GMAT Club Math Flashcards

Arithmetic • Statistics • Probability • Word Problems

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Q. If $20,000 is invested at 12% annual interest, compounded quarterly, what is the balance after 1 year?

A) $22,000
B) $22,400
C) $22,510
D) $22,600
E) $24,000

A. Correct choice: C.

Use $A = P(1 + r/n)^{nt}$ with $P = 20{,}000$, $r = 0.12$, $n = 4$, $t = 1$.

$A = 20{,}000 \times (1 + 0.12/4)^4 = 20{,}000 \times 1.03^4 \approx \$22{,}510.18$.

Q. 14 liters of apple juice is mixed with cranberry juice. If the resulting mix is 65% cranberry, how many liters of the mix were produced?

A) 20
B) 26
C) 34
D) 40
E) 60

A. Correct choice: D.

Let c be liters of cranberry. $c/(14+c) = 0.65 \Rightarrow c = 26$, total = 40 liters.

Q. What is the standard formula setup for a two-worker work problem?

A. Rates add. If A alone takes a hours and B alone takes b hours, then $1/T = 1/a + 1/b$ so $T = ab/(a + b)$.

Q. Robert can unload a truck in 8 hours. Doug can unload it in 6 hours. If they work together, how long will it take?

A) 3 hours
B) 3.33 hours
C) 3.43 hours
D) 4 hours
E) 7 hours

A. Correct choice: C.
Combined rate = 1/8 + 1/6 = 7/24 job per hour, so T = 24/7 hours ≈ 3.43 hours.

Q. Out of 90 attendees, 50 registered for Basic and 60 for Advanced. If 20 registered for neither, how many registered for both?

A) 20
B) 30
C) 35
D) 40
E) 50

A. Correct choice: D.

Use Group1 + Group2 − Both + Neither = Total

50 + 60 − Both + 20 = 90

Both = 40.

Q. An office of 120 employees is split male:female in a 3:5 ratio. If 40% are married and 20 of the married are men, how many women are single?

A) 27
B) 35
C) 45
D) 47
E) 55

A. Correct choice: D.

Men = 45, women = 75. Married total = 48. Married women = 28. Single women

Word Problems • Feed and Chickens (Hard)

Q. If a farmer sells 15 chickens, the feed lasts 4 more days. If he buys 20 chickens, the feed runs out 3 days earlier. How many chickens does he have originally?

A) 12
B) 24
C) 48
D) 55
E) 60

A. Correct choice: E.

Let n be original chickens and T be original days of feed.

$nT = (n - 15)(T + 4) = (n + 20)(T - 3)$. Solving gives $T = 12$, $n = 60$.

Word Problems • Chess Moves (Ultra Hard)

Q. In a chess tourney, White made 2319 moves and Black made 2315. In any game, whoever made the last move did not lose. Which can be true?

I. Blacks lost 5 games
II. Blacks won more games than Whites
III. All games were draws

A) I only
B) II only
C) III only
D) I and II
E) II and III

A. Correct choice: E.
Difference in moves is 4, so Whites made the last move in exactly 4 games, which could not be Black wins. The rest could be Black wins or draws.
Thus II and III can be true; I cannot.

Q. A price was increased by x% then decreased by y%. Is the new price higher than the original?
(1) $x > y$ (2) $x = 1.2y$

A. Neither statement alone nor together is sufficient. Answer: E.

Q. A bacteria colony doubles every day and fills the habitat in 20 days. If two identical colonies start together, when will they fill it?

A) 6.33
B) 7.5
C) 10
D) 15
E) 19

A. Correct choice: E.
Starting with twice the mass shifts the timeline one day earlier. 19 days.

Q. The average of 5 consecutive integers is 12. What is the average of the even-only integers among them?

A) 10
B) 12
C) 13.5
D) 18
E) 36

A. Correct choice: B.
Integers are 10, 11, 12, 13, 14. Even-only set 10, 12, 14 has average 12.

Statistics • Average Over Days

Q. For K days, Liv baked an average of 55 cupcakes per day. Today Liv and John baked 100 together and the average rose to 60. Find K.

A) 8
B) 9
C) 10
D) 12
E) 13

A. Correct choice: A.
Total after today: $60(K + 1) = 55K + 100$
$K = 8$.

Q. How do you compute the arithmetic mean?

A. Mean = (sum of all terms) ÷ (number of terms).

Q. How do you find the median?

A. Order the data. The median is the middle term. If the count is even, take the average of the two middle terms.

Q. How do you find the mode?

Statistics • Mode

A. The mode is the value that occurs most often. There can be more than one mode.

Q. How do you find the range?

A. Range = largest − smallest. Sorting helps.

Q. On the GMAT, do you compute exact SD? What is the concept?

A. Usually you estimate. SD measures spread around the mean. Adding a constant leaves SD unchanged; multiplying all values by k multiplies SD by |k|.

Q. Set S = {67,32,76,35,101,45,24,37}. If every element is decreased by 17%, how does SD change?

A) Increases by 17%
B) Decreases by 17%
C) Unchanged
D) Cannot be determined
E) Increases by 83%

A. Correct choice: B.
Multiplying by 0.83 scales SD by 0.83, so SD decreases by 17%.

Q. What is the SD of a set of consecutive even integers?

(1) There are 39 elements.
(2) The mean of the set is 382.

Statistics • DS on Consecutive Evens

A. For evenly spaced sets, SD depends on spacing and count, not on the mean. Spacing is 2, so knowing count is sufficient.
Answer: A.

Q. Set A has 19 integers, mean 4, SD 3. You add two integers to form set B. Which pair reduces SD the most?

A) (9,3)
B) (-3,3)
C) (6,1)
D) (4,5)
E) (5,5)

Statistics • Reduce SD the Most

A. Correct choice: D.
Values closest to the mean reduce SD the most. Pair (4,5).

Q. There are 3 marbles: blue, gray, green. In how many ways can they be arranged in a row?

A) 3
B) 4
C) 5
D) 6
E) 9

A. Correct choice: D.
Use 3! = 6 permutations.

Q. 3 marbles: blue, gray, green. If blue and green must be adjacent, how many arrangements are possible?

A) 2
B) 3
C) 4
D) 5
E) 6

A. Correct choice: C.
Treat BG as one block. Arrangements: 2! × 2 = 4.

Q. In how many ways can 5 distinct dresses be arranged in a store display?

A) 24
B) 60
C) 96
D) 120
E) 720

A. Correct choice: D.
5! = 120.

Q. For positive integer N, what is the last digit of 1! + 2! + … + N! ?
(1) N is even. (2) N > 3.

A. For N > 3, the sum ends with 3 because 5! onward end with 0. Either statement implies N > 3. Answer: D.

Q. How many ways to choose k objects from n distinct objects when order does not matter?

A. $C(n, k) = n! / [k!(n - k)!]$.

Q. How many ways to arrange k objects from n distinct objects when order matters?

A. $P(n, k) = n! / (n - k)!$.

Q. What is the difference between combinations and permutations? When do you use each?

A. Permutations care about order; combinations do not. Use permutations when positions are distinct; combinations when selecting an unordered group.

Q. Six partners dine at a round table. How many distinct seatings are possible?

A) 24
B) 60
C) 96
D) 120
E) 720

A. Correct choice: D.

Fix one seat for rotation symmetry. (6 − 1)! = 120.

Q. There are 5 chairs in a row. In how many ways can Bob and Rachel sit so that Bob is always to the left of Rachel?

A) 5
B) 8
C) 10
D) 12
E) 20

Probability & Combinatorics • Left of Rachel

A. Correct choice: C.
Choose 2 chairs C(5,2) = 10; in each pair exactly one order has Bob left of Rachel or 10.

Q. In how many ways can 8 people be divided into 4 unlabeled teams of 2 each?

A) 90
B) 105
C) 168
D) 420
E) 2520

A. Correct choice: B.

Answer = 8! / [(2!)^4 × 4!] = 105.

Q. What is P(E)? What is P(not E)?

A. P(E) = favorable/total. P(not E) = 1 − P(E).

Q. What is P(Tails) for a fair coin? What is P(rolling a 4) on a fair die?

A. P(Tails) = 1/2. P(4) = 1/6.

Q. A bucket has 10 green and 90 white marbles. If one marble is drawn at random, what is the probability it is green?

A) 1/2
B) 1/5
C) 1/10
D) 1/11
E) 1/20

A. Correct choice: C.
10/(10 + 90) = 1/10.

Q. For a fair coin and a fair die, what is the probability of getting Heads and a 4 in one flip and one roll?

A) 1/2
B) 1/6
C) 1/12
D) 1/18
E) 1/24

A. Correct choice: C.
(1/2) × (1/6) = 1/12.

Q. If the chance of rain on any day is 20%, what is the probability it rains on day 1 and is sunny on day 2?

A) 0.04
B) 0.16
C) 0.36
D) 0.64
E) 0.80

Probability & Combinatorics • Two-Day Weather

A. Correct choice: B.

$0.20 \times 0.80 = 0.16$.

Q. Choose one number from {1,3,6,7,8} and one from {3,5,2}. What is the probability both numbers are odd?

A) 1/5
B) 2/5
C) 3/5
D) 2/3
E) 3/8

A. Correct choice: B.
$(3/5) \times (2/3) = 2/5$.

Q. If Jessica rolls a fair die, what is the probability of rolling at least a 3?

A) 1/6
B) 1/3
C) 1/2
D) 2/3
E) 5/6

Probability & Combinatorics • At Least a 3

A. Correct choice: D.
Outcomes {3,4,5,6}: 4/6 = 2/3.

Q. There are 8 employees including Bob and Rachel. If 2 are chosen at random for a committee, what is the probability both are Bob and Rachel?

A) 1/8
B) 1/16
C) 1/28
D) 1/56
E) 1/64

A. Correct choice: C.
Total committees C(8,2) = 28. Favorable = 1. Probability = 1/28.

Q. Repeat of the prior question. Show three ways to get 1/28.

A. Method 1: 1/C(8,2) = 1/28.
Method 2: Sequential draw without replacement (Bob then Rachel) with 2! orderings gives 1/28.
Method 3: Not useful here; use 1 or 2.

Q. A jar has 1 gray, 2 white, and 4 green balls. Julia wins if the first ball is green; otherwise she draws a second ball and wins if the two balls are white or if the first is gray and the second is white. What is P(win)?

A) 1/3
B) 2/3
C) 4/7
D) 11/21
E) 5/7

A. Correct choice: B.
P(first green) = 4/7.
If first not green: P(white then white) = (2/7)(1/6) = 1/21;
P(gray then white) = (1/7)(2/6) = 1/21.
Total = 4/7 + 1/21 + 1/21 = 2/3.

Q. What is the basic percent relation? How much is 15% of 20?

A. Part = Rate × Base. 15% of 20 = 3.

Q. What is the formula for percent change? If pay rises from $15/hr to $18/hr, what is the percent increase?

A) 15%
B) 18%
C) 20%
D) 25%
E) 30%

A. Correct choice: C.

Percent change = (new − old)/old × 100%. Here: (18 − 15)/15 = 20%.

Arithmetic • Tripled Output

Q. If production tripled last year, by what percent did it increase?

A) 100%

B) 200%

C) 250%

D) 300%

E) 333%

Arithmetic • Tripled Output

A. Correct choice: B.
Increase factor 3 ⇒ increase of 200%.

Q. 50% of 25 is 25% of what number?

A) 25

B) 50

C) 75

D) 100

E) 200

A. Correct choice: B.

$0.5 \times 25 = 0.25 \times x \Rightarrow x = 50$.

Q. List quick parity rules for addition and multiplication.

A. Addition: even±even = even; odd±odd = even; even±odd = odd.
Multiplication: even×anything = even; odd×odd = odd.

Arithmetic • Is Zero Even?

Q. Is 0 odd or even?

Arithmetic • Is Zero Even?

A. Zero is even. It is neither positive nor negative.

Q. Quick divisibility tests for 2, 3, 4, 5, 6, and 9.

A.
2: last digit even.
3: sum of digits is multiple of 3.
4: last two digits a multiple of 4.
5: last digit 0 or 5.
6: divisible by 2 and 3.
9: sum of digits is multiple of 9.

Q. Which integer can be expressed as a sum of three consecutive even integers?

A) 200
B) 303
C) 400
D) 554
E) 570

Arithmetic • Sum of Three Consecutive Evens

A. Correct choice: E.
Sum of three consecutive evens is divisible by 3 and even. Only 570 fits.

Q. How many integers are there between 1 and 21 inclusive?

A) 19
B) 20
C) 21
D) 22
E) 23

A. Correct choice: C.

Use N − M + 1

21 − 1 + 1 = 21.

Q. What is a multiple? How to find LCM quickly?

A. Multiples are integer products. For LCM, take highest prime powers across the numbers.

Arithmetic • LCM of 18 and 24

Q. Find LCM(18, 24).

A) 36

B) 48

C) 60

D) 72

E) 144

Arithmetic • LCM of 18 and 24

A. Correct choice: D.

18 = 2 × 3^2; 24 = 2^3 × 3. LCM = 2^3 × 3^2 = 72.

Q. The product of three and four is reduced by five and then increased by the difference between the original product and eight. What is the result?

A) 7
B) 9
C) 11
D) 15
E) 19

A. Correct choice: C.

$3 \times 4 = 12$; $12 - 5 = 7$; original $- 8 = 4$; $7 + 4 = 11$.

Q. What is the reciprocal of a nonzero number x?
List two key properties.

A. The reciprocal is 1/x. Key facts: $x \times (1/x) = 1$; the reciprocal of a/b is b/a.

Q. What is the 3-step approach to solving |expression| equations and inequalities?

Arithmetic • Absolute Value Steps

A.

1) Split cases by sign.
2) Solve each case.
3) Check case conditions.

Arithmetic • Solve |x − 1| = 4

Q. Find all solutions to |x − 1| = 4.

A) −7
B) −3
C) 3
D) 5
E) −3 and 5

Arithmetic • Solve $|x - 1| = 4$

A. Correct choice: E.

$x - 1 = 4$

$x = 5$; $x - 1 = -4$

$x = -3$.

Arithmetic • Solve |x − 5| = 10

Q. Find all solutions to |x − 5| = 10.

A) −10 and 10
B) −5 and 5
C) −5 and 10
D) −5 and 15
E) 5 and 15

Arithmetic • Solve |x − 5| = 10

A. Correct choice: D.

$x - 5 = 10$

$x = 15$;

$x - 5 = -10$

$x = -5$.

Q. How many positive factors does 462 have?

A) 8

B) 12

C) 14

D) 16

E) 18

A. Correct choice: D.

Prime factorization: $462 = 2 \times 3 \times 7 \times 11$. Number of factors = $(1+1)^4 = 16$.

Arithmetic • Factors: Odd Count Exception

Q. Do integers usually have an odd or even number of positive factors? What is the exception?

Arithmetic • Factors: Odd Count Exception

A. Most have an even number. Perfect squares are the exception and have an odd number of factors.

Arithmetic • Sum of Integers −9 to 2

Q. What is the sum of −9, −8, −7, −6, −5, −4, −3, −2, −1, 0, 1, 2?

A) −54
B) −45
C) −42
D) −36
E) 0

Arithmetic • Sum of Integers −9 to 2

A. Correct choice: C.

Sum = −45 + 0 + 3 = −42.

Arithmetic • Sum of Evenly Spaced Set

Q. What is the sum of 9, 12, 15, 18, 21, 24?

A) 90

B) 96

C) 99

D) 102

E) 108

A. Correct choice: C.

Average × count = (9 + 24)/2 × 6 = 16.5 × 6 = 99.

Arithmetic • Recurring Decimal to Fraction

Q. Express 0.393939… as a fraction in lowest terms.

A) 13/99

B) 13/66

C) 13/33

D) 39/99

E) 43/99

A. Correct choice: C.

Let $x = 0.393939\ldots$ Then $100x - x = 39 \Rightarrow x = 39/99 = 13/33$.