The GMAT Math Question

1. For what values of ‘k’ will the pair of equations $3x + 4y = 12$ and $kx + 12y = 30$ not have a unique solution?

A. 12
B. 9
C. 3
D. 7.5
E. 2.5

2. Three years back the age of a father was 24 years more than his son. At present the father is 5 times as old as the son. How old will the son be three years from now?

A. 12 years
B. 6 years
C. 3 years
D. 9 years
E. 27 years

3. A poultry farm has only chickens and pigs. When the manager of the poultry counted the heads of the stock in the farm, the number totaled up to 200. However, when the number of legs was counted, the number totaled up to 540. How many chickens were there in the farm?

A. 70
B. 120
C. 60
D. 130
E. 80

4. If the ratio of the sum of the first 6 terms of a G.P. to the sum of the first 3 terms of the G.P. is 9, what is the common ratio of the G.P?

A. 3
B. 1/3
C. 2
D. 9
E. 1/9

5. The sum of the fourth and twelfth term of an arithmetic progression is 20. What is the sum of the first 15 terms of the arithmetic progression?

A. 300
B. 120
C. 150
D. 170
E. 270

6. The average of 5 consecutive integers starting with m as the first integer is n. What is the average of 9 consecutive integers that start with m+2?

A. m + 4

B. n + 6

C. n + 3

D. m + 5

E. n + 4

7. How many 3 digit positive integers exist that when divided by 7 leave a remainder of 5?

A. 128

B. 142

C. 143

D. 141

E. 129

8. The average age of a group of 10 students was 20. The average age increased by 2 years when two new students joined the group. What is the average age of the two new students who joined the group?

A. 22 years
B. 30 years
C. 44 years
D. 32 years
E. None of these

9. The average of 5 quantities is 6. The average of 3 of them is 8. What is the average of the remaining two numbers?

A. 4
B. 5
C. 3
D. 3.5
E. 0.5

10. The average wages of a worker during a fortnight comprising 15 consecutive working days was $ 90 per day. During the first 7 days, his average wages was $ 87/day and the average wages during the last 7 days was $ 92 /day. What was his wage on the 8^{th} day?

A. $83
B. $92

C. $90
D. $97
E. $104

11. The average weight of a group of 30 friends increases by 1 kg when the weight of their football coach was added. If average weight of the group after including the weight of the football coach is 31kgs, what is the weight of their football coach in kgs?

A. 31 kgs
B. 61 kgs
C. 60 kgs
D. 62 kgs
E. 91 kgs

12. The arithmetic mean of the 5 consecutive integers starting with ’s’ is 'a'. What is the arithmetic mean of 9 consecutive integers that start with s + 2?

A. 2 + s + a
B. 2 + a
C. 2s
D. 2a + 2
E. 4 + a

13. If the mean of numbers 28, x, 42, 78 and 104 is 62, then what is the mean of 128, 255, 511, 1023 and x?

A. 375
B. 275
C. 355
D. 415
E. 365

14. For what range of values of 'x' will the inequality $15x - (2/X) > 1$?

A. $x > 0.4$
B. $x < (1/3)$
C. $(-1/3) < x < 0.4, x > (15/2)$
D. $(-1/3) < x < 0.4, x > (25)$
E. $x < (-1/3)$ and $x > (2/5)$

Directions

This data sufficiency problem consists of a question and two statements, labeled (1) and (2), in which certain data are given. You have to decide whether the data given in the statements are sufficient for answering the question. Using the data given in the statements, plus your knowledge of mathematics and everyday facts (such as the number of days in a leap year or the meaning of the word counterclockwise), you must indicate whether —

A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient to answer the question asked.

B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient to answer the question asked.

C. BOTH statements (1) and (2) TOGETHER are sufficient to answer the question asked, but NEITHER statement ALONE is sufficient to answer the question asked.

D. EACH statement ALONE is sufficient to answer the question asked.

E. Statements (1) and (2) TOGETHER are NOT sufficient to answer the question asked, and additional data specific to the problem are needed.

Numbers

All numbers used are real numbers.

Figures

A figure accompanying a data sufficiency question will conform to the information given in the question but will not necessarily conform to the additional information given in statements (1) and (2).
Lines shown as straight can be assumed to be straight and lines that appear jagged can also be assumed to be straight.

You may assume that the positions of points, angles, regions, etc. exist in the order shown and that angle measures are greater than zero.
All figures lie in a plane unless otherwise indicated.

Note

In data sufficiency problems that ask for the value of a quantity, the data given in the statement are sufficient only when it is possible to determine exactly one numerical value for the quantity.

15. Is m divisible by 6?

(1) m is divisible by 3
(2) m is divisible by 4

16. If a salesman received a commission of 3% of the sales that he has booked in a month, what were the sales booked by the salesman in the month of November 2003?

(1) The sales booked by the salesman in the month of November 2003 minus salesman's commission was $245,000
(2) The selling price of the sales booked by the salesman in the month of November 2003 were 125 percent of the original purchase price of $225,000.

17. Is y an integer?
A. y^3 is an integer
B. 3y is an integer

18. How is Bill related to Betty?

(1) Cindy, the wife of Bill's only brother Chris does not have any siblings.
(2) Betty is Cindy's brother-in-law's wife.

19. What is the standard deviation (SD) of the four numbers p, q, r, and s?
1. The sum of p, q, r and s is 24
2. The sum of the squares of p, q, r and s is 224

20. What is the value of X, if X and Y are two distinct integers and their product is 30?
1. X is an odd integer
2. X > Y

21. What is the radius of the circum circle of the triangle whose sides are 5, 12 and 13 units respectively?

A. 2 units
B. 12 units
C. 6.5 units
D. 6 units
E. 7.5 units

22. If the sum of the interior angles of a regular polygon measures up to 1440 degrees, how many sides does the polygon have?

A. 10 sides
B. 8 sides
C. 12 sides
D. 9 sides
E. None of these

23. What is the measure of the circum radius of a triangle whose sides are 9, 40 and 41?

A. 6
B. 4
C. 24.5
D. 20.5
E. 12.5

24. What is the area of an obtuse angled triangle whose two sides are 8 and 12 and the angle included between two sides is 1500?

A. 24 sq units
B. 48 sq units
C. $24\sqrt{3}$
D. $48\sqrt{3}$
E. Such a triangle does not exist

25. Vertices of a quadrilateral ABCD are A (0, 0), B (4, 5), C (9, 9) and D (5, 4). What is the shape of the quadrilateral?

A. Square
B. Rectangle but not a square
C. Rhombus
D. Parallelogram but not a rhombus
E. Kite

26. The length of a rope, to which a cow is tied, is increased from 19m to 30m. How much additional ground will it be able to graze? Assume that the cow is able to move on all sides with equal ease.

A. 1696 sq m
B. 1694 sq m
C. 1594 sq m
D. 1756 sq m
E. 1896 sq m

27. A lady grows cabbages in her garden that is in the shape of a square. Each cabbage takes 1 square feet of area in her garden. This year, she has increased her output by 211 cabbages as compared to last year. The shape of the area used for growing the cabbages has remained a square in both these years. How many cabbages did she produce this year?

A. 11236
B. 11025
C. 14400
D. 12696
E. Cannot be determined

28. The area of a square field is 24200 sq m. How long will a lady take to cross the field diagonally at the rate of 6.6 km/hr?

A. 3 minutes
B. 0.04 hours
C. 2 minutes
D. 2.4 minutes
E. 2 minutes 40 seconds

29. A wheel of a car of radius 21 cm is rotating at 600 RPM. What is the speed of the car in km/hr?

A. 79.2 km/hr
B. 47.52 km/hr
C. 7.92 km/hr
D. 39.6 km/hr
E. 3.96 km/hr

30. What is the remainder when 1044 * 1047 * 1050 * 1053 is divided by 33?

A. 3
B. 27
C. 30
D. 21
E. 18

31. How many zeros will be there in the value of 25?

A. 25
B. 8
C. 6
D. 5
E. 2

32. How many integral divisors does the number 120 have?

A. 14
B. 16
C. 12
D. 20
E. None of these

33. When 242 is divided by a certain divisor the remainder obtained is 8. When 698 is divided by the same divisor the remainder obtained is 9. However, when the sum of the two numbers 242 and 698 is divided by the divisor, the remainder obtained is 4. What is the value of the divisor?

A. 11
B. 17
C. 13
D. 23
E. None of these

34. How many keystrokes are needed to type numbers from 1 to 1000?

A. 3001
B. 2893
C. 2704
D. 2890
E. None of these

35. A number when divided by a divisor leaves a remainder of 24. When twice the original number is divided by the same divisor, the remainder is 11. What is the value of the divisor?

A. 13
B. 59
C. 35
D. 37
E. 12

36. How many different positive integers exist between 10^6 and 10^7, the sum of whose digits is equal to 2?

A. 6
B. 7
C. 5
D. 8
E. 18

37. If both 11^2 and 3^3 are factors of the number a * 4^3 * 6^2 * 13^{11}, then what is the smallest possible value of a?

A. 121
B. 3267
C. 363
D. 33
E. None of the above

38. What is the % change in the area of a rectangle when its length increases by 10% and its width decreases by 10%?

A. 0%
B. 20% increase
C. 20% decrease
D. 1% decrease
E. Insufficient data

39. The difference between the value of a number increased by 12.5% and the value of the original number decreased by 25% is 30. What is the original number?

A. 60
B. 80
C. 40

D. 120
E. 160

40. In an election contested by two parties, Party D secured 12% of the total votes more than Party R. If party R got 132,000 votes, by how many votes did it lose the election?

A. 240,000
B. 300,000
C. 168,000
D. 36,000
E. 24,000

41. The wages earned by Robin is 30% more than that earned by Erica. The wages earned by Charles is 60% more than that earned by Erica. How much % is the wages earned by Charles more than that earned by Robin?

A. 23%
B. 18.75%
C. 30%
D. 50%
E. 100%

42. In how many ways can the letters of the word “PROBLEM” be rearranged to make 7 letter words such that none of the letters repeat?

A. 7
B. 7C7
C. 7^7
D. 49
E. None of these

43. Ten coins are tossed simultaneously. In how many of the outcomes will the third coin turn up a head?

A. 2^{10}
B. 2^9
C. $3*2^8$
D. $3*2^9$
E. None of these

44. In how many ways can 5 letters be posted in 3 post boxes, if any number of letters can be posted in all of the three post boxes?

A. ${}^5C_3$

B. ${}^5P_3$

C. 5^3

D. 3^5

E. 2^5

45. A man can hit a target once in 4 shots. If he fires 4 shots in succession, what is the probability that he will hit his target?

A. 1

B. $\frac{1}{256}$

C. $\frac{81}{256}$

D. $\frac{175}{256}$

E. $\frac{144}{256}$

46. There are 6 boxes numbered 1, 2 ...6. Each box is to be filled up either with a red or a green ball in such a way that at least 1 box contains a green ball and the boxes containing green balls are consecutively numbered. The total number of ways in which this can be done is

A. 5
B. 21
C. 33
D. 60
E. 6

47. What is the probability that the position in which the consonants appear remain unchanged when the letters of the word Math are re-arranged?

A. 1/4
B. 1/6
C. 1/3
D. 1/24
E. 1/12

48. What is the probability that the position in which the consonants appear remain unchanged when the letters of the word Math are re-arranged?

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B. 1/6
C. 1/3
D. 1/24

E. 1/12

49. How many different four letter words can be formed (the words need not be meaningful) using the letters of the word MEDITERRANEAN such that the first letter is E and the last letter is R?

A. 59

B. $\frac{11!}{2!*2!*2!}$

C. 56

D. 23

E. $\frac{11!}{3!*2!*2!*2!}$

50. In how many ways can the letters of the word ABACUS be rearranged such that the vowels always appear together?

A. $\frac{6!}{2!}$

B. 3!*3!

C. $\frac{4!}{2!}$

D. $\frac{4!*3!}{2!}$

E. $\frac{3!*3!}{2!}$

51. A merchant who marked his goods up by 50% subsequently offered a discount of 20%. What is the percentage profit that the merchant make after offering the discount?

A. 30%
B. 125%
C. 25%
D. 20%
E. Insufficient Data

52. What is the maximum percentage discount that a merchant can offer on her Marked Price so that she ends up selling at no profit or loss, if she had initially marked her goods up by 50%?

A. 50%
B. 20%
C. 25%
D. 16.67%
E. 33.33%

53. By selling an article at 80% of its marked price, a merchant makes a loss of 12%. What will be the % profit made by the merchant if he sells the article at 95% of its marked price?

A. 5% profit
B. 1% loss
C. 10% profit
D. 5.5% profit
E. 4.5% profit

54. Sam buys 10 apples for $1. At what price should he sell a dozen apples if he wishes to make a profit of 25%?

A. $0.125
B. $1.25
C. $0.25
D. $1.5
E. $1.8

55. If the cost price of 20 articles is equal to the selling price of 25 articles, what is the % profit or loss made by the merchant?

A. 25% loss
B. 25% profit
C. 20% loss
D. 20% profit
E. 5% profits

56. For what value of ‘m’ will the quadratic equation $x^2 – mx + 4 = 0$ have real and equal roots?

A. 16
B. 8
C. 2
D. -4
E. Choice (B) and (C)

57. If one of the roots of the quadratic equation $x^2 + mx + 24 = 0$ is 1.5, then what is the value of m?

A. -22.5
B. 16
C. -10.5
D. -17.5
E. Cannot be determined

58. What is the highest integral value of 'k' for which the quadratic equation $x^2 - 6x + k = 0$ have two real and distinct roots?

A. 9
B. 7
C. 3
D. 8
E. 12

59. A, B and C, each of them working alone can complete a job in 6, 8 and 12 days respectively. If all three of them work together to complete a job and earn $ 2340, what will be C's share of the earnings?

A. $1100
B. $520
C. $1080
D. $1170
E. $630

60. Mary and Mike enter into a partnership by investing $700 and $300 respectively. At the end of one year, they divided their profits such that a third of the profit is divided equally for the efforts they have put into the business and the remaining amount of profit is divided in the ratio of the investments they made in the business. If Mary received $800 more than Mike did, what was the profit made by their business in that year?

A. $2000
B. $6000
C. $4000
D. $1333
E. $3000

61. Three friends Alice, Bond and Charlie divide $1105 amongst them in such a way that if $10, $20 and $15 are removed from the sums that Alice, Bond and Charlie received respectively, then the share of the sums that they got will be in the ratio of 11: 18: 24. How much did Charlie receive?

A. $495
B. $510
C. $480
D. $375
E. $360

62. In what ratio should a 20% methyl alcohol solution be mixed with a 50% methyl alcohol solution so that the resultant solution has 40% methyl alcohol in it?

A. 1 : 2
B. 2 : 1
C. 1 : 3
D. 3 : 1
E. 2 : 3

63. In a class, 40% of the students enrolled for Math and 70% enrolled for Economics. If 15% of the students enrolled for both Math and Economics, what % of the students of the class did not enroll for either of the two subjects?

A. 5%
B. 15%
C. 0%
D. 25%
E. None of these

64. In a class of 40 students, 12 enrolled for both English and German. 22 enrolled for German. If the students of the class enrolled for at least one of the two subjects, then how many students enrolled for only English and not German?

A. 30
B. 10
C. 18
D. 28
E. 32

65. Of the 200 candidates who were interviewed for a position at a call center, 100 had a two-wheeler, 70 had a credit card and 140 had a mobile phone. 40 of them had both, a two-wheeler and a credit card, 30 had both, a credit card and a mobile phone and 60 had both, a two wheeler and mobile phone and 10 had all three. How many candidates had none of the three?

A. 0
B. 20
C. 10
D. 18
E. 25

66. Peter invested a certain sum of money in a simple interest bond whose value grew to $300 at the end of 3 years and to $ 400 at the end of another 5 years. What was the rate of interest in which he invested his sum?

A. 12%
B. 12.5%
C. 6.67%
D. 6.25%
E. 8.33%

67. Ann invested a certain sum of money in a bank that paid simple interest. The amount grew to $240 at the end of 2 years. She waited for another 3 years and got a final amount of $300. What was the principal amount that she invested at the beginning?

A. $200
B. $150
C. $210

D. $175
E. Insufficient data

68. Shawn invested one half of his savings in a bond that paid simple interest for 2 years and received $ 550 as interest. He invested the remaining in a bond that paid compound interest, interest being compounded annually, for the same 2 years at the same rate of interest and received $605 as interest. What was the value of his total savings before investing in these two bonds?

A. $5500
B. $11000
C. $22000
D. $2750
E. $44000

69. Braun invested a certain sum of money at 8% p.a. simple interest for 'n' years. At the end of 'n' years, Braun got back 4 times his original investment. What is the value of n?

A. 50 years
B. 25 years
C. 12 years 6 months
D. 37 years 6 months
E. 40 years

70. Steve traveled the first 2 hours of his journey at 40 mph and the remaining 3 hours of his journey at 80 mph. What is his average speed for the entire journey?

A. 60 mph

B. 56.67 mph

C. 53.33 mph

D. 64 mph

E. 66.67 mph

71. Jane covered a distance of 340 miles between city A and city B taking a total of 5 hours. If part of the distance was covered at 60 miles per hour speed and the balance at 80 miles per hour speed, how many hours did she travel at 60 miles per hour?

A. 2 hours 30 minutes

B. 3 hours

C. 2 hours

D. 1 hour 45 minutes

E. None of these

72. A runs 25% faster than B and is able to give him a start of 7 meters to end a race in dead heat. What is the length of the race?

A. 10 meters

B. 25 meters

C. 45 meters

D. 15 meters

E. 35 meters

73. Jim travels the first 3 hours of his journey at 60 mph speed and the remaining 5 hours at 24 mph speed. What is the average speed of Jim's travel in mph?

A. 42 mph

B. 36 mph

C. 37.5 mph

D. 42.5 mph

E. 48 mph

74. A train traveling at 100 kmph overtakes a motorbike traveling at 64 kmph in 40 seconds. What is the length of the train in meters?

A. 1777 meters
B. 1822 meters
C. 400 meters
D. 1111 meters
E. None of these

75. A train traveling at 72 kmph crosses a platform in 30 seconds and a man standing on the platform in 18 seconds. What is the length of the platform in meters?

A. 240 meters
B. 360 meters
C. 420 meters
D. 600 meters
E. Cannot be determined

76. Ram, who is half as efficient as Krish, will take 24 days to complete a work if he worked alone. If Ram and Krish worked together, how long will they take to complete the work?

A. 16 days
B. 12 days
C. 8 days
D. 6 days
E. 18 days

77. A can complete a project in 20 days and B can complete the same project in 30 days. If A and B start working on the project together and A quits 10 days before the project is completed, in how many days will the project be completed?

A. 18 days
B. 27 days
C. 26.67 days
D. 16 days
E. 12 days

78. Working together, Jose and Jane can complete an assigned task in 20 days. However, if Jose worked alone and complete half the work and then Jane takes over the task and completes the second half of the task, the task will be completed in 45 days. How long will Jose take to complete the task if he worked alone? Assume that Jane is more efficient than Jose.

A. 25 days
B. 30 days
C. 60 days
D. 65 days
E. 36 days