers such that x is a factor of y, and x is a multiple of z, which of the following is NOT necessarily an integer?

(A) $\frac{x+z}{z}$

(B) $\frac{y+z}{x}$

(C) $\frac{x+y}{z}$

(D) $\frac{xy}{z}$

(E) $\frac{yz}{x}$

115. If $x + y = 8z$, then which of the following represents the average (arithmetic mean) of x, y, and z, in terms of z ?

(A) $2z + 1$

(B) $3z$

(C) $5z$

(D) $\frac{z}{3}$

(E) $\frac{3z}{2}$

116. If the product of the integers w, x, y, and z is 770, and if $1 < w < x < y < z$, what is the value of $w + z$?

(A) 10
(B) 13
(C) 16
(D) 18
(E) 21

117. If the population of a certain country increases at the rate of one person every 15 seconds, by how many persons does the population increase in 20 minutes?

(A) 80
(B) 100
(C) 150
(D) 240
(E) 300

118. The value of $-3 - (-10)$ is how much greater than the value of $-10 - (-3)$?

(A) 0
(B) 6
(C) 7
(D) 14
(E) 26

119. For an agricultural experiment, 300 seeds were planted in one plot and 200 were planted in a second plot. If exactly 25 percent of the seeds in the first plot germinated and exactly 35 percent of the seeds in the second plot germinated, what percent of the total number of seeds germinated?

(A) 12%
(B) 26%
(C) 29%
(D) 30%
(E) 60%

120. If $\frac{a}{b}=\frac{2}{3}$, which of the following is NOT true?

(A) $\frac{a+b}{b}=\frac{5}{3}$

(B) $\frac{b}{b-a}=3$

(C) $\frac{a-b}{b}=\frac{1}{3}$

(D) $\frac{2a}{3b}=\frac{4}{9}$

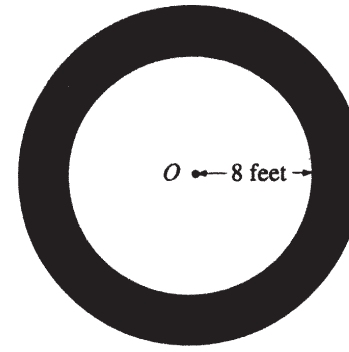
(E) $\frac{a+3b}{a}=\frac{11}{2}$

121. On the number line, if $r < s$, if p is halfway between r and s, and if t is halfway between p and r, then $\frac{s-t}{t-r}=$

(A) $\frac{1}{4}$ (B) $\frac{1}{3}$ (C) $\frac{4}{3}$ (D) 3 (E) 4

122. Coins are to be put into 7 pockets so that each pocket contains at least one coin. At most 3 of the pockets are to contain the same number of coins, and no two of the remaining pockets are to contain an equal number of coins. What is the least possible number of coins needed for the pockets?

(A) 7
(B) 13
(C) 17
(D) 22
(E) 28



123. The figure above shows a circular flower bed, with its center at O, surrounded by a circular path that is 3 feet wide. What is the area of the path, in square feet?

(A) 25π (B) 38π (C) 55π (D) 57π (E) 64π

	Brand X	Brand Y
Miles per Gallon	40	36
Cost per Gallon	\$0.80	\$0.75

124. The table above gives the gasoline costs and consumption rates for a certain car driven at 50 miles per hour, using each of two brands of gasoline. How many miles farther can the car be driven at this speed on \$12 worth of brand X gasoline than on \$12 worth of brand Y gasoline?

(A) 20 (B) 24 (C) 84 (D) 100 (E) 104

125. If \$1 were invested at 8 percent interest compounded annually, the total value of the investment, in dollars, at the end of 6 years would be

(A) $(1.8)^6$
(B) $(1.08)^6$
(C) $6(1.08)$
(D) $1 + (0.08)^6$
(E) $1 + 6(0.08)$

126. A furniture store sells only two models of desks, model A and model B. The selling price of model A is \$120, which is 30 percent of the selling price of model B. If the furniture store sells 2,000 desks, $\frac{3}{4}$ of which are model B, what is the furniture store's total revenue from the sale of desks?

(A) \$114,000
(B) \$186,000
(C) \$294,000
(D) \$380,000
(E) \$660,000

127. How many minutes does it take John to type y words if he types at the rate of x words per minute?

(A) $\frac{x}{y}$ (B) $\frac{y}{x}$ (C) xy (D) $\frac{60x}{y}$ (E) $\frac{y}{60x}$

128. The weights of four packages are 1, 3, 5, and 7 pounds, respectively. Which of the following CANNOT be the total weight, in pounds, of any combination of the packages?

(A) 9
(B) 10
(C) 12
(D) 13
(E) 14

129. $\sqrt{(16)(20)+(8)(32)} =$

(A) $4\sqrt{20}$
(B) 24
(C) 25
(D) $4\sqrt{20}+8\sqrt{2}$
(E) 32

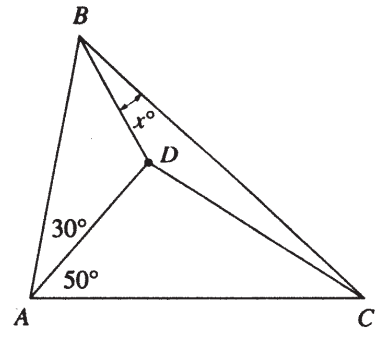
130. The positive integer n is divisible by 25. If $\sqrt{n}$ is greater than 25, which of the following could be the value of $\frac{n}{25}$?

(A) 22
(B) 23
(C) 24
(D) 25
(E) 26

131. If x and y are different integers and $x^2 = xy$, which of the following must be true?

I. $x = 0$
II. $y = 0$
III. $x = -y$

(A) I only
(B) II only
(C) III only
(D) I and III only
(E) I, II, and III



Note: Figure not drawn to scale.

132. In the figure above, $DA = DB = DC$. What is the value of x ?

(A) 10
(B) 20
(C) 30
(D) 40
(E) 50

133. If X and Y are sets of integers, $X \triangle Y$ denotes the set of integers that belong to set X or set Y, but not both. If X consists of 10 integers, Y consists of 18 integers, and 6 of the integers are in both X and Y, then $X \triangle Y$ consists of how many integers?

(A) 6
(B) 16
(C) 22
(D) 30
(E) 174

134. During the four years that Mrs. Lopez owned her car, she found that her total car expenses were $18,000. Fuel and maintenance costs accounted for $\frac{1}{3}$ of the total and depreciation accounted for $\frac{3}{5}$ of the remainder. The cost of insurance was 3 times the cost of financing, and together these two costs accounted for $\frac{1}{5}$ of the total. If the only other expenses were taxes and license fees, then the cost of financing was how much more or less than the cost of taxes and license fees?

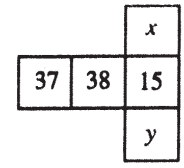
(A) $1,500 more
(B) $1,200 more
(C) $100 less
(D) $300 less
(E) $1,500 less

135. A car travels from Mayville to Rome at an average speed of 30 miles per hour and returns immediately along the same route at an average speed of 40 miles per hour. Of the following, which is closest to the average speed, in miles per hour, for the round-trip?

(A) 32.0
(B) 33.0
(C) 34.3
(D) 35.5
(E) 36.5

136. If $\frac{0.0015 \times 10^m}{0.03 \times 10^k} = 5 \times 10^7$, then $m - k =$

(A) 9
(B) 8
(C) 7
(D) 6
(E) 5

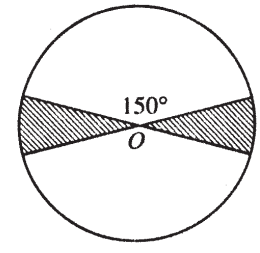


137. In the figure above, the sum of the three numbers in the horizontal row equals the product of the three numbers in the vertical column. What is the value of xy?

(A) 6
(B) 15
(C) 35
(D) 75
(E) 90

138. For telephone calls between two particular cities, a telephone company charges $0.40 per minute if the calls are placed between 5:00 a.m. and 9:00 p.m. and $0.25 per minute if the calls are placed between 9:00 p.m. and 5:00 a.m. If the charge for a call between the two cities placed at 1:00 p.m. was $10.00, how much would a call of the same duration have cost if it had been placed at 11:00 p.m.?

(A) $3.75
(B) $6.25
(C) $9.85
(D) $10.00
(E) $16.00



139. If O is the center of the circle above, what fraction of the circular region is shaded?

(A) $\frac{1}{12}$
(B) $\frac{1}{9}$
(C) $\frac{1}{6}$
(D) $\frac{1}{4}$
(E) $\frac{1}{3}$

140. If a compact disc that usually sells for \$12.95 is on sale for \$9.95, then the percent decrease in price is closest to

(A) 38%
(B) 31%
(C) 30%
(D) 29%
(E) 23%

141. $\dfrac{1}{1+\dfrac{1}{2+\dfrac{1}{3}}} =$

(A) $\dfrac{3}{10}$

(B) $\dfrac{7}{10}$

(C) $\dfrac{6}{7}$

(D) $\dfrac{10}{7}$

(E) $\dfrac{10}{3}$

142. A fruit-salad mixture consists of apples, peaches, and grapes in the ratio 6 : 5 : 2, respectively, by weight. If 39 pounds of the mixture is prepared, the mixture includes how many more pounds of apples than grapes?

(A) 15
(B) 12
(C) 9
(D) 6
(E) 4

143. If $\dfrac{3}{x} = 2$ and $\dfrac{y}{4} = 3$, then $\dfrac{3+y}{x+4} =$

(A) $\dfrac{10}{9}$

(B) $\dfrac{3}{2}$

(C) $\dfrac{20}{11}$

(D) $\dfrac{30}{11}$

(E) 5

144. $(1+\sqrt{5})(1-\sqrt{5}) =$

(A) -4
(B) 2
(C) 6
(D) $-4-2\sqrt{5}$
(E) $6-2\sqrt{5}$

145. Starting from point O on a flat school playground, a child walks 10 yards due north, then 6 yards due east, and then 2 yards due south, arriving at point P. How far apart, in yards, are points O and P?

(A) 18
(B) 16
(C) 14
(D) 12
(E) 10

146. A certain car increased its average speed by 5 miles per hour in each successive 5-minute interval after the first interval. If in the first 5-minute interval its average speed was 20 miles per hour, how many miles did the car travel in the third 5-minute interval?

(A) 1.0
(B) 1.5
(C) 2.0
(D) 2.5
(E) 3.0

147. Lois has x dollars more than Jim has, and together they have a total of y dollars. Which of the following represents the number of dollars that Jim has?

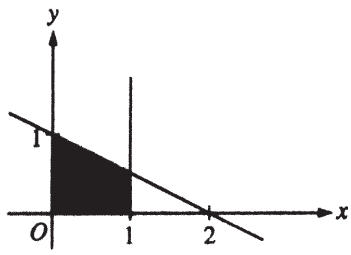
(A) $\dfrac{y-x}{2}$

(B) $y-\dfrac{x}{2}$

(C) $\dfrac{y}{2}-x$

(D) $2y-x$

(E) $y-2x$



148. In the rectangular coordinate system above, the shaded region is bounded by straight lines. Which of the following is NOT an equation of one of the boundary lines?

(A) $x = 0$
(B) $y = 0$
(C) $x = 1$
(D) $x - y = 0$
(E) $x + 2y = 2$

149. A certain population of bacteria doubles every 10 minutes. If the number of bacteria in the population initially was 10^4, what was the number in the population 1 hour later?

(A) $2(10^4)$
(B) $6(10^4)$
(C) $(2^6)(10^4)$
(D) $(10^6)(10^4)$
(E) $(10^4)^6$

150. During a certain season, a team won 80 percent of its first 100 games and 50 percent of its remaining games. If the team won 70 percent of its games for the entire season, what was the total number of games that the team played?

(A) 180
(B) 170
(C) 156
(D) 150
(E) 105

151. If Juan takes 11 seconds to run y yards, how many seconds will it take him to run x yards at the same rate?

(A) $\frac{11x}{y}$
(B) $\frac{11y}{x}$
(C) $\frac{x}{11y}$
(D) $\frac{11}{xy}$
(E) $\frac{xy}{11}$

152. Which of the following fractions has the greatest value?

(A) $\frac{6}{(2^2)(5^2)}$
(B) $\frac{1}{(2^3)(5^2)}$
(C) $\frac{28}{(2^2)(5^3)}$
(D) $\frac{62}{(2^3)(5^3)}$
(E) $\frac{122}{(2^4)(5^3)}$

153. Of 30 applicants for a job, 14 had at least 4 years experience, 18 had degrees, and 3 had less than 4 years experience and did not have a degree. How many of the applicants had at least 4 years experience and a degree?

(A) 14
(B) 13
(C) 9
(D) 7
(E) 5

154. Which of the following CANNOT yield an integer when divided by 10?

(A) The sum of two odd integers
(B) An integer less than 10
(C) The product of two primes
(D) The sum of three consecutive integers
(E) An odd integer

155. A certain clock marks every hour by striking a number of times equal to the hour, and the time required for a stroke is exactly equal to the time interval between strokes. At 6:00 the time lapse between the beginning of the first stroke and the end of the last stroke is 22 seconds. At 12:00, how many seconds elapse between the beginning of the first stroke and the end of the last stroke?

(A) 72
(B) 50
(C) 48
(D) 46
(E) 44

156. If $k \neq 0$ and $k - \frac{3-2k^2}{k} = \frac{x}{k}$, then $x =$

(A) $-3-k^2$
(B) k^2-3
(C) $3k^2-3$
(D) $k-3-2k^2$
(E) $k-3+2k^2$

157. $\frac{\frac{1}{2}+\frac{1}{3}}{\frac{1}{4}} =$

(A) $\frac{1}{12}$
(B) $\frac{5}{24}$
(C) $\frac{2}{3}$
(D) $\frac{9}{4}$
(E) $\frac{10}{3}$

158. John has 10 pairs of matched socks. If he loses 7 individual socks, what is the greatest number of pairs of matched socks he can have left?

(A) 7
(B) 6
(C) 5
(D) 4
(E) 3

159. Last year's receipts from the sale of candy on Valentine's Day totaled 385 million dollars, which represented 7 percent of total candy sales for the year. Candy sales for the year totaled how many million dollars?

(A) 55
(B) 550
(C) 2,695
(D) 5,500
(E) 26,950

160. How many minutes does it take to travel 120 miles at 400 miles per hour?

(A) 3
(B) $3\frac{1}{3}$
(C) $8\frac{2}{3}$
(D) 12
(E) 18

161. If $1 + \frac{1}{x} = 2 - \frac{2}{x}$, then $x =$

(A) -1
(B) $\frac{1}{3}$
(C) $\frac{2}{3}$
(D) 2
(E) 3

162. Last year, for every 100 million vehicles that traveled on a certain highway, 96 vehicles were involved in accidents. If 3 billion vehicles traveled on the highway last year, how many of those vehicles were involved in accidents? (1 billion = 1,000,000,000)

(A) 288
(B) 320
(C) 2,880
(D) 3,200
(E) 28,800

163. If the perimeter of a rectangular garden plot is 34 feet and its area is 60 square feet, what is the length of each of the longer sides?

(A) 5 ft
(B) 6 ft
(C) 10 ft
(D) 12 ft
(E) 15 ft

164. What is the least positive integer that is divisible by each of the integers 1 through 7, inclusive?

(A) 420
(B) 840
(C) 1,260
(D) 2,520
(E) 5,040

165. Thirty percent of the members of a swim club have passed the lifesaving test. Among the members who have not passed the test, 12 have taken the preparatory course and 30 have not taken the course. How many members are there in the swim club?

(A) 60
(B) 80
(C) 100
(D) 120
(E) 140

166. For all numbers s and t, the operation $*$ is defined by $s * t = (s - 1)(t + 1)$. If $(-2) * x = -12$, then $x =$

(A) 2
(B) 3
(C) 5
(D) 6
(E) 11

167. In an increasing sequence of 10 consecutive integers, the sum of the first 5 integers is 560. What is the sum of the last 5 integers in the sequence?

(A) 585
(B) 580
(C) 575
(D) 570
(E) 565

168. A certain manufacturer produces items for which the production costs consist of annual fixed costs totaling \$130,000 and variable costs averaging \$8 per item. If the manufacturer's selling price per item is \$15, how many items must the manufacturer produce and sell to earn an annual profit of \$150,000 ?

(A) 2,858
(B) 18,667
(C) 21,429
(D) 35,000
(E) 40,000

169. How many two-element subsets of {1, 2, 3, 4} are there that do not contain the pair of elements 2 and 4 ?

(A) One
(B) Two
(C) Four
(D) Five
(E) Six

170. In a certain company, the ratio of the number of managers to the number of production-line workers is 5 to 72. If 8 additional production-line workers were to be hired, the ratio of the number of managers to the number of production-line workers would be 5 to 74. How many managers does the company have?

(A) 5
(B) 10
(C) 15
(D) 20
(E) 25

171. If $(x - 1)^2 = 400$, which of the following could be the value of $x - 5$?

(A) 15
(B) 14
(C) -24
(D) -25
(E) -26

172. Salesperson A's compensation for any week is \$360 plus 6 percent of the portion of A's total sales above \$1,000 for that week. Salesperson B's compensation for any week is 8 percent of B's total sales for that week. For what amount of total weekly sales would both salespeople earn the same compensation?

(A) \$21,000
(B) \$18,000
(C) \$15,000
(D) \$4,500
(E) \$4,000

173. If a square region has area x, what is the length of its diagonal in terms of x?

(A) $\sqrt{x}$

(B) $\sqrt{2x}$

(C) $2\sqrt{x}$

(D) $x\sqrt{2}$

(E) $2x$

174. In a certain class consisting of 36 students, some boys and some girls, exactly $\frac{1}{3}$ of the boys and exactly $\frac{1}{4}$ of the girls walk to school. What is the greatest possible number of students in this class who walk to school?

(A) 9
(B) 10
(C) 11
(D) 12
(E) 13

175. The sum of the ages of Doris and Fred is y years. If Doris is 12 years older than Fred, how many years old will Fred be y years from now, in terms of y?

(A) $y - 6$

(B) $2y - 6$

(C) $\frac{y}{2} - 6$

(D) $\frac{3y}{2} - 6$

(E) $\frac{5y}{2} - 6$

$$\begin{array}{r} 1{,}234 \\ 1{,}243 \\ 1{,}324 \\ \cdots\cdot \\ \cdots\cdot \\ +\ 4{,}321 \end{array}$$

176. The addition problem above shows four of the 24 different integers that can be formed by using each of the digits 1, 2, 3, and 4 exactly once in each integer. What is the sum of these 24 integers?

(A) 24,000
(B) 26,664
(C) 40,440
(D) 60,000
(E) 66,660

177. If $x = -(2 - 5)$, then $x =$

(A) -7 (B) -3 (C) 3 (D) 7 (E) 10

178. What percent of 30 is 12?

(A) 2.5% (B) 3.6% (C) 25%

(D) 40% (E) 250%

179. On a 3-day fishing trip, 4 adults consumed food costing \$60. For the same food costs per person per day, what would be the cost of food consumed by 7 adults during a 5-day fishing trip?

(A) \$300
(B) \$175
(C) \$105
(D) \$100
(E) \$84

180. In a poll of 66,000 physicians, only 20 percent responded; of these, 10 percent disclosed their preference for pain reliever X. How many of the physicians who responded did <u>not</u> disclose a preference for pain reliever X?

(A) 1,320
(B) 5,280
(C) 6,600
(D) 10,560
(E) 11,880

181. If $\frac{1.5}{0.2+x} = 5$, then x =

(A) -3.7
(B) 0.1
(C) 0.3
(D) 0.5
(E) 2.8

182. If a basketball team scores an average (arithmetic mean) of x points per game for n games and then scores y points in its next game, what is the team's average score for the $n + 1$ games?

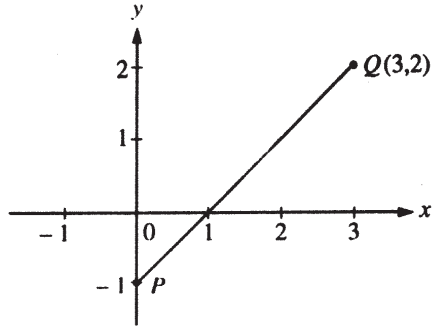
(A) $\frac{nx+y}{n+1}$

(B) $x+\frac{y}{n+1}$

(C) $x+\frac{y}{n}$

(D) $\frac{n(x+y)}{n+1}$

(E) $\frac{x+ny}{n+1}$



183. In the figure above, the point on segment PQ that is twice as far from P as from Q is

(A) (3, 1)
(B) (2, 1)
(C) (2, –
(D) (1.5, 0
(E) (1, 0)

184. $\frac{3}{100}+\frac{5}{1{,}000}+\frac{7}{100{,}000}=$

(A) 0.357
(B) 0.3507
(C) 0.35007
(D) 0.0357
(E) 0.03507

185. If the number n of calculators sold per week varies with the price p in dollars according to the equation $n = 300 - 20p$, what would be the total weekly revenue from the sale of \$10 calculators?

(A) \$100 (B) \$300 (C) \$1,000
(D) \$2,800 (E) \$3,000

186. Of the 65 cars on a car lot, 45 have air-conditioning, 30 have power windows, and 12 have both air-conditioning and power windows. How many of the cars on the lot have neither air-conditioning nor power windows?

(A) 2
(B) 8
(C) 10
(D) 15
(E) 18

187. Of the following numbers, which one is third greatest?

(A) $2\sqrt{2} - 1$ (B) $\sqrt{2} + 1$ (C) $1 - \sqrt{2}$
(D) $\sqrt{2} - 1$ (E) $\sqrt{2}$

188. During the second quarter of 1984, a total of 2,976,000 domestic cars were sold. If this was 24 percent greater than the number sold during the first quarter of 1984, how many were sold during the first quarter?

(A) 714,240
(B) 2,261,760
(C) 2,400,000
(D) 3,690,240
(E) 3,915,790

189. If a positive integer n is divisible by both 5 and 7, the n must also be divisible by which of the following?

I. 12
II. 35
III. 70

(A) None (B) I only (C) II only
(D) I and II (E) II and III

190. An author received \$0.80 in royalties for each of the first 100,000 copies of her book sold, and \$0.60 in royalties for each additional copy sold. If she received a total of \$260,000 in royalties, how many copies of her book were sold?

(A) 130,000
(B) 300,000
(C) 380,000
(D) 400,000
(E) 420,000

191. Starting from Town S, Fred rode his bicycle 8 miles due east, 3 miles due south, 2 miles due west, and 11 miles due north, finally stopping at Town T. If the entire region is flat, what is the straight-line distance, in miles, between Towns S and T?

(A) 10

(B) $8\sqrt{2}$

(C) $\sqrt{157}$

(D) 14

(E) 24

192. Which of the following describes all values of x for which $1 - x^2 \geq 0$?

(A) $x \geq 1$
(B) $x \leq -1$
(C) $0 \leq x \leq 1$
(D) $x \leq -1$ or $x \geq 1$
(E) $-1 \leq x \leq 1$

193. Four hours from now, the population of a colony of bacteria will reach 1.28×10^6. If the population of the colony doubles every 4 hours, what was the population 12 hours ago?

(A) 6.4×10^2
(B) 8.0×10^4
(C) 1.6×10^5
(D) 3.2×10^5
(E) 8.0×10^6

194. At a certain pizzeria, $\frac{1}{8}$ of the pizzas sold in one week were mushroom and $\frac{1}{3}$ of the remaining pizzas sold were pepperoni. If n of the pizzas sold were pepperoni, how many were mushroom?

(A) $\frac{3}{8}n$

(B) $\frac{3}{7}n$

(C) $\frac{7}{16}n$

(D) $\frac{7}{8}n$

(E) $3n$

195. If 4 is one solution of the equation $x^2 + 3x + k = 10$, where k is a constant, what is the other solution?

(A) -7 (B) -4 (C) -3 (D) 1 (E) 6

196. The probability is $\frac{1}{2}$ that a certain coin will turn up heads on any given toss. If the coin is to be tossed three times, what is the probability that on at least one of the tosses the coin will turn up tails?

(A) $\frac{1}{8}$ (B) $\frac{1}{2}$ (C) $\frac{3}{4}$ (D) $\frac{7}{8}$ (E) $\frac{15}{16}$

197. A caterer ordered 125 ice-cream bars and 125 sundaes. If the total price was $200.00 and the price of each ice-cream bar was $0.60, what was the price of each sundae?

(A) $0.60
(B) $0.80
(C) $1.00
(D) $1.20
(E) $1.60

198. Lloyd normally works 7.5 hours per day and earns $4.50 per hour. For each hour he works in excess of 7.5 hours on a given day, he is paid 1.5 times his regular rate. If Lloyd works 10.5 hours on a given day, how much does he earn for that day?

(A) $33.75
(B) $47.25
(C) $51.75
(D) $54.00
(E) $70.00

199. If $x = -3$, what is the value of $-3x^2$?

(A) −27 (B) −18 (C) 18 (D) 27 (E) 81

200. Of the final grades received by the students in a certain math course, $\frac{1}{5}$ are A's, $\frac{1}{4}$ are B's, $\frac{1}{2}$ are C's, and the remaining 10 grades are D's. What is the number of students in the course?

(A) 80
(B) 110
(C) 160
(D) 200
(E) 400

201. $\dfrac{29^2 + 29}{29} =$

(A) 870 (B) 841 (C) 58 (D) 31 (E) 30

202. Mr. Hernandez, who was a resident of State X for only 8 months last year, had a taxable income of $22,500 for the year. If the state tax rate were 4 percent of the year's taxable income prorated for the proportion of the year during which the taxpayer was a resident, what would be the amount of Mr. Hernandez's State X tax for last year?

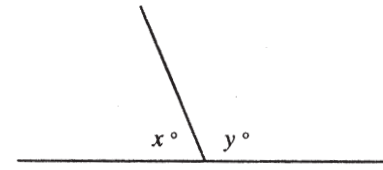
(A) $900 (B) $720 (C) $600
(D) $300 (E) $60

203. If $x = 1 - 3t$ and $y = 2t - 1$, then for what value of t does $x = y$?

(A) $\frac{5}{2}$ (B) $\frac{3}{2}$ (C) $\frac{2}{3}$ (D) $\frac{2}{5}$ (E) 0

204. Which of the following fractions is equal to the decimal 0.0625 ?

(A) $\frac{5}{8}$ (B) $\frac{3}{8}$ (C) $\frac{1}{16}$ (D) $\frac{1}{18}$ (E) $\frac{3}{80}$



205. In the figure above, if $\dfrac{x}{x+y} = \dfrac{3}{8}$, then $x =$

(A) 60
(B) 67.5
(C) 72
(D) 108
(E) 112.5

206. The number of coronary-bypass operations performed in the United States increased from 13,000 in 1970 to 191,000 in 1983. What was the approximate percent increase in the number of coronary-bypass operations from 1970 to 1983 ?

(A) 90%
(B) 140%
(C) 150%
(D) 1,400%
(E) 1,600%

207. If positive integers x and y are not both odd, which of the following must be even?

(A) xy
(B) $x + y$
(C) $x - y$
(D) $x + y - 1$
(E) $2(x + y) - 1$

208. Two trains, X and Y, started simultaneously from opposite ends of a 100-mile route and traveled toward each other on parallel tracks. Train X, traveling at a constant rate, completed the 100-mile trip in 5 hours; train Y, traveling at a constant rate, completed the 100-mile trip in 3 hours. How many miles had train X traveled when it met train Y?

(A) 37.5 (B) 40.0 (C) 60.0
(D) 62.5 (E) 77.5

209. As x increases from 165 to 166, which of the following must increase?

I. $2x - 5$

II. $1 - \frac{1}{x}$

III. $\frac{1}{x^2 - x}$

(A) I only
(B) III only
(C) I and II
(D) I and III
(E) II and III

210. If it is true that $x > -2$ and $x < 7$, which of the following must be true?

(A) $x > 2$
(B) $x > -7$
(C) $x < 2$
(D) $-7 < x < 2$
(E) None of the above

211. A club sold an average (arithmetic mean) of 92 raffle tickets per member. Among the female members, the average number sold was 84, and among the male members, the average number sold was 96. What was the ratio of the number of male members to the number of female members in the club?

(A) 1 : 1
(B) 1 : 2
(C) 1 : 3
(D) 2 : 1
(E) 3 : 1

212. How many bits of computer memory will be required to store the integer x, where $x = -\sqrt{810{,}000}$, if each digit requires 4 bits of memory and the sign of x requires 1 bit?

(A) 25 (B) 24 (C) 17 (D) 13 (E) 12

213. One week a certain truck rental lot had a total of 20 trucks, all of which were on the lot Monday morning. If 50 percent of the trucks that were rented out during the week were returned to the lot on or before Saturday morning of that week, and if there were at least 12 trucks on the lot that Saturday morning, what is the greatest number of different trucks that could have been rented out during the week?

(A) 18
(B) 16
(C) 12
(D) 8
(E) 4

214. Ms. Adams sold two properties, X and Y, for $30,000 each. She sold property X for 20 percent more than she paid for it and sold property Y for 20 percent less than she paid for it. If expenses are disregarded, what was her total net gain or loss, if any, on the two properties?

(A) Loss of $1,250
(B) Loss of $2,500
(C) Gain of $1,250
(D) Gain of $2,500
(E) There was neither a net gain nor a net loss.

215. A rectangular box is 10 inches wide, 10 inches long, and 5 inches high. What is the greatest possible (straight-line) distance, in inches, between any two points on the box?

(A) 15
(B) 20
(C) 25
(D) $10\sqrt{2}$
(E) $10\sqrt{3}$

216. How many positive integers less than 20 are either a multiple of 2, an odd multiple of 9, or the sum of a positive multiple of 2 and a positive multiple of 9?

(A) 19
(B) 18
(C) 17
(D) 16
(E) 15

217. On 3 sales John has received commissions of \$240, \$80, and \$110, and he has 1 additional sale pending. If John is to receive an average (arithmetic mean) commission of exactly \$150 on the 4 sales, then the 4th commission must be

(A) \$164
(B) \$170
(C) \$175
(D) \$182
(E) \$185

218. $\sqrt{463}$ is between

(A) 21 and 22
(B) 22 and 23
(C) 23 and 24
(D) 24 and 25
(E) 25 and 26

219. The annual budget of a certain college is to be shown on a circle graph. If the size of each sector of the graph is to be proportional to the amount of the budget it represents, how many degrees of the circle should be used to represent an item that is 15 percent of the budget?

(A) 15°
(B) 36°
(C) 54°
(D) 90°
(E) 150°

220. A company accountant estimates that airfares next year for business trips of a thousand miles or less will increase by 20 percent and airfares for all other business trips will increase by 10 percent. This year total airfares for business trips of a thousand miles or less were \$9,900 and airfares for all other business trips were \$13,000. According to the accountant's estimate, if the same business trips will be made next year as this year, how much will be spent for airfares next year?

(A) \$22,930
(B) \$26,180
(C) \$26,330
(D) \$26,490
(E) \$29,770

221. What is the value of $2x^2 - 2.4x - 1.7$ for $x = 0.7$?

(A) -0.72
(B) -1.42
(C) -1.98
(D) -2.40
(E) -2.89

222. If $x * y = xy - 2(x + y)$ for all integers x and y, then $2 * (-3) =$

(A) -16
(B) -11
(C) -4
(D) 4
(E) 16

223. During a two-week period, the price of an ounce of silver increased by 25 percent by the end of the first week and then decreased by 20 percent of this new price by the end of the second week. If the price of silver was x dollars per ounce at the beginning of the two-week period, what was the price, in dollars per ounce, by the end of the period?

(A) $0.8x$
(B) $0.95x$
(C) x
(D) $1.05x$
(E) $1.25x$

224. If a cube has a volume of 64, what is its total surface area?

(A) 16
(B) 24
(C) 48
(D) 64
(E) 96

Club	Number of Students
Chess	40
Drama	30
Math	25

225. The table above shows the number of students in three clubs at McAuliffe School. Although no student is in all three clubs, 10 students are in both chess and drama, 5 students are in both chess and math, and 6 students are in both drama and math. How many different students are in the three clubs?

(A) 68
(B) 69
(C) 74
(D) 79
(E) 84

226. If s, u, and v are positive integers and $2^s = 2^u + 2^v$, which of the following must be true?

I. $s = u$
II. $u \neq v$
III. $s > v$

(A) None
(B) I only
(C) II only
(D) III only
(E) II and III

227. In a nationwide poll, N people were interviewed. If $\frac{1}{4}$ of them answered "yes" to question 1, and of those, $\frac{1}{3}$ answered "yes" to question 2, which of the following expressions represents the number of people interviewed who did not answer "yes" to both questions?

(A) $\frac{N}{7}$
(B) $\frac{6N}{7}$
(C) $\frac{5N}{12}$
(D) $\frac{7N}{12}$
(E) $\frac{11N}{12}$

228. In a certain pond, 50 fish were caught, tagged, and returned to the pond. A few days later, 50 fish were caught again, of which 2 were found to have been tagged. If the percent of tagged fish in the second catch approximates the percent of tagged fish in the pond, what is the approximate number of fish in the pond?

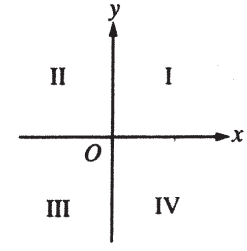
(A) 400
(B) 625
(C) 1,250
(D) 2,500
(E) 10,000

229. The ratio of two quantities is 3 to 4. If each of the quantities is increased by 5, what is the ratio of these two new quantities?

(A) $\frac{3}{4}$
(B) $\frac{8}{9}$
(C) $\frac{18}{19}$
(D) $\frac{23}{24}$
(E) It cannot be determined from the information given.

230. In 1986 the book value of a certain car was $\frac{2}{3}$ of the original purchase price, and in 1988 its book value was $\frac{1}{2}$ of the original purchase price. By what percent did the book value of this car decrease from 1986 to 1988 ?

(A) $16\frac{2}{3}\%$
(B) 25%
(C) $33\frac{1}{3}\%$
(D) 50%
(E) 75%



231. In the rectangular coordinate system shown above, which quadrant, if any, contains no point (x, y) that satisfies the inequality $2x - 3y \leq -6$?

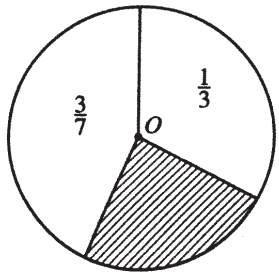
(A) None
(B) I
(C) II
(D) III
(E) IV

232. A hiker walked for two days. On the second day the hiker walked 2 hours longer and at an average speed 1 mile per hour faster than he walked on the first day. If during the two days he walked a total of 64 miles and spent a total of 18 hours walking, what was his average speed on the first day?

(A) 2 mph
(B) 3 mph
(C) 4 mph
(D) 5 mph
(E) 6 mph

233. If a printer can print 2 pages of text per second, then, at this rate, approximately how many minutes will it take to print 5,000 pages of text?

(A) 4
(B) 25
(C) 42
(D) 250
(E) 417



234. In the circular region with center O, shown above, the two unshaded sections comprise $\frac{3}{7}$ and $\frac{1}{3}$ of the area of the circular region. The shaded section comprises what fractional part of the area of the circular region?

(A) $\frac{3}{5}$
(B) $\frac{6}{7}$
(C) $\frac{2}{21}$
(D) $\frac{5}{21}$
(E) $\frac{16}{21}$

235. Envelopes can be purchased for \$1.50 per pack of 100, \$1.00 per pack of 50, or \$0.03 each. What is the greatest number of envelopes that can be purchased for \$7.30 ?

(A) 426
(B) 430
(C) 443
(D) 460
(E) 486

236. $\sqrt{16+16} =$

(A) $4\sqrt{2}$
(B) $8\sqrt{2}$
(C) $16\sqrt{2}$
(D) 8
(E) 16

237. An automobile's gasoline mileage varies, depending on the speed of the automobile, between 18.0 and 22.4 miles per gallon, inclusive. What is the maximum distance, in miles, that the automobile could be driven on 15 gallons of gasoline?

(A) 336
(B) 320
(C) 303
(D) 284
(E) 270

238. $\frac{(0.3)^5}{(0.3)^3} =$

(A) 0.001
(B) 0.01
(C) 0.09
(D) 0.9
(E) 1.0

239. In a horticultural experiment, 200 seeds were planted in plot I and 300 were planted in plot II. If 57 percent of the seeds in plot I germinated and 42 percent of the seeds in plot II germinated, what percent of the total number of planted seeds germinated?

(A) 45.5%
(B) 46.5%
(C) 48.0%
(D) 49.5%
(E) 51.0%

240. The organizers of a fair projected a 25 percent increase in attendance this year over that of last year, but attendance this year actually decreased by 20 percent. What percent of the projected attendance was the actual attendance?

(A) 45%
(B) 56%
(C) 64%
(D) 75%
(E) 80%

241. An optometrist charges \$150 per pair for soft contact lenses and \$85 per pair for hard contact lenses. Last week she sold 5 more pairs of soft lenses than hard lenses. If her total sales for pairs of contact lenses last week were \$1,690, what was the total number of pairs of contact lenses that she sold?

(A) 11
(B) 13
(C) 15
(D) 17
(E) 19

242. What is the ratio of $\frac{3}{4}$ to the product $4\left(\frac{3}{4}\right)$?

(A) $\frac{1}{4}$
(B) $\frac{1}{3}$
(C) $\frac{4}{9}$
(D) $\frac{9}{4}$
(E) 4

243. The cost to rent a small bus for a trip is x dollars, which is to be shared equally among the people taking the trip. If 10 people take the trip rather than 16, how many more dollars, in terms of x, will it cost per person?

(A) $\frac{x}{6}$
(B) $\frac{x}{10}$
(C) $\frac{x}{16}$
(D) $\frac{3x}{40}$
(E) $\frac{3x}{80}$

244. If x is an integer and $y = 3x + 2$, which of the following CANNOT be a divisor of y?

(A) 4
(B) 5
(C) 6
(D) 7
(E) 8

245. The size of a television screen is given as the length of the screen's diagonal. If the screens were flat, then the area of a square 21-inch screen would be how many square inches greater than the area of a square 19-inch screen?

(A) 2
(B) 4
(C) 16
(D) 38
(E) 40

246. If the average (arithmetic mean) of x and y is 60 and the average (arithmetic mean) of y and z is 80, what is the value of $z - x$?

(A) 70
(B) 40
(C) 20
(D) 10
(E) It cannot be determined from the information given.

247. If 3 and 8 are the lengths of two sides of a triangular region, which of the following can be the length of the third side?

I. 5
II. 8
III. 11

(A) II only
(B) III only
(C) I and II only
(D) II and III only
(E) I, II, and III

248. One night a certain motel rented $\frac{3}{4}$ of its rooms, including $\frac{2}{3}$ of its air-conditioned rooms. If $\frac{3}{5}$ of its rooms were air-conditioned, what percent of the rooms that were <u>not</u> rented were air-conditioned?

(A) 20%
(B) $33\frac{1}{3}\%$
(C) 35%
(D) 40%
(E) 80%

249. If $3 - x = 2x - 3$, then $4x =$

(A) -24
(B) -8
(C) 0
(D) 8
(E) 24

250. A certain electronic component is sold in boxes of 54 for \$16.20 and in boxes of 27 for \$13.20. A customer who needed only 54 components for a project had to buy 2 boxes of 27 because boxes of 54 were unavailable. Approximately how much more did the customer pay for each component due to the unavailability of the larger boxes?

(A) \$0.33
(B) \$0.19
(C) \$0.11
(D) \$0.06
(E) \$0.03

251. On a certain street, there is an odd number of houses in a row. The houses in the row are painted alternately white and green, with the first house painted white. If n is the total number of houses in the row, how many of the houses are painted white?

(A) $\frac{n+1}{2}$
(B) $\frac{n-1}{2}$
(C) $\frac{n}{2}+1$
(D) $\frac{n}{2}-1$
(E) $\frac{n}{2}$

$$\begin{array}{r} \square\triangle \\ \times\ \triangle\square \\ \hline \end{array}$$

252. The product of the two-digit numbers above is the three-digit number $\square\diamond\square$, where $\square$, $\triangle$, and $\diamond$ are three different nonzero digits. If $\square \times \triangle < 10$, what is the two-digit number $\square\triangle$?

(A) 11
(B) 12
(C) 13
(D) 21
(E) 31

253. As a salesperson, Phyllis can choose one of two methods of annual payment: either an annual salary of $35,000 with no commission or an annual salary of $10,000 plus a 20 percent commission on her total annual sales. What must her total annual sales be to give her the same annual pay with either method?

(A) $100,000
(B) $120,000
(C) $125,000
(D) $130,000
(E) $132,000

254. A restaurant buys fruit in cans containing $3\frac{1}{2}$ cups of fruit each. If the restaurant uses $\frac{1}{2}$ cup of the fruit in each serving of its fruit compote, what is the least number of cans needed to prepare 60 servings of the compote?

(A) 7
(B) 8
(C) 9
(D) 10
(E) 12

255. If $x > 3{,}000$, then the value of $\frac{x}{2x+1}$ is closest to

(A) $\frac{1}{6}$
(B) $\frac{1}{3}$
(C) $\frac{10}{21}$
(D) $\frac{1}{2}$
(E) $\frac{3}{2}$

256. Machine A produces 100 parts twice as fast as machine B does. Machine B produces 100 parts in 40 minutes. If each machine produces parts at a constant rate, how many parts does machine A produce in 6 minutes?

(A) 30
(B) 25
(C) 20
(D) 15
(E) 7.5

257. If 18 is 15 percent of 30 percent of a certain number, what is the number?

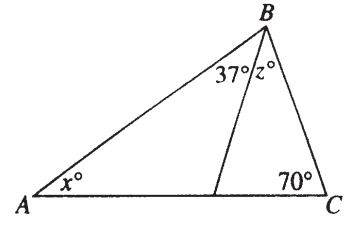
(A) 9
(B) 36
(C) 40
(D) 81
(E) 400

258. A necklace is made by stringing N individual beads together in the repeating pattern red bead, green bead, white bead, blue bead, and yellow bead. If the necklace design begins with a red bead and ends with a white bead, then N could equal

(A) 16
(B) 32
(C) 41
(D) 54
(E) 68

259. If $x = (0.08)^2$, $y = \frac{1}{(0.08)^2}$, and $z = (1 - 0.08)^2 - 1$, which of the following is true?

(A) $x = y = z$
(B) $y < z < x$
(C) $z < x < y$
(D) $y < x$ and $x = z$.
(E) $x < y$ and $x = z$.



260. In $\triangle ABC$ above, what is x in terms of z ?

(A) $z + 73$
(B) $z - 73$
(C) $70 - z$
(D) $z - 70$
(E) $73 - z$

261. In 1990 a total of x earthquakes occurred worldwide, some but not all of which occurred in Asia. If m of these earthquakes occurred in Asia, which of the following represents the ratio of the number of earthquakes that occurred in Asia to the number that did not occur in Asia?

(A) $\frac{x}{m}$

(B) $\frac{m}{x}$

(C) $\frac{m}{x-m}$

(D) $\frac{x}{x-m}$

(E) $1-\frac{m}{x}$

262. If $\frac{x+y}{xy}=1$, then $y=$

(A) $\frac{x}{x-1}$

(B) $\frac{x}{x+1}$

(C) $\frac{x-1}{x}$

(D) $\frac{x+1}{x}$

(E) x

263. If $\frac{1}{2}$ of the air in a tank is removed with each stroke of a vacuum pump, what fraction of the original amount of air has been removed after 4 strokes?

(A) $\frac{15}{16}$

(B) $\frac{7}{8}$

(C) $\frac{1}{4}$

(D) $\frac{1}{8}$

(E) $\frac{1}{16}$

264. Last year Department Store X had a sales total for December that was 4 times the average (arithmetic mean) of the monthly sales totals for January through November. The sales total for December was what fraction of the sales total for the year?

(A) $\frac{1}{4}$

(B) $\frac{4}{15}$

(C) $\frac{1}{3}$

(D) $\frac{4}{11}$

(E) $\frac{4}{5}$

265. How many integers n are there such that $1 < 5n + 5 < 25$?

(A) Five
(B) Four
(C) Three
(D) Two
(E) One

266. If the two-digit integers M and N are positive and have the same digits, but in reverse order, which of the following CANNOT be the sum of M and N ?

(A) 181
(B) 165
(C) 121
(D) 99
(E) 44

267. Working alone, printers X, Y, and Z can do a certain printing job, consisting of a large number of pages, in 12, 15, and 18 hours, respectively. What is the ratio of the time it takes printer X to do the job, working alone at its rate, to the time it takes printers Y and Z to do the job, working together at their individual rates?

(A) $\frac{4}{11}$

(B) $\frac{1}{2}$

(C) $\frac{15}{22}$

(D) $\frac{22}{15}$

(E) $\frac{11}{4}$

268. In 1985 a company sold a brand of shoes to retailers for a fixed price per pair. In 1986 the number of pairs of the shoes that the company sold to retailers decreased by 20 percent, while the price per pair increased by 20 percent. If the company's revenue from the sales of the shoes in 1986 was \$3.0 million, what was the approximate revenue from the sale of the shoes in 1985 ?

(A) \$2.4 million
(B) \$2.9 million
(C) \$3.0 million
(D) \$3.1 million
(E) \$3.6 million

269. $\dfrac{(3)(0.072)}{0.54} =$

(A) 0.04
(B) 0.3
(C) 0.4
(D) 0.8
(E) 4.0

270. A car dealer sold x used cars and y new cars during May. If the number of used cars sold was 10 greater than the number of new cars sold, which of the following expresses this relationship?

(A) $x > 10y$
(B) $x > y + 10$
(C) $x > y - 10$
(D) $x = y + 10$
(E) $x = y - 10$

271. What is the maximum number of $1\frac{1}{4}$-foot pieces of wire that can be cut from a wire that is 24 feet long?

(A) 11
(B) 18
(C) 19
(D) 20
(E) 30

272. If each of the two lines ℓ_1 and ℓ_2 is parallel to line ℓ_3, which of the following must be true?

(A) Lines ℓ_1, ℓ_2, and ℓ_3 lie in the same plane.
(B) Lines ℓ_1, ℓ_2, and ℓ_3 lie in different planes.
(C) Line ℓ_1 is parallel to line ℓ_2.
(D) Line ℓ_1 is the same line as line ℓ_2.
(E) Line ℓ_1 is the same line as line ℓ_3.

$$\frac{61.24 \times (0.998)^2}{\sqrt{403}}$$

273. The expression above is approximately equal to

(A) 1
(B) 3
(C) 4
(D) 5
(E) 6

274. Car X and car Y traveled the same 80-mile route. If car X took 2 hours and car Y traveled at an average speed that was 50 percent faster than the average speed of car X, how many hours did it take car Y to travel the route?

(A) $\frac{2}{3}$
(B) 1
(C) $1\frac{1}{3}$
(D) $1\frac{3}{5}$
(E) 3

275. If the numbers $\frac{17}{24}$, $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, and $\frac{9}{16}$ were ordered from greatest to least, the middle number of the resulting sequence would be

(A) $\frac{17}{24}$
(B) $\frac{1}{2}$
(C) $\frac{3}{8}$
(D) $\frac{3}{4}$
(E) $\frac{9}{16}$

276. If a 10 percent deposit that has been paid toward the purchase of a certain product is \$110, how much more remains to be paid?

(A) \$880
(B) \$990
(C) \$1,000
(D) \$1,100
(E) \$1,210

277. Kim purchased n items from a catalog for \$8 each. Postage and handling charges consisted of \$3 for the first item and \$1 for each additional item. Which of the following gives the total dollar amount of Kim's purchase, including postage and handling, in terms of n?

(A) $8n + 2$
(B) $8n + 4$
(C) $9n + 2$
(D) $9n + 3$
(E) $9n + 4$

278. $\left(\sqrt{7} + \sqrt{7}\right)^2 =$

(A) 98
(B) 49
(C) 28
(D) 21
(E) 14

279. If the average (arithmetic mean) of the four numbers K, $2K + 3$, $3K - 5$, and $5K + 1$ is 63, what is the value of K?

(A) 11
(B) $15\frac{3}{4}$
(C) 22
(D) 23
(E) $25\frac{3}{10}$

280. A rabbit on a controlled diet is fed daily 300 grams of a mixture of two foods, food X and food Y. Food X contains 10 percent protein and food Y contains 15 percent protein. If the rabbit's diet provides exactly 38 grams of protein daily, how many grams of food X are in the mixture?

(A) 100
(B) 140
(C) 150
(D) 160
(E) 200

281. A company that ships boxes to a total of 12 distribution centers uses color coding to identify each center. If either a single color or a pair of two different colors is chosen to represent each center and if each center is uniquely represented by that choice of one or two colors, what is the minimum number of colors needed for the coding? (Assume that the order of the colors in a pair does not matter.)

(A) 4
(B) 5
(C) 6
(D) 12
(E) 24

282. If $x + y = a$ and $x - y = b$, then $2xy =$

(A) $\frac{a^2 - b^2}{2}$
(B) $\frac{b^2 - a^2}{2}$
(C) $\frac{a - b}{2}$
(D) $\frac{ab}{2}$
(E) $\frac{a^2 + b^2}{2}$

283. A rectangular circuit board is designed to have width w inches, perimeter p inches, and area k square inches. Which of the following equations must be true?

(A) $w^2 + pw + k = 0$
(B) $w^2 - pw + 2k = 0$
(C) $2w^2 + pw + 2k = 0$
(D) $2w^2 - pw - 2k = 0$
(E) $2w^2 - pw + 2k = 0$

284. On a certain road, 10 percent of the motorists exceed the posted speed limit and receive speeding tickets, but 20 percent of the motorists who exceed the posted speed limit do not receive speeding tickets. What percent of the motorists on that road exceed the posted speed limit?

(A) $10\frac{1}{2}\%$
(B) $12\frac{1}{2}\%$
(C) 15%
(D) 22%
E) 30%

285. If p is an even integer and q is an odd integer, which of the following must be an odd integer?

(A) $\frac{p}{q}$

(B) pq

(C) $2p + q$

(D) $2(p + q)$

(E) $\frac{3p}{q}$

286. A certain college has a student-to-teacher ratio of 11 to 1. The average (arithmetic mean) annual salary for teachers is \$26,000. If the college pays a total of \$3,380,000 in annual salaries to its teachers, how many students does the college have?

(A) 130
(B) 169
(C) 1,300
(D) 1,430
(E) 1,560

287. Last year if 97 percent of the revenues of a company came from domestic sources and the remaining revenues, totaling \$450,000, came from foreign sources, what was the total of the company's revenues?

(A) \$1,350,000
(B) \$1,500,000
(C) \$4,500,000
(D) \$15,000,000
(E) \$150,000,000

288. Drum X is $\frac{1}{2}$ full of oil and drum Y, which has twice the capacity of drum X, is $\frac{2}{3}$ full of oil. If all of the oil in drum X is poured into drum Y, then drum Y will be filled to what fraction of its capacity?

(A) $\frac{3}{4}$

(B) $\frac{5}{6}$

(C) $\frac{11}{12}$

(D) $\frac{7}{6}$

(E) $\frac{11}{6}$

289. In a certain population, there are 3 times as many people aged twenty-one or under as there are people over twenty-one. The ratio of those twenty-one or under to the total population is

(A) 1 to 2
(B) 1 to 3
(C) 1 to 4
(D) 2 to 3
(E) 3 to 4

290. $\frac{2+2\sqrt{6}}{2} =$

(A) $\sqrt{6}$

(B) $2\sqrt{6}$

(C) $1+\sqrt{6}$

(D) $1+2\sqrt{6}$

(E) $2+\sqrt{6}$

291. A certain telescope increases the visual range at a particular location from 90 kilometers to 150 kilometers. By what percent is the visual range increased by using the telescope?

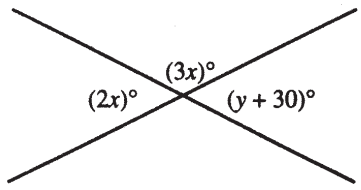
(A) 30%

(B) $33\frac{1}{2}\%$

(C) 40%

(D) 60%

(E) $66\frac{2}{3}\%$



Note: Figure not drawn to scale.

292. In the figure above, the value of y is

(A) 6
(B) 12
(C) 24
(D) 36
(E) 42

293. A part-time employee whose hourly wage was increased by 25 percent decided to reduce the number of hours worked per week so that the employee's total weekly income would remain unchanged. By what percent should the number of hours worked be reduced?

(A) 12.5%
(B) 20%
(C) 25%
(D) 50%
(E) 75%

294. If $x > 0$, $\frac{x}{50} + \frac{x}{25}$ is what percent of x?

(A) 6%

(B) 25%

(C) $37\frac{1}{2}\%$

(D) 60%

(E) 75%

295. If the operation $\circledcirc$ is defined for all a and b by the equation $a \circledcirc b = \frac{a^2 b}{3}$, then $2 \circledcirc (3 \circledcirc -1) =$

(A) 4

(B) 2

(C) $-\frac{4}{3}$

(D) -2

(E) -4

296. A factory that employs 1,000 assembly-line workers pays each of these workers \$5 per hour for the first 40 hours worked during a week and $1\frac{1}{2}$ times that rate for hours worked in excess of 40. What was the total payroll for the assembly-line workers for a week in which 30 percent of them worked 20 hours, 50 percent worked 40 hours, and the rest worked 50 hours?

(A) \$180,000
(B) \$185,000
(C) \$190,000
(D) \$200,000
(E) \$205,000

297. If $x \neq 2$, then $\frac{3x^2(x-2) - x + 2}{x-2} =$

(A) $3x^2 - x + 2$

(B) $3x^2 + 1$

(C) $3x^2$

(D) $3x^2 - 1$

(E) $3x^2 - 2$

298. In a certain school, 40 more than $\frac{1}{3}$ of all the students are taking a science course and $\frac{1}{4}$ of those taking a science course are taking physics. If $\frac{1}{8}$ of all the students in the school are taking physics, how many students are in the school?

(A) 240
(B) 300
(C) 480
(D) 720
(E) 960

299. If $d > 0$ and $0 < 1 - \frac{c}{d} < 1$, which of the following must be true?

I. $c > 0$

II. $\frac{c}{d} < 1$

III. $c^2 + d^2 > 1$

(A) I only
(B) II only
(C) I and II only
(D) II and III only
(E) I, II, and III

300. The inside dimensions of a rectangular wooden box are 6 inches by 8 inches by 10 inches. A cylindrical cannister is to be placed inside the box so that it stands upright when the closed box rests on one of its six faces. Of all such cannisters that could be used, what is the radius, in inches, of the one that has maximum volume?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 8

301. $\dfrac{\frac{1}{2}}{\frac{1}{4}+\frac{1}{6}} =$

(A) $\frac{6}{5}$
(B) $\frac{5}{6}$
(C) $\frac{5}{24}$
(D) $\frac{1}{5}$
(E) $\frac{1}{12}$

302. Kelly and Chris packed several boxes with books. If Chris packed 60 percent of the total number of boxes, what was the ratio of the number of boxes Kelly packed to the number of boxes Chris packed?

(A) 1 to 6
(B) 1 to 4
(C) 2 to 5
(D) 3 to 5
(E) 2 to 3

303. A train travels from New York City to Chicago, a distance of approximately 840 miles, at an average rate of 60 miles per hour and arrives in Chicago at 6:00 in the evening, Chicago time. At what hour in the morning, New York City time, did the train depart for Chicago? (Note: Chicago time is one hour earlier than New York City time.)

(A) 4:00
(B) 5:00
(C) 6:00
(D) 7:00
(E) 8:00

304. Of the following, which is the closest approximation of $\frac{50.2 \times 0.49}{199.8}$?

(A) $\frac{1}{10}$

(B) $\frac{1}{8}$

(C) $\frac{1}{4}$

(D) $\frac{5}{4}$

(E) $\frac{25}{2}$

305. Last year Manfred received 26 paychecks. Each of his first 6 paychecks was \$750; each of his remaining paychecks was \$30 more than each of his first 6 paychecks. To the nearest dollar, what was the average (arithmetic mean) amount of his paychecks for the year?

(A) \$752
(B) \$755
(C) \$765
(D) \$773
(E) \$775

306. A certain pair of used shoes can be repaired for \$12.50 and will last for 1 year. A pair of the same kind of shoes can be purchased new for \$28.00 and will last for 2 years. The average cost per year of the new shoes is what percent greater than the cost of repairing the used shoes?

(A) 3%
(B) 5%
(C) 12%
(D) 15%
(E) 24%

307. In a certain brick wall, each row of bricks above the bottom row contains one less brick than the row just below it. If there are 5 rows in all and a total of 75 bricks in the wall, how many bricks does the bottom row contain?

(A) 14
(B) 15
(C) 16
(D) 17
(E) 18

308. If 25 percent of p is equal to 10 percent of q, and $pq \neq 0$, then p is what percent of q ?

(A) 2.5%
(B) 15%
(C) 20%
(D) 35%
(E) 40%

309. If the length of an edge of cube X is twice the length of an edge of cube Y, what is the ratio of the volume of cube Y to the volume of cube X ?

(A) $\frac{1}{2}$

(B) $\frac{1}{4}$

(C) $\frac{1}{6}$

(D) $\frac{1}{8}$

(E) $\frac{1}{27}$

310. $(\sqrt{2}+1)(\sqrt{2}-1)(\sqrt{3}+1)(\sqrt{3}-1) =$

(A) 2

(B) 3

(C) $2\sqrt{6}$

(D) 5

(E) 6

311. In a certain calculus class, the ratio of the number of mathematics majors to the number of students who are not mathematics majors is 2 to 5. If 2 more mathematics majors were to enter the class, the ratio would be 1 to 2. How many students are in the class?

(A) 10
(B) 12
(C) 21
(D) 28
(E) 35

312. Machines A and B always operate independently and at their respective constant rates. When working alone, machine A can fill a production lot in 5 hours, and machine B can fill the same lot in x hours. When the two machines operate simultaneously to fill the production lot, it takes them 2 hours to complete the job. What is the value of x?

(A) $3\frac{1}{3}$

(B) 3

(C) $2\frac{1}{2}$

(D) $2\frac{1}{3}$

(E) $1\frac{1}{2}$

313. In the xy-coordinate system, if (a, b) and $(a+3, b+k)$ are two points on the line defined by the equation $x = 3y - 7$, then $k =$

(A) 9

(B) 3

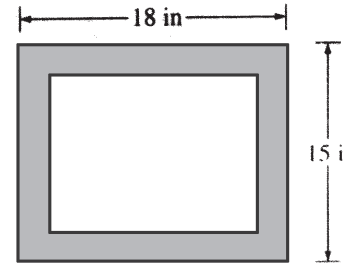
(C) $\frac{7}{3}$

(D) 1

(E) $\frac{1}{3}$

314. What is the units digit of $(13)^4(17)^2(29)^3$?

(A) 9
(B) 7
(C) 5
(D) 3
(E) 1



Note: Figure not drawn to scale.

315. The shaded region in the figure above represents a rectangular frame with length 18 inches and width 15 inches. The frame encloses a rectangular picture that has the same area as the frame itself. If the length and width of the picture have the same ratio as the length and width of the frame, what is the length of the picture, in inches?

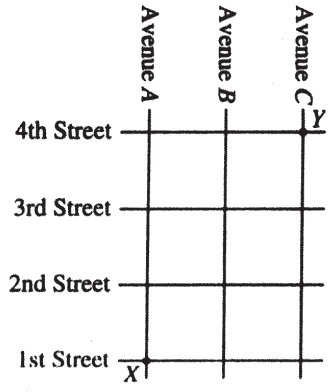
(A) $9\sqrt{2}$

(B) $\frac{3}{2}$

(C) $\frac{9}{\sqrt{2}}$

(D) $15\left(1-\frac{1}{\sqrt{2}}\right)$

(E) $\frac{9}{2}$

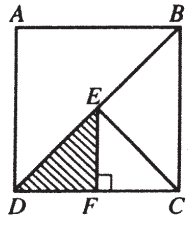


316. Pat will walk from intersection X to intersection Y along a route that is confined to the square grid of four streets and three avenues shown in the map above. How many routes from X to Y can Pat take that have the minimum possible length?

(A) Six
(B) Eight
(C) Ten
(D) Fourteen
(E) Sixteen

317. A certain fishing boat is chartered by 6 people who are to contribute equally to the total charter cost of \$480. If each person contributes equally to a \$150 down payment, how much of the charter cost will each person still owe?

(A) \$80 (B) \$66 (C) \$55 (D) \$50 (E) \$45



318. In square $ABCD$ above, if $DE = EB$ and $DF = FC$, then the area of the shaded region is what fraction of the area of square region $ABCD$?

(A) $\frac{1}{16}$ (B) $\frac{1}{8}$ (C) $\frac{1}{6}$ (D) $\frac{1}{4}$ (E) $\frac{1}{3}$

319. Craig sells major appliances. For each appliance he sells, Craig receives a commission of \$50 plus 10 percent of the selling price. During one particular week Craig sold 6 appliances for selling prices totaling \$3,620. What was the total of Craig's commissions for that week?

(A) \$412 (B) \$526 (C) \$585
(D) \$605 (E) \$662

320. The average (arithmetic mean) of 10, 30, and 50 is 5 more than the average of 20, 40, and

(A) 15 (B) 25 (C) 35 (D) 45 (E) 55

321. What number when multiplied by $\frac{4}{7}$ yields $\frac{6}{7}$ as the result?

(A) $\frac{2}{7}$ (B) $\frac{2}{3}$ (C) $\frac{3}{2}$ (D) $\frac{24}{7}$ (E) $\frac{7}{2}$

322. If $y = 4 + (x - 3)^2$, then y is least when $x =$

(A) -4 (B) -3 (C) 0 (D) 3 (E) 4

323. If 3 pounds of dried apricots that cost x dollars per pound are mixed with 2 pounds of prunes that cost y dollars per pound, what is the cost, in dollars, per pound of the mixture?

(A) $\frac{3x+2y}{5}$

(B) $\frac{3x+2y}{x+y}$

(C) $\frac{3x+2y}{xy}$

(D) $5(3x + 2y)$

(E) $3x + 2y$

324. A cashier mentally reversed the digits of one customer's correct amount of change and thus gave the customer an incorrect amount of change. If the cash register contained 45 cents more than it should have as a result of this error, which of the following could have been the correct amount of change in cents?

(A) 14 (B) 45 (C) 54 (D) 65 (E) 83

325. Which of the following is NOT equal to the square of an integer?

(A) $\sqrt{\sqrt{1}}$ (B) $\sqrt{4}$ (C) $\frac{18}{2}$

(D) $41 - 25$ (E) 36

326. An artist wishes to paint a circular region on a square poster that is 2 feet on a side. If the area of the circular region is to be $\frac{1}{2}$ the area of the poster, what must be the radius of the circular region in feet?

(A) $\frac{1}{\pi}$ (B) $\sqrt{\frac{2}{\pi}}$ (C) 1 (D) $\frac{2}{\sqrt{\pi}}$ (E) $\frac{\pi}{2}$

327. Which of the following must be equal to zero for all real numbers x ?

I. $-\frac{1}{x}$

II. $x + (-x)$

III. x^0

(A) I only
(B) II only
(C) I and III only
(D) II and III only
(E) I, II, and III

328. At the rate of m meters per s seconds, how many meters does a cyclist travel in x minutes?

(A) $\frac{m}{sx}$ (B) $\frac{mx}{s}$ (C) $\frac{60m}{sx}$

(D) $\frac{60ms}{x}$ (E) $\frac{60mx}{s}$

	City *A*	City *B*	City *C*	City *D*	City *E*	City *F*
City *A*						
City *B*						
City *C*						
City *D*						
City *E*						
City *F*						

329. In the table above, what is the least number of table entries that are needed to show the mileage between each city and each of the other five cities?

(A) 15 (B) 21 (C) 25 (D) 30 (E) 36

330. A certain tax rate is \$0.82 per \$100.00. What is this rate, expressed as a percent?

(A) 82% (B) 8.2% (C) 0.82%
(D) 0.082% (E) 0.0082%

331. Fermat primes are prime numbers that can be written in the form $2^k + 1$, where k is an integer and a power of 2. Which of the following is NOT a Fermat prime?

(A) 3 (B) 5 (C) 17 (D) 31 (E) 257

332. A shipment of 1,500 heads of cabbage, each of which was approximately the same size, was purchased for \$600. The day the shipment arrived, $\frac{2}{3}$ of the heads were sold, each at 25 percent above the cost per head. The following day the rest were sold at a price per head equal to 10 percent less than the price each head sold for on the day before. What was the gross profit on this shipment?

(A) \$100 (B) \$115 (C) \$125
(D) \$130 (E) \$135

333. If $(t - 8)$ is a factor of $t^2 - kt - 48$, then $k =$

(A) -6 (B) -2 (C) 2 (D) 6 (E) 14

334. If a is a positive integer, and if the units' digit of a^2 is 9 and the units' digit of $(a + 1)^2$ is 4, what is the units' digit of $(a + 2)^2$?

(A) 1 (B) 3 (C) 5 (D) 7 (E) 9

335. The ratio, by volume, of soap to alcohol to water in a certain solution is 2 : 50 : 100. The solution will be altered so that the ratio of soap to alcohol is doubled while the ratio of soap to water is halved. If the altered solution will contain 100 cubic centimeters of alcohol, how many cubic centimeters of water will it contain?

(A) 50 (B) 200 (C) 400 (D) 625 (E) 800

336. If 75 percent of a class answered the first question on a certain test correctly, 55 percent answered the second question on the test correctly, and 20 percent answered neither of the questions correctly, what percent answered both correctly?

(A) 10% (B) 20% (C) 30%
(D) 50% (E) 65%

337. $\frac{31}{125} =$

(A) 0.248
(B) 0.252
(C) 0.284
(D) 0.312
(E) 0.320

338. Members of a social club met to address 280 newsletters. If they addressed $\frac{1}{4}$ of the newsletters during the first hour and $\frac{2}{5}$ of the remaining newsletters during the second hour, how many newsletters did they address during the second hour?

(A) 28 (B) 42 (C) 63 (D) 84 (E) 112

339. If $x^2 = 2y^3$ and $2y = 4$, what is the value of $x^2 + y$?

(A) -14
(B) -2
(C) 3
(D) 6
(E) 18

340. If the cost of 12 eggs varies between \$0.90 and \$1.20, then the cost per egg varies between

(A) \$0.06 and \$0.08
(B) \$0.065 and \$0.085
(C) \$0.07 and \$0.09
(D) \$0.075 and \$0.10
(E) \$0.08 and \$0.105

341. $(\sqrt{3}+2)(\sqrt{3}-2) =$

(A) $\sqrt{3}-4$ (B) $\sqrt{6}-4$ (C) -1
(D) 1 (E) 2

342. A glucose solution contains 15 grams of glucose per 100 cubic centimeters of solution. If 45 cubic centimeters of the solution were poured into an empty container, how many grams of glucose would be in the container?

(A) 3.00
(B) 5.00
(C) 5.50
(D) 6.50
(E) 6.75

343. If Sam were twice as old as he is, he would be 40 years older than Jim. If Jim is 10 years younger than Sam, how old is Sam?

(A) 20
(B) 30
(C) 40
(D) 50
(E) 60

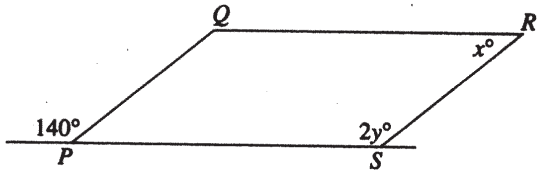
344. If $\frac{1}{2}+\frac{1}{3}+\frac{1}{4}=\frac{13}{x}$, which of the following must be an integer?

I. $\frac{x}{8}$

II. $\frac{x}{12}$

III. $\frac{x}{24}$

(A) I only (B) II only (C) I and III only
(D) II and III only (E) I, II, and III

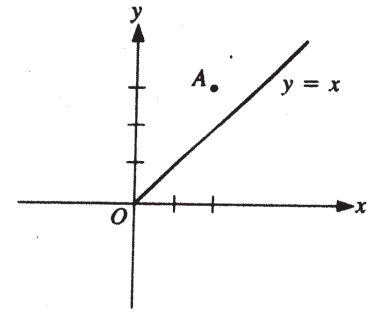


345. In the figure above, if $PQRS$ is a parallelogram, then $y - x =$

(A) 30 (B) 35 (C) 40 (D) 70 (E) 100

346. The temperature in degrees Celsius (C) can be converted to temperature in degrees Fahrenheit (F) by the formula $F = \frac{9}{5}C + 32$. What is the temperature at which $F = C$?

(A) 20° (B) $\left(\frac{32}{5}\right)°$ (C) 0°
(D) −20° (E) −40°



347. In the rectangular coordinate system above, the line $y = x$ is the perpendicular bisector of segment AB (not shown), and the x-axis is the perpendicular bisector of segment BC (not shown). If the coordinates of point A are (2, 3), what are the coordinates of point C?

(A) (−3, −2)
(B) (−3, 2)
(C) (2, −3)
(D) (3, −2)
(E) (2, 3)

348. If 1 kilometer is approximately 0.6 mile, which of the following best approximates the number of kilometers in 2 miles?

(A) $\frac{10}{3}$ (B) 3 (C) $\frac{6}{5}$ (D) $\frac{1}{3}$ (E) $\frac{3}{10}$

349. A \$500 investment and a \$1,500 investment have a combined yearly return of 8.5 percent of the total of the two investments. If the \$500 investment has a yearly return of 7 percent, what percent yearly return does the \$1,500 investment have?

(A) 9%
(B) 10%
(C) $10\frac{5}{8}\%$
(D) 11%
(E) 12%

350. A store currently charges the same price for each towel that it sells. If the current price of each towel were to be increased by \$1, 10 fewer of the towels could be bought for \$120, excluding sales tax. What is the current price of each towel?

(A) \$1
(B) \$2
(C) \$3
(D) \$4
(E) \$12

351. If the sum of n consecutive integers is 0, which of the following must be true?

I. n is an even number.
II. n is an odd number.
III. The average (arithmetic mean) of the n integers is 0.

(A) I only (B) II only (C) III only
(D) I and III (E) II and III

352. In the formula $V = \frac{1}{(2r)^3}$, if r is halved, then V is multiplied by

(A) 64

(B) 8

(C) 1

(D) $\frac{1}{8}$

(E) $\frac{1}{64}$

353. For any integer n greater than 1, $\underline{\lfloor n}$ denotes the product of all the integers from 1 to n, inclusive. How many prime numbers are there between $\underline{\lfloor 6} + 2$ and $\underline{\lfloor 6} + 6$, inclusive?

(A) None (B) One (C) Two
(D) Three (E) Four

354. In how many arrangements can a teacher seat 3 girls and 3 boys in a row of 6 seats if the boys are to have the first, third, and fifth seats?

(A) 6 (B) 9 (C) 12 (D) 36 (E) 720

355. A circular rim 28 inches in diameter rotates the same number of inches per second as a circular rim 35 inches in diameter. If the smaller rim makes x revolutions per second, how many revolutions per minute does the larger rim make in terms of x ?

(A) $\frac{48\pi}{x}$

(B) $75x$

(C) $48x$

(D) $24x$

(E) $\frac{x}{75}$

356. The cost C of manufacturing a certain product can be estimated by the formula $C = 0.03rst^2$, where r and s are the amounts, in pounds, of the two major ingredients and t is the production time, in hours. If r is increased by 50 percent, s is increased by 20 percent, and t is decreased by 30 percent, by approximately what percent will the estimated cost of manufacturing the product change?

(A) 40% increase
(B) 12% increase
(C) 4% increase
(D) 12% decrease
(E) 24% decrease

357. Reggie purchased a car costing $8,700. As a down payment he used a $2,300 insurance settlement, and an amount from his savings equal to 15 percent of the difference between the cost of the car and the insurance settlement. If he borrowed the rest of the money needed to purchase the car, how much did he borrow?

(A) $6,400
(B) $6,055
(C) $5,440
(D) $5,095
(E) $3,260

MEMBERSHIP OF ORGANIZATION *X*, 1988

Honorary Members	78
Fellows	9,209
Members	35,509
Associate Members	27,909
Affiliates	2,372

358. According to the table above, the number of fellows was approximately what percent of the total membership of Organization *X*?

(A) 9%
(B) 12%
(C) 18%
(D) 25%
(E) 35%

359. The arithmetic mean and standard deviation of a certain normal distribution are 13.5 and 1.5, respectively. What value is exactly 2 standard deviations less than the mean?

(A) 10.5
(B) 11.0
(C) 11.5
(D) 12.0
(E) 12.5

360. Mark bought a set of 6 flower pots of different sizes at a total cost of $8.25. Each pot cost $0.25 more than the next one below it in size. What was the cost, in dollars, of the largest pot?

(A) $1.75
(B) $1.85
(C) $2.00
(D) $2.15
(E) $2.30

361. When N is divided by T, the quotient is S and the remainder is V. Which of the following expressions is equal to N?

(A) ST
(B) $S + V$
(C) $ST + V$
(D) $T(S + V)$
(E) $T(S - V)$

38, 69, 22, 73, 31, 47, 13, 82

362. Which of the following numbers is greater than three-fourths of the numbers but less than one-fourth of the numbers in the list above?

(A) 56
(B) 68
(C) 69
(D) 71
(E) 73

363. Lucy invested $10,000 in a new mutual fund account exactly three years ago. The value of the account increased by 10 percent during the first year, increased by 5 percent during the second year, and decreased by 10 percent during the third year. What is the value of the account today?

(A) $10,350
(B) $10,395
(C) $10,500
(D) $11,500
(E) $12,705

364. A certain bakery has 6 employees. It pays annual salaries of $14,000 to each of 2 employees, $16,000 to 1 employee, and $17,000 to each of the remaining 3 employees. The average (arithmetic mean) annual salary of these employees is closest to which of the following?

(A) $15,200
(B) $15,500
(C) $15,800
(D) $16,000
(E) $16,400

365. If x is equal to the sum of the even integers from 40 to 60, inclusive, and y is the number of even integers from 40 to 60, inclusive, what is the value of $x+y$?

(A) 550
(B) 551
(C) 560
(D) 561
(E) 572

366. If $\left(7^{\frac{3}{4}}\right)^n = 7$, what is the value of n?

(A) $\frac{1}{3}$
(B) $\frac{2}{3}$
(C) $\frac{4}{3}$
(D) $\frac{5}{3}$
(E) $\frac{6}{3}$

367. Which of the following is equal to the average (arithmetic mean) of $(x+2)^2$ and $(x-2)^2$?

(A) x^2
(B) x^2+2
(C) x^2+4
(D) x^2+2x
(E) x^2+4x

368. If $x^4+y^4=100$ then the greatest possible value of x is between

(A) 0 and 3
(B) 3 and 6
(C) 6 and 9
(D) 9 and 12
(E) 12 and 15

369. During a car trip, Maria stopped to rest after she traveled $\frac{1}{2}$ of the total distance to her destination. She stopped again after she traveled $\frac{1}{4}$ of the distance remaining between her first stop and her destination, and then she drove the remaining 120 miles to her destination. What was the total distance, in miles, from Maria's starting point to her destination?

(A) 280
(B) 320
(C) 360
(D) 420
(E) 480

NUMBER OF SOLID-COLORED MARBLES IN THREE JARS

Jar	Number of Red Marbles	Number of Green Marbles	Total Number of Red and Green Marbles
P	x	y	80
Q	y	z	120
R	x	z	160

370. In the table above, what is the number of green marbles in jar R?

(A) 70
(B) 80
(C) 90
(D) 100
(E) 110

371. The cost of picture frame M is \$10.00 less than 3 times the cost of picture frame N. If the cost of frame M is \$50.00, what is the cost of frame N?

(A) \$13.33
(B) \$16.66
(C) \$20.00
(D) \$26.66
(E) \$40.00

372. If x is to be chosen at random from the set $\{1, 2, 3, 4\}$ and y is to be chosen at random from the set $\{5, 6, 7\}$, what is the probability that xy will be even?

(A) $\frac{1}{6}$

(B) $\frac{1}{3}$

(C) $\frac{1}{2}$

(D) $\frac{2}{3}$

(E) $\frac{5}{6}$

373. If $S = \{0, 4, 5, 2, 11, 8\}$, how much greater than the median of the numbers in S is the mean of the numbers in S?

(A) 0.5
(B) 1.0
(C) 1.5
(D) 2.0
(E) 2.5

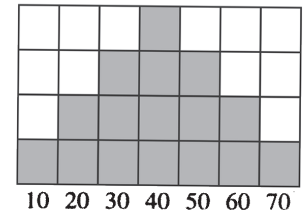
374. The value of $\sqrt[3]{-89}$ is

(A) between –9 and –10
(B) between –8 and –9
(C) between –4 and –5
(D) between –3 and –4
(E) undefined

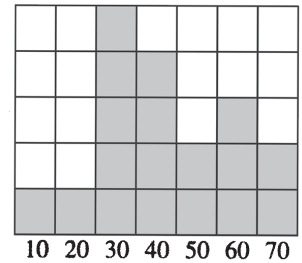
Shipment	Number of Defective Chips in the Shipment	Total Number of Chips in the Shipment
$S1$	2	5,000
$S2$	5	12,000
$S3$	6	18,000
$S4$	4	16,000

375. A computer chip manufacturer expects the ratio of the number of defective chips to the total number of chips in all future shipments to equal the corresponding ratio for shipments $S1$, $S2$, $S3$, and $S4$ combined, as shown in the table above. What is the expected number of defective chips in a shipment of 60,000 chips?

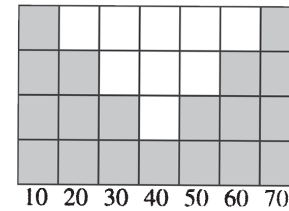
(A) 14
(B) 20
(C) 22
(D) 24
(E) 25



X



Y



Z

376. If the variables, X, Y, and Z take on only the values 10, 20, 30, 40, 50, 60, or 70 with frequencies indicated by the shaded regions above, for which of the frequency distributions is the mean equal to the median?

(A) X only
(B) Y only
(C) Z only
(D) X and Y
(E) X and Z

377. In a certain furniture store, each week Nancy earns a salary of \$240 plus 5 percent of the amount of her total sales that exceeds \$800 for the week. If Nancy earned a total of \$450 one week, what were her total sales that week?

(A) \$2,200
(B) \$3,450
(C) \$4,200
(D) \$4,250
(E) \$5,000

$A = \{2, 3, 4, 5\}$
$B = \{4, 5, 6, 7, 8\}$

378. Two integers will be randomly selected from the sets above, one integer from set A and one integer from set B. What is the probability that the sum of the two integers will equal 9?

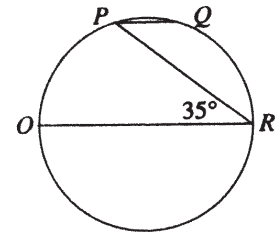
(A) 0.15
(B) 0.20
(C) 0.25
(D) 0.30
(E) 0.33

p, r, s, t, u

379. An arithmetic sequence is a sequence in which each term after the first is equal to the sum of the preceding term and a constant. If the list of numbers shown above is an arithmetic sequence, which of the following must also be an arithmetic sequence?

I. $2p, 2r, 2s, 2t, 2u$
II. $p-3, r-3, s-3, t-3, u-3$
III. p^2, r^2, s^2, t^2, u^2

(A) I only
(B) II only
(C) III only
(D) I and II
(E) II and III



380. In the circle above, PQ is parallel to diameter OR, and OR has length 18. What is the length of minor arc PQ ?

(A) 2π
(B) $\frac{9\pi}{4}$
(C) $\frac{7\pi}{2}$
(D) $\frac{9\pi}{2}$
(E) 3π

381. Dick and Jane each saved \$3,000 in 1989. In 1990 Dick saved 8 percent more than in 1989, and together he and Jane saved a total of \$5,000. Approximately what percent less did Jane save in 1990 than in 1989 ?

(A) 8%
(B) 25%
(C) 41%
(D) 59%
(E) 70%

382. Of the following, which is <u>least</u>?

(A) $\frac{1}{0.2}$
(B) $(0.2)^2$
(C) 0.02
(D) $\frac{0.2}{2}$
(E) 0.2

383. S represents the sum of the weights of n fish in pounds. Which of the following represents the average (arithmetic mean) of the n weights in ounces? (1 pound = 16 ounces)

(A) $16nS$

(B) $\frac{16S}{n}$

(C) $\frac{16n}{S}$

(D) $\frac{nS}{16}$

(E) $\frac{S}{16n}$

NET INCOME BY SECTOR,
SECOND QUARTER, 1996

Sector	Net Income (in billions)	Percent Change from First Quarter, 1996
Basic Materials	$4.83	–26%
Energy	7.46	+40
Industrial	5.00	–1
Utilities	8.57	+303
Conglomerates	2.07	+10

384. The table above represents the combined net income of all United States companies in each of five sectors for the second quarter of 1996. Which sector had the greatest net income during the first quarter of 1996 ?

(A) Basic Materials
(B) Energy
(C) Industrial
(D) Utilities
(E) Conglomerates

385. For how many integers n is $2^n = n^2$?

(A) None
(B) One
(C) Two
(D) Three
(E) More than three

386. The manager of a theater noted that for every 10 admission tickets sold, the theater sells 3 bags of popcorn at $2.25 each, 4 sodas at $1.50 each, and 2 candy bars at $1.00 each. To the nearest cent, what is the average (arithmetic mean) amount of these snack sales per ticket sold?

(A) $1.48
(B) $1.58
(C) $1.60
(D) $1.64
(E) $1.70

387. If $n = 4p$, where p is a prime number greater than 2, how many different positive <u>even</u> divisors does n have, including n ?

(A) Two
(B) Three
(C) Four
(D) Six
(E) Eight

388. S is a set containing 9 different numbers. T is a set containing 8 different numbers, all of which are members of S. Which of the following statements CANNOT be true?

(A) The mean of S is equal to the mean of T.
(B) The median of S is equal to the median of T.
(C) The range of S is equal to the range of T.
(D) The mean of S is greater than the mean of T.
(E) The range of S is less than the range of T.

389. In a recent election, James received 0.5 percent of the 2,000 votes cast. To win the election, a candidate needed to receive more than 50 percent of the vote. How many additional votes would James have needed to win the election?

(A) 901
(B) 989
(C) 990
(D) 991
(E) 1,001

390. The regular price per can of a certain brand of soda is $0.40. If the regular price per can is discounted 15 percent when the soda is purchased in 24-can cases, what is the price of 72 cans of this brand of soda purchased in 24-can cases?

(A) $16.32
(B) $18.00
(C) $21.60
(D) $24.48
(E) $28.80

391. If r and s are integers and $rs + r$ is odd, which of the following must be even?

(A) r
(B) s
(C) $r + s$
(D) $rs - r$
(E) $r^2 + s$

List I: 3, 6, 8, 19
List II: x, 3, 6, 8, 19

392. If the median of the numbers in list I above is equal to the median of the numbers in list II above, what is the value of x ?

(A) 6
(B) 7
(C) 8
(D) 9
(E) 10

393. If $d = 2.0453$ and d^* is the decimal obtained by rounding d to the nearest hundredth, what is the value of $d^* - d$?

(A) –0.0053
(B) –0.0003
(C) 0.0007
(D) 0.0047
(E) 0.0153

394. Right triangle PQR is to be constructed in the xy-plane so that the right angle is at P and PR is parallel to the x-axis. The x- and y-coordinates of P, Q, and R are to be integers that satisfy the inequalities $-4 \leq x \leq 5$ and $6 \leq y \leq 16$. How many different triangles with these properties could be constructed?

(A) 110
(B) 1,100
(C) 9,900
(D) 10,000
(E) 12,100

395. A box contains 100 balls, numbered from 1 to 100. If three balls are selected at random and with replacement from the box, what is the probability that the sum of the three numbers on the balls selected from the box will be odd?

(A) $\frac{1}{4}$
(B) $\frac{3}{8}$
(C) $\frac{1}{2}$
(D) $\frac{5}{8}$
(E) $\frac{3}{4}$

396. How many different positive integers are factors of 441 ?

(A) 4
(B) 6
(C) 7
(D) 9
(E) 11

397. Company K's earnings were \$12 million last year. If this year's earnings are projected to be 150 percent greater than last year's earnings, what are Company K's projected earnings this year?

(A) \$13.5 million
(B) \$15 million
(C) \$18 million
(D) \$27 million
(E) \$30 million

2, 4, 6, 8, n, 3, 5, 7, 9

398. In the list above, if n is an integer between 1 and 10, inclusive, then the median must be

(A) either 4 or 5
(B) either 5 or 6
(C) either 6 or 7
(D) n
(E) 5.5

399. If $0 < x < 1$, which of the following inequalities must be true?

I. $x^5 < x^3$
II. $x^4 + x^5 < x^3 + x^2$
III. $x^4 - x^5 < x^2 - x^3$

(A) None
(B) I only
(C) II only
(D) I and II only
(E) I, II, and III

400. If $(2^x)(2^y) = 8$ and $(9^x)(3^y) = 81$, then $(x, y) =$

(A) (1, 2)
(B) (2, 1)
(C) (1, 1)
(D) (2, 2)
(E) (1, 3)

401. If $a = 1$ and $\frac{a-b}{c}=1$, which of the following is NOT a possible value of b ?

(A) −2
(B) −1
(C) 0
(D) 1
(E) 2

402. Which of the following is equal to x^{18} for all positive values of x ?

(A) $x^9 + x^9$
(B) $(x^2)^9$
(C) $(x^9)^9$
(D) $(x^3)^{15}$
(E) $\frac{x^4}{x^{22}}$

403. A television manufacturer produces 600 units of a certain model each month at a cost to the manufacturer of \$90 per unit and all of the produced units are sold each month. What is the minimum selling price per unit that will ensure that the monthly profit (revenue from sales minus the manufacturer's cost to produce) on the sales of these units will be at least \$42,000 ?

(A) \$110
(B) \$120
(C) \$140
(D) \$160
(E) \$180

404. A square countertop has a square tile inlay in the center, leaving an untiled strip of uniform width around the tile. If the ratio of the tiled area to the untiled area is 25 to 39, which of the following could be the width, in inches, of the strip?

I. $1\frac{1}{2}$
II. 3
III. $4\frac{1}{2}$

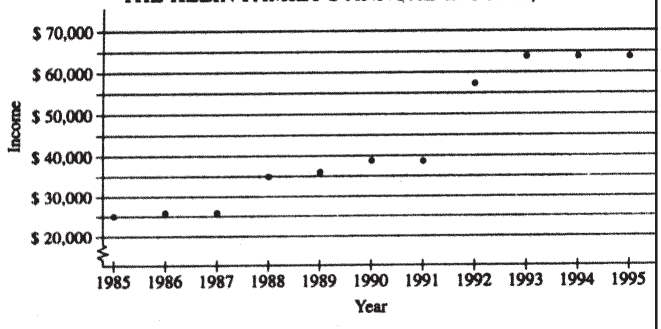
(A) I only
(B) II only
(C) I and II only
(D) I and III only
(E) I, II, and III

$$\begin{array}{r} 4\square 7 \\ \triangle 2\ 3 \\ +\ 1\ 6\ 2 \\ \hline 1,\ 2\ 2\ 2 \end{array}$$

405. If $\square$ and $\triangle$ represent single digits in the correctly worked computation above, what is the value of $\square + \triangle$?

(A) 7
(B) 9
(C) 10
(D) 11
(E) 13

THE KLEIN FAMILY'S ANNUAL INCOME, 1985-1995



406. Which of the following statements can be inferred from the data above?

I. The Klein family's annual income more than doubled from 1985 to 1995.

II. The Klein family's annual income increased by a greater amount from1985 to 1990 than from 1990 to 1995.

III. The Klein family's average (arithmetic mean) annual income for the period shown was greater than $40,000.

(A) I only
(B) II only
(C) I and III only
(D) II and III only
(E) I, II, and III

407. Anne bought a computer for $2,000 and then paid a 5 percent sales tax, and Henry bought a computer for $1,800 and then paid a 12 percent sales tax. The total amount that Henry paid, including sales tax, was what percent less than the total amount that Anne paid, including sales tax?

(A) 3%
(B) 4%
(C) 7%
(D) 10%
(E) 12%

408. If $\frac{x}{y} = \frac{2}{3}$, then $\frac{x-y}{x} =$

(A) $-\frac{1}{2}$
(B) $-\frac{1}{3}$
(C) $\frac{1}{3}$
(D) $\frac{1}{2}$
(E) $\frac{5}{2}$

409. If $4x + 3y = -2$ and $3x + 6 = 0$, what is the value of y ?

(A) $-3\frac{1}{3}$
(B) -2
(C) $-\frac{2}{3}$
(D) $\frac{2}{3}$
(E) 2

I. 72, 73, 74, 75, 76
II. 74, 74, 74, 74, 74
III. 62, 74, 74, 74, 89

410. The data sets I, II, and III above are ordered from greatest standard deviation to least standard deviation in which of the following?

(A) I, II, III
(B) I, III, II
(C) II, III, I
(D) III, I, II
(E) III, II, I

411. The contents of a certain box consist of 14 apples and 23 oranges. How many oranges must be removed from the box so that 70 percent of the pieces of fruit in the box will be apples?

(A) 3
(B) 6
(C) 14
(D) 17
(E) 20

412. If n is a positive integer and n^2 is divisible by 72, then the largest positive integer that must divide n is

(A) 6
(B) 12
(C) 24
(D) 36
(E) 48

413. If –3 is 6 more than x, what is the value of $\frac{x}{3}$?

(A) –9
(B) –6
(C) –3
(D) –1
(E) 1

$$r = 400\left(\frac{D+S-P}{P}\right)$$

414. If stock is sold three months after it is purchased, the formula above relates P, D, S, and r, where P is the purchase price of the stock, D is the amount of any dividend received, S is the selling price of the stock, and r is the yield of the investment as a percent. If Rose purchased $400 worth of stock, received a dividend of $5, and sold the stock for $420 three months after purchasing it, what was the yield of her investment according to the formula? (Assume that she paid no commissions.)

(A) 1.25%
(B) 5%
(C) 6.25%
(D) 20%
(E) 25%

415. An athlete runs R miles in H hours, then rides a bicycle Q miles in the same number of hours. Which of the following represents the athlete's average speed, in miles per hour, for these two activities combined?

(A) $\frac{R-Q}{H}$
(B) $\frac{R-Q}{2H}$
(C) $\frac{2(R+Q)}{H}$
(D) $\frac{2(R+Q)}{2H}$
(E) $\frac{R+Q}{2H}$

416. If a certain sample of data has a mean of 20.0 and a standard deviation of 3.0, which of the following values is more than 2.5 standard deviations from the mean?

(A) 12.0
(B) 13.5
(C) 17.0
(D) 23.5
(E) 26.5

417. Which of the following is the least positive integer that is divisible by 2, 3, 4, 5, 6, 7, 8, and 9 ?

(A) 15,120
(B) 3,024
(C) 2,520
(D) 1,890
(E) 1,680

418. Of the 50 researchers in a workgroup, 40 percent will be assigned to team A and the remaining 60 percent to team B. However, 70 percent of the researchers prefer team A and 30 percent prefer team B. What is the least possible number of researchers who will NOT be assigned to the team they prefer?

(A) 15
(B) 17
(C) 20
(D) 25
(E) 30

419. Last year, a certain public transportation system sold an average (arithmetic mean) of 41,000 tickets per day on weekdays (Monday through Friday) and an average of 18,000 tickets per day on Saturday and Sunday. Which of the following is closest to the total number of tickets sold last year?

(A) 1 million
(B) 1.25 million
(C) 10 million
(D) 12.5 million
(E) 125 million

County	Amount Recycled	Amount Disposed of
A	16,700	142,800
B	8,800	48,000
C	13,000	51,400
D	3,900	20,300
E	3,300	16,200

420. The table above shows the amount of waste material, in tons, recycled by each of five counties in a single year and the amount of waste material, also in tons, that was disposed of in landfills by the five counties in that year. Which county had the lowest ratio of waste material disposed of to waste material recycled in the year reported in the table?

(A) *A*
(B) *B*
(C) *C*
(D) *D*
(E) *E*

421. If a number between 0 and $\frac{1}{2}$ is selected at random, which of the following will the number most likely be between?

(A) 0 and $\frac{3}{20}$
(B) $\frac{3}{20}$ and $\frac{1}{5}$
(C) $\frac{1}{5}$ and $\frac{1}{4}$
(D) $\frac{1}{4}$ and $\frac{3}{10}$
(E) $\frac{3}{10}$ and $\frac{1}{2}$

District	Number of Votes	Percent of Votes for Candidate *P*	Percent of Votes for Candidate *Q*
1	800	60	40
2	1,000	50	50
3	1,500	50	50
4	1,800	40	60
5	1,200	30	70

422. The table above shows the results of a recent school board election in which the candidate with the higher total number of votes from the five districts was declared the winner. Which district had the greatest number of votes for the winner?

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

423. If m is the average (arithmetic mean) of the first 10 positive multiples of 5 and if M is the median of the first 10 positive multiples of 5, what is the value of $M - m$?

(A) −5
(B) 0
(C) 5
(D) 25
(E) 27.5

424. If n is a positive integer less than 200 and $\frac{14n}{60}$ is an integer, then n has how many different positive prime factors?

(A) Two
(B) Three
(C) Five
(D) Six
(E) Eight

Day	Change in Dollars
Monday	$+1\frac{1}{2}$
Tuesday	$-\frac{3}{4}$
Wednesday	0
Thursday	$-\frac{1}{8}$
Friday	$+2\frac{1}{4}$

425. The table above shows the daily change in the price of a certain stock last week. What was the net change in dollars in the price of the stock for the week?

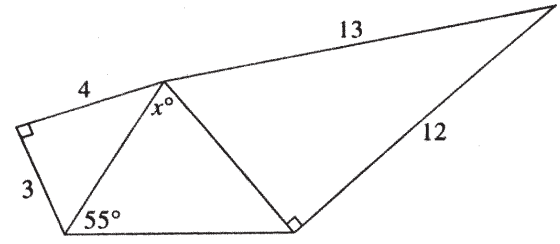
(A) $-4\frac{5}{8}$
(B) $-2\frac{7}{8}$
(C) $+2\frac{7}{8}$
(D) $+3\frac{3}{4}$
(E) $+4\frac{5}{8}$

426. A group of store managers must assemble 280 displays for an upcoming sale. If they assemble 25 percent of the displays during the first hour and 40 percent of the remaining displays during the second hour, how many of the displays will not have been assembled by the end of the second hour?

(A) 70
(B) 98
(C) 126
(D) 168
(E) 182

427. The temperatures in degrees Celsius recorded at 6 in the morning in various parts of a certain country were 10°, 5°, –2°, –1°, –5°, and 15°. What is the median of these temperatures?

(A) –2°C
(B) –1°C
(C) 2°C
(D) 3°C
(E) 5°C



428. In the figure above, what is the value of x ?

(A) 55
(B) 60
(C) 65
(D) 70
(E) 75

1	2	3	4	5	6	7
–2	–4	–6	–8	–10	–12	–14
3	6	9	12	15	18	21
–4	–8	–12	–16	–20	–24	–28
5	10	15	20	25	30	35
–6	–12	–18	–24	–30	–36	–42
7	14	21	28	35	42	49

429. What is the sum of the integers in the table above?

(A) 28
(B) 112
(C) 336
(D) 448
(E) 784

430. If $m > 0$ and x is m percent of y, then, in terms of m, y is what percent of x ?

(A) $100m$

(B) $\frac{1}{100m}$

(C) $\frac{1}{m}$

(D) $\frac{10}{m}$

(E) $\frac{10,000}{m}$

3, k, 2, 8, m, 3

431. The arithmetic mean of the list of numbers above is 4. If k and m are integers and $k \neq m$, what is the median of the list?

(A) 2
(B) 2.5
(C) 3
(D) 3.5
(E) 4

432. A certain junior class has 1,000 students and a certain senior class has 800 students. Among these students, there are 60 sibling pairs, each consisting of 1 junior and 1 senior. If 1 student is to be selected at random from each class, what is the probability that the 2 students selected will be a sibling pair?

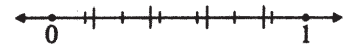
(A) $\frac{3}{40,000}$

(B) $\frac{1}{3,600}$

(C) $\frac{9}{2,000}$

(D) $\frac{1}{60}$

(E) $\frac{1}{15}$



433. On the number line above, the segment from 0 to 1 has been divided into fifths, as indicated by the large tick marks, and also into sevenths, as indicated by the small tick marks. What is the least possible distance between any two of the tick marks?

(A) $\frac{1}{70}$

(B) $\frac{1}{35}$

(C) $\frac{2}{35}$

(D) $\frac{1}{12}$

(E) $\frac{1}{7}$

434. A certain musical scale has 13 notes, each having a different frequency, measured in cycles per second. In the scale, the notes are ordered by increasing frequency, and the highest frequency is twice the lowest. For each of the 12 lower frequencies, the ratio of a frequency to the next higher frequency is a fixed constant. If the lowest frequency is 440 cycles per second, then the frequency of the 7th note in the scale is how many cycles per second?

(A) $440\sqrt{2}$

(B) $440\sqrt{2^7}$

(C) $440\sqrt{2^{12}}$

(D) $440\sqrt[12]{2^7}$

(E) $440\sqrt[7]{2^{12}}$

435. If $a = 7$ and $b = -7$, what is the value of $2a - 2b + b^2$?

(A) –49
(B) 21
(C) 49
(D) 63
(E) 77

436. Equal amounts of water were poured into two empty jars of different capacities, which made one jar $\frac{1}{4}$ full and the other jar $\frac{1}{3}$ full. If the water in the jar with the lesser capacity is then poured into the jar with the greater capacity, what fraction of the larger jar will be filled with water?

(A) $\frac{1}{7}$
(B) $\frac{2}{7}$
(C) $\frac{1}{2}$
(D) $\frac{7}{12}$
(E) $\frac{2}{3}$

437. If Mel saved more than \$10 by purchasing a sweater at a 15 percent discount, what is the smallest amount the original price of the sweater could be, to the nearest dollar?

(A) 45
(B) 67
(C) 75
(D) 83
(E) 150

438. Which of the following CANNOT be the median of the three positive integers x, y, and z ?

(A) x
(B) z
(C) $x+z$
(D) $\frac{x+z}{2}$
(E) $\frac{x+z}{3}$

439. $\frac{(8^2)(3^3)(2^4)}{96^2} =$

(A) 3
(B) 6
(C) 9
(D) 12
(E) 18

440. What is the 25th digit to the right of the decimal point in the decimal form of $\frac{6}{11}$?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 7

441. Which of the following lists the number of points at which a circle can intersect a triangle?

(A) 2 and 6 only
(B) 2, 4, and 6 only
(C) 1, 2, 3, and 6 only
(D) 1, 2, 3, 4, and 6 only
(E) 1, 2, 3, 4, 5, and 6

ANSWER KEYS

PROBLEM SOLVING

1	C	59	D	117	A	175	D	233	C	291	E	349	A	407	B
2	B	60	E	118	D	176	E	234	D	292	E	350	C	408	A
3	B	61	D	119	C	177	C	235	D	293	B	351	E	409	E
4	A	62	B	120	C	178	D	236	A	294	A	352	B	410	D
5	B	63	E	121	D	179	B	237	A	295	E	353	A	411	D
6	D	64	B	122	C	180	E	238	C	296	B	354	D	412	B
7	E	65	C	123	D	181	B	239	C	297	D	355	C	413	C
8	A	66	E	124	B	182	A	240	C	298	A	356	D	414	E
9	E	67	B	125	B	183	B	241	B	299	C	357	C	415	E
10	C	68	C	126	E	184	E	242	A	300	B	358	B	416	A
11	D	69	D	127	B	185	C	243	E	301	A	359	A	417	C
12	A	70	B	128	E	186	A	244	C	302	E	360	C	418	A
13	E	71	B	129	B	187	E	245	E	303	B	361	C	419	D
14	B	72	A	130	E	188	C	246	B	304	B	362	D	420	C
15	D	73	D	131	A	189	C	247	A	305	D	363	B	421	E
16	C	74	B	132	A	190	D	248	E	306	C	364	C	422	D
17	A	75	D	133	B	191	A	249	D	307	D	365	D	423	B
18	C	76	A	134	D	192	E	250	B	308	E	366	C	424	B
19	C	77	B	135	C	193	B	251	A	309	D	367	C	425	C
20	D	78	E	136	A	194	B	252	D	310	A	368	B	426	C
21	B	79	B	137	A	195	A	253	C	311	D	368	B	427	C
22	C	80	D	138	B	196	D	254	C	312	A	370	D	428	D
23	B	81	D	139	C	197	C	255	D	313	D	371	C	429	B
24	B	82	B	140	E	198	D	256	A	314	E	372	D	430	E
25	D	83	B	141	B	199	A	257	E	315	A	373	A	431	C
26	E	84	C	142	B	200	D	258	E	316	C	374	C	432	A
27	E	85	D	143	D	201	E	259	C	317	C	375	B	433	B
28	C	86	A	144	A	202	C	260	E	318	B	376	E	434	A
29	A	87	E	145	E	203	D	261	C	319	E	377	E	435	E
30	E	88	B	146	D	204	C	262	A	320	A	378	B	436	C
31	A	89	C	147	A	205	B	263	A	321	C	379	D	437	B
32	D	90	B	148	D	206	D	264	B	322	D	380	A	438	C
33	A	91	B	149	C	207	A	265	B	323	A	381	C	439	A
34	A	92	E	150	D	208	A	266	A	324	E	382	C	440	C
35	C	93	B	151	A	209	C	267	D	325	B	383	B	441	E
36	D	94	D	152	D	210	B	268	D	326	B	384	A		
37	B	95	D	153	E	211	D	269	C	327	B	385	C		
38	E	96	A	154	E	212	D	270	D	328	E	386	A		
39	B	97	E	155	D	213	B	271	C	329	A	387	C		
40	C	98	A	156	C	214	B	272	C	330	C	388	E		
41	D	99	B	157	E	215	A	273	B	331	D	389	D		
42	A	100	C	158	B	216	E	274	C	332	C	390	D		
43	C	101	E	159	D	217	B	275	E	333	C	391	B		
44	C	102	D	160	E	218	A	276	B	334	A	392	B		
45	D	103	B	161	E	219	C	277	C	335	E	393	D		
46	C	104	D	162	C	220	B	278	C	336	D	394	C		
47	B	105	A	163	D	221	D	279	D	337	A	395	C		
48	E	106	E	164	A	222	C	280	B	338	D	396	D		
49	C	107	C	165	A	223	C	281	B	339	E	397	E		
50	E	108	D	166	B	224	E	282	A	340	D	398	B		
51	B	109	E	167	A	225	C	283	E	341	C	399	E		
52	D	110	E	168	E	226	D	284	B	342	E	400	A		
53	A	111	B	169	D	227	E	285	C	343	B	401	D		
54	C	112	A	170	D	228	C	286	D	344	B	402	B		
55	E	113	E	171	C	229	E	287	D	345	A	403	D		
56	A	114	B	172	C	230	B	288	C	346	E	404	E		
57	A	115	B	173	B	231	E	289	E	347	D	405	B		
58	E	116	B	174	C	232	B	290	C	348	A	406	C		

DATA SUFFICIENCY

A Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
B Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
C BOTH statements (1) and (2) TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
D EACH statement ALONE is sufficient.
E Statements (1) and (2) TOGETHER are NOT sufficient.

1) Is $P=6$?
   a) $p^2 = 6p$
   b) p is even

2) Is $x = y$?
   a) $ax = ay$
   b) $a^2x = a^2y$

3) Is $x > y$
   a) $ax > ay$
   b) $a^2x > a^2y$

4) Is $p > q$?
   a) $\frac{p}{q} = \frac{8}{7}$
   b) $p^2 > q^2$

5) Is z an odd integer ?
   a) $3z$ is odd integer
   b) $z/3$ is odd integer

6) Is $k^2/m > 0$?
   a) $-3 < k < 5$
   b) $-2 < m < 4$

7) Is $k^2/m < 0$?
   a) $-3 < k < 5$
   b) $2 < m < 4$

8) Is $g > h$?
   a) $g - 5 > h - 5$
   b) $g^2 > gh$

9) Is $x = y$?
   a) $x^2 = xy$
   b) $x^2 = y^2$

10) Given $c < d$, $e < c$.
    Is $c > 8$?
    a) $c + d + e = 24$
    b) $d < 12$

11) Given $e < c < d$;
    $c + d + e = 24$.
    Is $c > 8$?
    a) $d < 12$
    b) $d < 10$

12) Is $x^3/y = x + x/y$?
    a) $y = 8$
    b) $y = x^2 - 1$

13) Given $30 < x < 40$. Find x ?
    a) When $x/3$, remainder is 2
    b) When $x/4$, remainder is 3

14) Given $x^3y^4 = 5000$.
    Is $y = 5$?
    a) $y > 0$
    b) x is an integer

15) Given $x = y + z$. Is $x > y$?
    a) $y > 0$
    b) $z > 0$

16) Is $n < 0$?
    a) $m < n$
    b) $-n < m$

17) Is x a multiple of two consecutive odd numbers?
    a) $x = 4a^2 - b^2$ (a, b integers)
    b) $b=1$

18) Is $3^{\frac{A^2}{B}} < 1$?
    a) $A < 0$
    b) $B < 0$

19) $PQ > 1$?
    a) $P^Q = 1$
    b) $Q = -1$

20) $X + Y = ?$
    a) $X^2 + Y^2 = 5$
    b) $XY = 2$

21) $X = ?$
    a)
    a) $|x+2| = 2|x-2|$
    b) $X > 2$

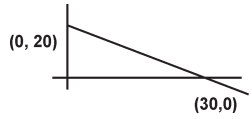
22) X and Y are positive integer, is $X = Y$?
    a) $|X-A| = |Y-A|$
    b) $A < 0$

23) If x is not equal to 0, is $|x|$ less than 1 ?
    a) $x / |x| < x$
    b) $|x| > x$

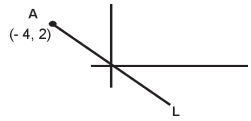
24) If $|X-5| + |X-6| < 2$, what is the range of x ?

COORDINATE GEOMETRY

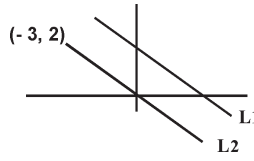
1) Find Equation of the Line



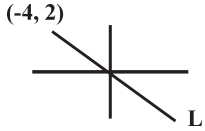
2) Find Slope of Line ⊥ to "*AL*"



3) *L*1 // *L*2, find slope of line *L*1



4) Which point also lies on "*L*"



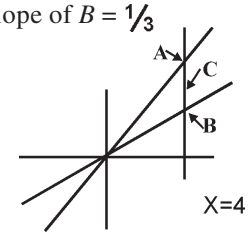
a) (-3, 4) b) (-4, 6)
c) (6, -3) d) (6, -4)

5) A Line has *X* - Intercept *A* & *Y* - Intercept *B*. What is slope of the line?

6) If (5, 3) & (-6, 5) are 2 points on a line. Find its equation?

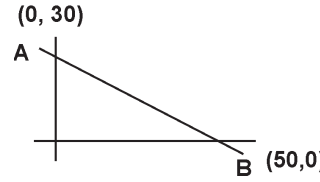
7) Give mirror image of
(-3, 2) across *X* = *Y* line

8) "*C*" is the Mid Point of *A*&*B*, Find Coordinate of "*C*"
Slope of *A* = 1/2
Slope of *B* = 1/3



9) Which point is farthest from the origin
a) (3, 5) b) (-6, 2)
c) (5, -4) d) (-5, 3)
e) (7, 3)

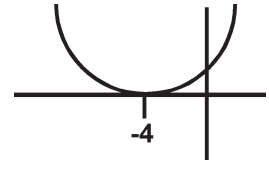
10) How many points on line segment "*AB*" have both *X* & *Y* Coordinates as Integers?



11) Point *P*(*a*,*b*) is randomly selected within the region enclosed by the following lines; $3y+2x=6$, $x=0$ and $y=0$. What is the probability that $b>a$?

12) Given equation of the circle is $X^2 + Y^2 = 20$. HOW many points on the circumference have both *X* and *Y* coordinates integers?

13) Which is the Equation of the given Parabola
a) $y = x + 4$ b) $y = x - 4$
c) $y = (x+4)^2$ d) $y = (x - 4)^2$



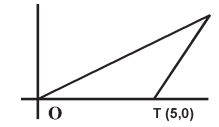
14) Does the line from (*A*, *B*) to (*C*, *D*) have a positive slope.
a) $A<0, B<0$
b) $C>0, D>0$

15) Same Question
a) $A<0, B<0$
b) $C>O, D<O$

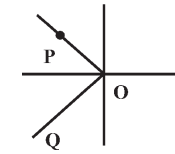
16) What is slope of the line "*L*"?
a) Equation of line *L* is $Y = -4$
b) The line croses neither the IIIrd nor the IVth Quadrant *(it is not one of the axes)*

17) Does the line $Y = MX + C$ intersect *X* Axis?
a) $M<0$ b) $C>0$

18) What are the Coordinates of "*S*"
a) *OS* Slope = 1/3
b) *ST* Slope = 1/2



19) Is (-1,-1) a point on line "*OQ*"
a) *P* = (-2, 2) b) ∠POQ = 90°



20) In which quadrant does the point P (x, y) lie?
1) Point $R(x, y+1)$ is in the second quadrant.
2) Point $Q(x+3, y)$ is in the third quadrant.

21) Line L_1 has a slope *A* and line L_2 has the slope *B*. is *A* greater than *B* ?
1) The *Y* intercept of L_1 is greater than the Y –intercept of line L_2
2) L_1 and L_2 intersect at point *Q*(5, 9)

22) What is distance between 2*Y* intercepts?
a) $4Y = 3X+6$
b) $3Y - 7 = 4X$

23) Does the graphical representation of the quadratic function $f(x)=Y=Ax^2+C$ intersects with *X*- axis?
1) $A<0$ 2) $C>0$

24) In *xy*-plane, a certain line L_1 has how many intersections with $y = x^2+2$?
1) Line L_1 does not intersect *X*-axis.
2) The point *Q*(2,1) lies on line L_1

STATISTICS

1) Average of "K" numbers is "A". Add "F" to each number and then divide each number by "Q". What is the new average?

2) Range of 6 numbers is 27.4. Add 10 to each number and then divide each of these numbers by 2. What is the range of the new list formed?

3) In a set of five different numbers, which of the following CANNOT affect the value of the median?

   a) Multiply each number by 2.

   b) Add 10 to each number.

   c) Increase largest number only.

   d) Increase smallest number only.

   e) Decrease largest number only.

4) 18 is the median of the following list of numbers : 5, 18, 43, 67 and X; what should be the value of X so that the mean of this list of numbers is maximum?

5) Given P, Q, R, S & T are integers and $P \geq Q \geq R \geq S \geq T$. Mean of P, Q, R, S, and T is 50 and the median is 40. What will be minimum possible value of P?

6) A certain characteristic in a large population has a distribution that is symmetric about the mean M. If 68 percent of the distribution lies within one standard deviation (S.D.) D of the mean, what percent of the distribution is less than $M - D$?

   a) 2% b) 14% c) 16%

   d) 34% e) 84%

7) Is the standard deviation (S.D.) of a certain set greater than 15,000?

   a) The range of the set is 25,000.

   b) The mean of the set is 150,000

8) If a, b, c, d are integers, which one has the same standard deviation as a, b, c, d ?

   a) $|a|, |b|, |c|, |d|$

   b) $a+100, b+100, c+100, d+100$

   c) $2a+2, 2b+2, 2c+2, 2d+2$

   d) $a^2+4, b^2+4, c^2+4, d^2+4$

9) The table below shows the number of students with corresponding heights in cms. What is the median measure of the table below?

Height in cms	Number of Students
150	6
160	7
155	9
165	8
170	11

10) Given S is a set of 25 consecutive integers. –5 is the smallest value in the set. What is the range of the positive integers in the set ?

11) Given list of 6 terms : 5, 10, 15, 20, 25, and X. What will be the value of X so that the standard deviation (S.D.) of the six terms is minimum ?

12) A club sold an average (arithmetic mean) of 92 raffle tickets per member. Among the female members, the average number sold was 84, and among the male members, the average number sold was 96. What was the ratio of the number of male members to the number of female members in the club?

   a) 1 : 1 b) 1:2 c) 1:3

   d) 2:1 e) 3:1

13. If x, y, and k are positive numbers such that $\left(\frac{x}{x+y}\right)(10)+\left(\frac{y}{x+y}\right)(20)=k$ and if $x<y$, which of the following could be the value of k ?

   a) 10 b) 12 c) 15

   d) 18 e) 30

14. Material A costs \$3 per kilogram, and Material B costs \$5 per kilogram. If 10 kilograms of Material K consists of x kilograms of Material A and y kilograms of Material B, is $x > y$?

   1) $y > 4$

   2) The cost of the 10 kilograms of Material K is less than \$40.

15. Set X and Y have 10 numbers, respectively. Is standard deviation of X greater than that of Y?

   1) Range of X is greater that of Y

   2) Average of X is greater than that of Y

NUMBER SYSTEM

1. If each of the following fractions were written as a repeating decimal, which would have the longest sequence of different digits?

   (A) $\frac{2}{11}$

   (B) $\frac{1}{3}$

   (C) $\frac{41}{99}$

   (D) $\frac{2}{3}$

   (E) $\frac{23}{37}$

2. Any decimal that has only a finite number of non-zero digits is a terminating decimal. For example, 24, 0.82, and 5.096 are three terminating decimals. If r and s are positive integers and the ratio r/s is expressed as a decimal, is r/s a terminating decimal?

   (1) $90 < r < 100$

   (2) $s = 4$

3. If x, y, and z are positive integers such that x is a factor of y, and x is a multiple of z, which of the following is NOT necessarily an integer?

   (A) $\frac{x+z}{z}$

   (B) $\frac{y+z}{x}$

   (C) $\frac{x+y}{z}$

   (D) $\frac{xy}{z}$

   (E) $\frac{yz}{x}$

4. If positive integer x is a multiple of 6 and positive integer y is a multiple of 14, is xy a multiple of 105?

   (1) x is a multiple of 9.

   (2) y is a multiple of 25.

5. What is the tens digit of positive integer x?

   (1) x divided by 100 has a remainder of 30.

   (2) x divided by 110 has a remainder of 30.

6. If M and N are positive integers that have remainders of 1 and 3, respectively, when divided by 6, which of the following could NOT be a possible value of $M + N$?

   (A) 86 (B) 52

   (C) 34 (D) 28

   (E) 10

7. Simplify: $(16^3 - 15^3) \times (16^2 - 15^2) =$

   (A) 22468 (B) 22351

   (C) 22216 (D) 22192

   (E) 22106

8. Which of the following cannot be square of an integer?

   (A) 275625 (B) 261121

   (C) 385641 (D) 426408

   (E) 227529

9. What is the Units digit of $(13)^4(17)^2(29)^3$?

   (A) 9 (B) 7

   (C) 5 (D) 3

   (E) 1

10. If $(243)^x(463)^y = n$, where x and y are positive integers, what is the units digit of n?

    (1) $x + y = 7$

    (2) $x = 4$

11. r, s and t are positive integers and $p = rst$. What is the remainder when 2^p is divided by 10?

    (1) s is even.

    (2) $p = 4t$

12. If n is an integer, is $3^n + 1$ divisible by 10?

    (1) $n = 4k + 2$

    (2) $n > 4$

TIME SPEED & DISTANCE

1. An empty swimming pool can be filled to capacity through an inlet pipe in 3 hours, and it can be completely drained by a drainpipe in 6 hours. If both pipes are fully open at the same time, in how many hours will the empty pool be filled to capacity?

2. A police officer, traveling at 100 miles per hour, pursues Philip who has a 30 minute head start. The police officer overtakes Philip in two hours. Find Philip's speed.

3. A, B, C working alone finish constructing a house in 4, 6 and 12 hrs resp. A starts alone and works for 1 hr. He is then joined by B and they work together for 1 hr. Finally C joins them and they all work together to finish the work. If they start working at 9.00 a.m., at what time will they finish?

   (A) 11.30 a.m. (B) 11.40 a.m.

   (C) 12.00 p.m. (D) 11.10 a.m.

   (E) 11.20 a.m

4. I travel the first part of my journey at 40mph and the second part at 60mph and cover the total distance of 240m to my destination in 5 hours. How long did the first part of my journey last?

5. Ram covers a part of the journey at 20mph and the balance at 70mph taking total of 8 hours to cover the distance of 400m. How many hours has been driving at 20mph?

6. An hour after Jane started walking from X to Y, a distance of 45 miles, Bob started walking from Y to X. If Jane travels at 3mph and Bob travels at 4mph then how much distance had Bob traveled when they meet?

7. Train A can travel from X to Y, a distance of 100 miles, in 3 hrs while train B can travel the same distance in 5 hrs. If A starts from X to Y at the same time as B starts from Y to X, then at what distance from X do they meet?

8. Bob can read 30 pages and Jane reads 40 pages in an hour. Bob starts with a novel at 4.30 pm and Jane starts with the same novel at 5.20 pm, then at what time they will be reading the same page?

9. Bob enters a lift on the 21st Floor, which is going up @ 57 Floors/min. At the same time Jane enters another lift on the 61st Floor which is going down @ 63 Floors/min. At what Floor will they be together?

SIMPLE INTEREST AND COMPOUND INTEREST

1) If $ 1 were invested at 8 percent interest compounded annually, the total value of the investment, in dollars, at the end of 6 years would be

   (A) $(1.8)^6$ (B) $(1.08)^6$

   (C) $6(1.08)$ (D) $1+(0.08)^6$

   (E) $1+6(0.08)$

2) On July 1, 1982, Ms. Fox deposited $ 10000 in a new account at the annual interest rate of 12 percent-compounded monthly. If no additional deposits or withdrawals were made and if interest was credited on the last day of each month, what was the amount of money in the account on September 1, 1982?

   (A) $ 10,200 (B) $10,201

   (C) $ 11,100 (D) $ 12,100

   (E) $ 12,544

3) Leona bought a 1 – year, $ 10,000 certificate of deposit that paid interest at an annual rate of 8 percent compounded semiannually. What was the total amount of interest paid on this certificate at maturity?

   (A) $ 10,464 (B) $ 864

   (C) $ 816 (D) $ 800

   (E) $ 480

4) John deposited $ 10,000 to open a new savings account that earned 4 percent annual interest, compounded quarterly. If there were no other transactions in the account, what was the amount of the money in John's account 6 months after the account was opened?

   (A) $ 10,100 (B) $ 10,101

   (C) $ 10,200 (D) $ 10,201

   (E) $ 10,400

VENN DIAGRAMS

2 Cases

1) Of the 65 cars in a car lot, 45 have air-conditioning, 30 have power windows, and 12 have both air conditioning and power windows. How many of the cars in the lot have neither air conditioning nor power windows?

(A) 2 (B) 8
(C) 10 (D) 15
(E) 18

2) Of the 30 applicants for a job, 14 had at least 4 years experience, 18 had degrees, and 3 had less than 4 years experience and did not have a degree. How many of the applicants had at least 4 years experience and a degree?

(A) 14 (B) 13
(C) 9 (D) 7
(E) 5

3) 80 percent of the people in a party drink coffee; 10 percent of these also drink tea. 10 percent drink neither of these two drinks. What percent of the people in the party drink

(A) Only coffee (B) Only tea (C) Tea

3 Cases

4)

Club	Number of students
Chess	40
Drama	30
Math	25

The table above shows the number of students in three clubs of McAuliffe school. Although no student is in all the three clubs, 10 students are in both chess and drama, 5 students are in both chess and math, and 6 students are in both drama and math. How many different students are in the three clubs?

(A) 68 (B) 69
(C) 74 (D) 79
(E) 84

Table Structure

5) One night a certain motel rented $\frac{3}{4}$ of its rooms, including 2/3 of its air-conditioned rooms. If $\frac{3}{5}$ of its rooms were air-conditioned, what percent of the rooms that were not rented were air-conditioned?

(A) 20 %
(B) $33\frac{1}{3}$ %
(C) 35 %
(D) 40 %
(E) 80 %

6) In each production lot for a certain toy, 25 percent of the toys are red and 75 percent of the toys are blue. Half the toys are size A and half are size B. if 10 out of a lot of 100 toys are red and size A. how many of the toys are blue and size B?

(A) 15
(B) 25
(C) 30
(D) 35
(E) 40

7) One- fifth of the light switches produced by a certain factory are defective. Four- fifth of the defective switches are rejected and 1/20 of the nondefective switches are rejected by mistake. If all the switches not rejected are sold. What percent of the switches sold by a factory are defective?

(A) 4 %
(B) 5 %
(C) 6.25%
(D) 11 %
(E) 16 %

PERMUTATION & COMBINATION

1) 6 children, 6 chairs, how many arrangements?

2) 6 children, 9 chairs, how many arrangements?

3) 6 chairs and 6 children - 3 boys & 3 girls. Arrange them in a line so that boys & girls must alternate.

4) Arrange 'begin' so that it starts with a vowel.

5) Arrange 'digit' so that the two 'I'

   a) come together.

   b) don't come together.

6) Arrange 4 different paintings so that the best & worst are together.

7) Arrange 10 people in a line so that '8' particular people are never together.

8) 5 delegates. Arrange so that the president always sits in the center.

9) I have 1 red & 3 green identical marbles. In how many ways can I arrange them?

10) 21 people of which 12 are experienced. Select a team of 3 so that

    a) At least 1 is experienced

    b) Exactly 1 is experienced

11) How many 4 or 5 letter codes can be formed using all the English alphabets?

12) How many 3 digits numbers where units place is prime? (both with & without repetition)

13) In how many ways can a team of 3 people be selected from a group of 14 people so that Jack is in the team? Jack is one among the 14 people.

14) In how many ways can 3 people out of 14 people be given 3 prizes (gold, silver & bronze) so that Jack is awarded? Jack is one of the 14 people.

15) A circle has 7 points on its circumference. What is the ratio of number of triangles to number of quadrilaterals?

16) 2 men, 3 women, 5 chairs how many ways if men & women alternate?

17) 2 men, 3 women, 5 chairs. How many ways if no two men sit together?

18) Seat 5 people in a circle. How many ways?

19) 5 people sit in circle so that two particular people don't come together.

20) How many arrangements of 'belittle' ?

21) How many ways to choose a committee of 3 people from 4 couples so that no couple is chosen.

22) How many 5 digit palindromes can be made using 1, 2 & 3 ?

23) 8 men, 5 women. In how many ways a committee of 4 men & 2 women can be made.

24) In how may ways can you arrange 4 alphabets (w, x, y, z) in a straight line so that w comes before 'y' ?

PROBABILITY

1) 3 red, 4 blue, 5 green. Pick 3. (P) of getting a) all red b) no blue c) one of each color.

(2) Pick 3 out of 52 cards. (P) all are queens.

(3) 200 different marbles. Pick one. Replace. Pick another. (P) it is the same marble

(4) (P) a car jumps a red light is 75% A car jumps. (P) 2nd car also jumps.

(5) 12 white and 12 blue marbles.1st 3 picked are white. (P) 4th is also white?

(6) N is an integer from 1-99 . (a) (P) that n(n+1) is a multiple of 3. (b) (P) that n(n+1)(n+2) is a multiple of 6.

(7) 10 people in a line. (P) 3 particular people don't stand together.

(8) Toss 2 dice. (P) that sum of numbers is 5 or 9.

(9) 1,2,4,8,16,32. Pick 2 numbers. (P) sum is odd.

(10) N questions are either true or false. What is minimum value of n for which (P) of all true < 1/1000.

(11) Y yellow, 30 blue balls. Maximum value of y if (p) of picking a yellow ball < 2/5.

(12) 3 red, 4 green, 5 blue marbles. Pick 4. (P) of 3 green & 1 red.

(13) 70 tickets, 7 prizes. Buy 2 tickets (P) of getting exactly 1 prize.

(14) 5 different pairs of socks. Pick 2 singles. (P) its a pair.

(15) 7 different pairs of socks. Pick 4 singles. (P) its 2 pairs.

(16)

x	f
1	3
2	1
3	3
4	1
5	3
6	1
7	3

Mean = 4

(P) that $|4 - x| > \frac{3}{2}$

(17) Of 58 bottles. 25 are blue. 17 green and16 yellow. Pick 2. (P) 1st is blue & 2nd is yellow.

(18) (P) it rains on any day = 0.2. A person leaves on Saturday morning. He will return on the evening of the 1st day it rains. (P) he returns on the following Monday

(19) (P) of getting a head is 0.6. In 6 tosses of a coin (P) of getting at least 5 heads.

(20) A couple decides to have 4 children. (P) of 2 boys & 2 girls. The probability of having a boy is equal to having a girl.

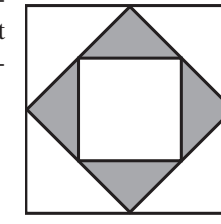
(21) On 6 tosses of a coin (P) of getting a) exactly 3 heads b) atleast 4 heads.

(22) A person flicks channels in the order A, B, C till he hears a particular song. (P) the song comes on any particular channel is .3. What is (P) that the person will

a) reach channel C in one cycle ?

b) hear it on channel C in one cycle ?

(23) 3 squares based on the others midpoint. Pick a point in the largest square (P) it is in the shaded portion?



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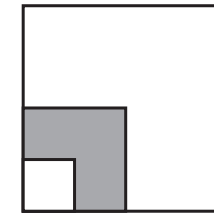
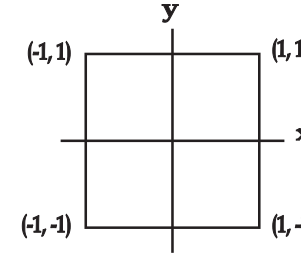


(25) Pick a point (x, y) in the square (P) that $x^2 + y^2 \le 1$



(26) 2 cubes number 1-6. Toss them. (P) that the difference of numbers > 2.

POST-CLASS STUDY PLANS

2-3 Months Study Plan

MATHS	VERBAL
1. Jamboree Quant Handbook. (Theory + solved examples + exercise) 2. Class Handouts 3. Problem Solving from 10 th edition (set of 441 questions) 4. OFFICIAL GUIDE 13th edition 5. Jamboree Book2 (must do list + extra practice set) 6. Revise Number Systems + Inequalities + Co-ordinate Geometry	1. Red Book: SC Exercises 1 to 6 2. Red Book RC Passages 1-4 3. O G 13 4. GMAT Book 2: Complete

Recommended Online Tests FOR MATHS AND VERBAL

a)	Power Prep	Test 1 +2	g)	Score 800	Test 2
b)	Jamboree	Test 1 +2	h)	Jamboree	Test 4 to 7
c)	Score 800	Test 1 +2	i)	Kaplan	Test 2
d)	Kaplan	Test 1	j)	Jamboree	Test 8 to 10
e)	Jamboree	Test 3	k)	Jamboree	Test 11 + 12
f)	GMAT Prep	Test 1	l)	GMAT PREP	Test 2

Last Week Before Exam

MATHS

Revise Handouts + Data Sufficiency from OG + repeat 2 Pearsontests. DON'T TOUCH ANYTHING ELSE.

VERBAL

Revise OG 13 and Blue Book Practice Content SC, CR and RC. Repeat GMAT Prep 1 and 2

POST-CLASS STUDY PLANS

6 Weeks Study Plan

MATHS	VERBAL
1. Jamboree Quant Handbook. (Theory + solved examples)	1. Red Book: SC Exercises 1 to 6
2. Class Handouts	2. Red Book RC Passages 1-4
3. Problem Solving from 10 th edition (set of 441 questions)	3. O G 13
4. OFFICIAL GUIDE 13th edition	4. GMAT Book 2: Practice Content: All
5. Jamboree Book2 (must do list)	5. GMAT Book 2: 3 Drills each of SC, CR and RC
6. Revise Number Systems + Inequalities	

Recommended Online Tests FOR MATHS AND VERBAL

a)	Power Prep	Test 1	
b)	Jamboree	Test 1	
c)	Score 800	Test 1	
d)	Kaplan	Test 1	
e)	Jamboree	Test 3	
f)	GMAT Prep	Test 1	
g)	Jamboree	Test 11 + 12	
h)	GMAT PREP	Test 2	

Last Week Before Exam

MATHS

Revise handouts + Data Sufficiency from OG + repeat 2 Pearson tests. DON'T TOUCH ANYTNG ELSE.

VERBAL

Revise OG 13 LAST 80 Question+ Repeat GMAT Prep 1 and 2

POST-CLASS STUDY PLANS

3 Weeks Study Plan

MATHS	VERBAL
1. Jamboree Quant Handbook. (Theory)	1. RED Book SC Exercises 1-5
2. Class Handouts	2. Red Book RC 1-4
3. Problem Solving from 10 th edition (set of 441 questions)	3. OG 13
4. OFFICIAL GUIDE 13th edition	4. Blue Book Practice Content: 100 questions each of SC , CR and RC

Recommended Online Tests FOR MATHS AND VERBAL

a)	Power Prep	Test 1	e)	Jamboree	Test 3
b)	Jamboree	Test 1	f)	GMAT Prep	Test 1
c)	Score 800	Test 1	g)	Jamboree	Test 11 + 12
d)	Kaplan	Test 1	h)	GMAT PREP	Test 2

Last Week Before Exam

MATHS

Revise handouts + Data Sufficiency from OG + repeat 2 Pearson tests. DON'T TOUCH ANYTNG ELSE.

VERBAL

Revise last 50 Questions from OG, SC, CR and RC. Repeat GMAT Prep 1 and 2