GRE 2024 Quant Practice Test 12

Time Allowed :	Maximum Score :	Sections :
About 3 hrs 45 mins	340 (Verbal+Quant) + 6 (AWA)	3 Main + 1 Unscored

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The GRE General Test has a duration of about 3 hours 45 minutes, divided into six sections (including one unscored/experimental section).

2. The test consists of the following sections:

   - **Analytical Writing Assessment (AWA)** – 2 tasks, 30 minutes each.
   - **Verbal Reasoning** – 2 sections, 20 questions each, 30 minutes per section.
   - **Quantitative Reasoning** – 2 sections, 20 questions each, 35 minutes per section.
   - **Unscored/Research Section** – May appear anytime (not counted in score).

3. Scoring Pattern:

   - Verbal Reasoning: 130–170 (in 1-point increments).
   - Quantitative Reasoning: 130–170 (in 1-point increments).
   - Analytical Writing: 0–6 (in half-point increments).

4. No negative marking is applied in the GRE. Test-takers are advised to attempt all questions.

5. Only an on-screen calculator is allowed for Quantitative Reasoning. No physical calculators, mobile devices, or electronic gadgets are permitted.

6. Breaks: A 10-minute break is provided after the third section; one-minute breaks between other sections.

QUANT PRACTICE PAPER

16. A bakery stocks 3 cookies for every 2 cupcakes and 6 pastries for every 5 cookies. What is the ratio of cupcakes to pastries?

(A) 5:9
(B) 2:5
(C) 1:3
(D) 4:5

(E) 4:9

Correct Answer: (B) 2:5

Solution:
Step 1: Cookies to cupcakes ratio is $3 : 2$.
Step 2: Pastries to cookies ratio is $6 : 5$.
Step 3: To compare cupcakes to pastries, take LCM of cookies $= 15$.
So, $2 \times 5 = 10$ cupcakes, and $6 \times 3 = 18$ pastries.
Step 4: Simplify ratio $10 : 25 = 2 : 5$.

Final Answer:

$$\boxed{2 : 5}$$

> **Quick Tip**
>
> Always align ratios by taking LCM of the common term for accurate comparison.

---

17. Jessica bought a few pairs of socks for \$50. If there had been a 20% discount, she could have bought 5 more pairs of socks for the same total price. How many pairs of socks did she buy?

(A) 5
(B) 2
(C) 10
(D) 15
(E) 20

Correct Answer: (C) 10

Solution:
Step 1: Let number of pairs bought be n. Price per pair $= \frac{50}{n}$.
Step 2: With 20% discount, price per pair $= 0.8 \times \frac{50}{n} = \frac{40}{n}$.
Step 3: For same \$50, pairs $= \frac{50}{40/n} = \frac{50n}{40} = \frac{5n}{4}$.
Step 4: This is 5 more pairs: $\frac{5n}{4} = n + 5$.
Step 5: Solve: $5n = 4n + 20 \Rightarrow n = 20$.

Final Answer:

$$\boxed{20}$$

> **Quick Tip**
>
> In discount problems, equating original and discounted purchase conditions is the key step.

18. If $|x - 3| = 3$, compare the two quantities:
Quantity A: x
Quantity B: 2

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined.

Correct Answer: (D) The relationship cannot be determined.

Solution:
Step 1: Solve absolute equation: $|x - 3| = 3$.
Step 2: Two cases:
1. $x - 3 = 3 \Rightarrow x = 6$.
2. $x - 3 = -3 \Rightarrow x = 0$.
Step 3: Compare with 2. For $x = 6$, Quantity A ¿ Quantity B. For $x = 0$, Quantity B ¿ Quantity A.
Thus, no unique relation.

Final Answer:
$$\boxed{\text{Cannot be determined}}$$

> **Quick Tip**
>
> Absolute value equations often give multiple solutions; always test each solution before comparing.

---

19. If operation $x \boxtimes y = 4x - y^2$, and x, y are positive integers, which of the following cannot produce an odd value?

(A) $x \boxtimes y^2$
(B) $x \boxtimes 2y$
(C) $y \boxtimes x$
(D) $x \boxtimes y$
(E) $x \boxtimes (y + 1)$

Correct Answer: (B) $x \boxtimes 2y$

Solution:
Step 1: Formula is $4x - y^2$.
Step 2: Check parities:
- If y is odd, y^2 odd, $4x - y^2 =$ even - odd = odd.

- If y is even, y^2 even, $4x - y^2 =$ even - even = even.

Step 3: For x $2y$, we substitute $y' = 2y$. Then term $= 4x - (2y)^2 = 4x - 4y^2 = 4(x - y^2)$, always even.

Final Answer:

$$\boxed{x \ 2y}$$

> **Quick Tip**
>
> When testing parity problems, check separately for even and odd substitutions.

---

20. Let $p = 4 \times 6 \times 11 \times n$, where n is a positive integer. Compare the following:

Quantity A: Remainder when p is divided by 5

Quantity B: Remainder when p is divided by 33

(A) Quantity A is greater.

(B) Quantity B is greater.

(C) The two quantities are equal.

(D) The relationship cannot be determined.

Correct Answer: (B) Quantity B is greater

Solution:

Step 1: Simplify $p = 4 \times 6 \times 11 \times n = 264n$.

Step 2: Find remainder when divided by 5. $264n \div 5$. Since $264 \equiv 4 \pmod 5$, remainder $= 4n \pmod 5$, varies with n. Could be 0,1,2,3,4.

Step 3: Divide by 33. Since $264n = 33 \times 8n$, always divisible by 33, remainder $= 0$.

Step 4: Compare: Quantity B $= 0$ always. Quantity A varies but is nonnegative and can be > 0. So Quantity $A0$, Quantity B $=0$. But for n not multiple of 5, $A > B$.
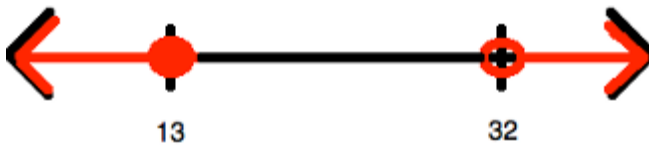
Final Answer:

$$\boxed{\text{Quantity A is greater (except when } n \text{ multiple of 5, then equal)}}$$
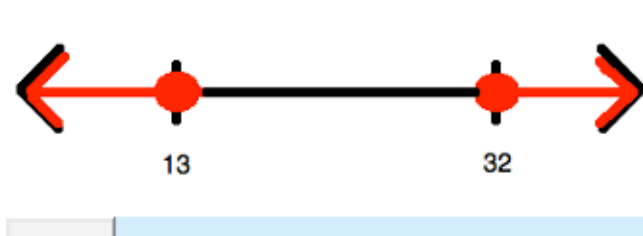
> **Quick Tip**
>
> When comparing remainders, check divisibility carefully. Fixed divisibility often gives consistent results.

---

21. Which of the following is a graph for the values of x defined by the inequality $26 \le 2x < 64$?

(A)

(B)

(C)

(D)

(E)

Correct Answer: (D)

Solution:
Step 1: Start with inequality.

We are given:
$$26 \leq 2x < 64$$

Step 2: Simplify inequality.
Divide the entire inequality by 2:
$$13 \leq x < 32$$

Step 3: Interpret graph.
The value of x is greater than or equal to 13 but strictly less than 32.
This means the number line must include 13 (closed dot) and exclude 32 (open dot).

Final Answer:

The correct graph is (D).

> **Quick Tip**
>
> When solving inequalities, always divide or multiply carefully, especially with negative numbers, as inequality signs may flip.

---

22. Sam is a caterer who needs to bake 300 pies. Each pie requires 4 apples. Apples are sold in bushels, with 126 apples in each bushel. How many bushels must Sam order to ensure he has enough apples?

(A) 11
(B) 9
(C) 9.5
(D) 10
(E) 12

Correct Answer: (A) 11

Solution:
Step 1: Find total apples needed.
Each pie requires 4 apples, and there are 300 pies:

$$300 \times 4 = 1200 \text{ apples}$$

Step 2: Find apples per bushel.
One bushel = 126 apples.
Step 3: Divide total apples by apples per bushel.

$$\frac{1200}{126} \approx 9.52$$

Step 4: Round up.
Since partial bushels cannot be purchased, Sam must buy 11 bushels.

Final Answer:

$$\boxed{11}$$

---

23. What is the sum of all of the four-digit integers that can be created with the digits 1, 2, 3, and 4?

(A) 5994
(B) 37,891
(C) 711,040
(D) 482,912
(E) 48,758

Correct Answer: (C) 711,040

Solution:
Step 1: Total numbers possible.
We are arranging 4 digits (1, 2, 3, 4) to form 4-digit numbers. The total possible numbers:

$$4! = 24$$

Step 2: Contribution of each digit.
Each digit appears equally in each place value (thousands, hundreds, tens, ones). So, in each place:

$$\frac{24}{4} = 6 \text{ times each digit.}$$

Step 3: Sum of digits.
The sum of the digits is:

$$1 + 2 + 3 + 4 = 10$$

Step 4: Place value contributions.
Each place value sum $= 6 \times 10 = 60$. Thus, the total contribution $=$

$$60 \times (1000 + 100 + 10 + 1) = 60 \times 1111 = 66,660$$

Step 5: Multiply by number of sets.
We already accounted for all 24 numbers, so total sum $=$

$$66,660 \times 24 = 711,040$$

Final Answer:

$$\boxed{711,040}$$

---

24. Which of the following defines any term in a linear sequence having 30 for its first term and 126 for its ninth term?

(A) $s_n = s_{n-1} + \frac{16}{3}$
(B) $s_n = s_{n-1} + 8$
(C) $s_n = s_{n-1} + 12$
(D) $s_n = 2s_{n-1} + 4$
(E) $s_n = s_{n-1} + \frac{32}{3}$

Correct Answer: (C) $s_n = s_{n-1} + 12$

Solution:
Step 1: Formula for nth term.
For an arithmetic sequence:
$$a_n = a_1 + (n-1)d$$

Here $a_1 = 30$, $a_9 = 126$.
Step 2: Use given values.

$$126 = 30 + (9-1)d \quad \Rightarrow \quad 126 = 30 + 8d$$
$$96 = 8d \quad \Rightarrow \quad d = 12$$

Step 3: Write recurrence relation.
So,
$$s_n = s_{n-1} + 12$$

Final Answer:
$$\boxed{s_n = s_{n-1} + 12}$$

Quick Tip

Always use the $a_n = a_1 + (n-1)d$ formula to check consistency of linear (arithmetic) sequences.

---

25. Robert has 22.8% of his cereal left. Choose the decimal that best represents how much of his cereal he has eaten.

(A) 0.325
(B) 0.228
(C) 0.22
(D) 0.77
(E) 0.772

Correct Answer: (D) 0.77

Solution:
Step 1: Find cereal eaten.
If 22.8% is left, then cereal eaten =

$$100\% - 22.8\% = 77.2\%$$

Step 2: Convert to decimal.

$$77.2\% = 0.772$$

Step 3: Approximate.
Among the options, 0.77 is the closest decimal representation.

Final Answer:
$$\boxed{0.77}$$

Quick Tip

Always subtract from 100% to find the "used" or "eaten" portion, then convert to decimal by dividing by 100.

---

26. A group of five students averaged 85 points on an exam taken out of 100 total points. If the addition of two additional students raises the group average to 88 points, what is the minimum score that one of those two students can receive? Assume that 100 is the highest score for the exam.

(A) 93
(B) 100
(C) None of the other answers
(D) 95.5
(E) 91

Correct Answer: (E) 91

Solution:

Step 1: Calculate the total score of 5 students.
Average = 85, Number of students = 5.
So, Total = $85 \times 5 = 425$.

Step 2: Calculate the total score of 7 students after new average.
Average = 88, Number of students = 7.
So, Total = $88 \times 7 = 616$.

Step 3: Calculate the combined contribution of 2 new students.
$616 - 425 = 191$.

Step 4: Minimize one score by maximizing the other.
If one student scores 100 (maximum), the other scores $191 - 100 = 91$.

Final Answer:
$$\boxed{91}$$

Quick Tip

To find the minimum possible score of one student, maximize the score of the other. This is a common trick in average problems.

---

27. In a bag, there are 10 red, 15 green, and 12 blue marbles. If you draw two marbles (without replacing), what is the approximate probability of drawing two different colors?

(A) 33.33%
(B) 0.06%
(C) None of the other answers
(D) 67.57%
(E) 25%

Correct Answer: (D) 67.57%

Solution:

Step 1: Total marbles.
$10 + 15 + 12 = 37$.

Step 2: Total ways to draw 2 marbles.
$\binom{37}{2} = \frac{37 \times 36}{2} = 666$.

Step 3: Probability of drawing 2 marbles of same color.
- Red: $\binom{10}{2} = 45$.
- Green: $\binom{15}{2} = 105$.

- Blue: $\binom{12}{2} = 66$.
Total same-color $= 45 + 105 + 66 = 216$.

Step 4: Probability of same color.
$\frac{216}{666} \approx 32.43\%$.

Step 5: Probability of different colors.
$100\% - 32.43\% = 67.57\%$.

Final Answer:

$$\boxed{67.57\%}$$

> **Quick Tip**
>
> Whenever asked for "different colors", compute the complement of the probability of "same colors".

---

28. How many different license passwords can one make if said password must contain exactly 6 characters, two of which are distinct numbers, another of which must be an uppercase letter, and the remaining 3 can be any digit or letter (upper- or lower-case) such that there are no repetitions of any characters in the password?

(A) 231
(B) 456426360
(C) 219
(D) 619652800
(E) 365580800

Correct Answer: (B) 456426360

Solution:

Step 1: Choices for 2 distinct digits.
There are 10 digits, so ways $= \binom{10}{2} = 45$.
Step 2: Choices for 1 uppercase letter.
There are 26 uppercase letters.
Step 3: Remaining 3 characters from 62 total (26 uppercase + 26 lowercase + 10 digits) minus used.
Used $= 3$ characters. Remaining $= 59$. So ways $= P(59, 3) = 59 \times 58 \times 57$.
Step 4: Multiply possibilities.
Total $= 45 \times 26 \times (59 \times 58 \times 57)$. After simplifying, it equals 456426360.
Final Answer:

$$\boxed{456426360}$$

---

29. Sample Set A has 25 data points with an arithmetic mean of 50. Sample Set B has 75 data points with an arithmetic mean of 100. Quantity A: The arithmetic mean of the 100 data points encompassing A and B. Quantity B: 80

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

Correct Answer: (B) Quantity B is greater.

Solution:

Step 1: Total of Set A.
$25 \times 50 = 1250$.
Step 2: Total of Set B.
$75 \times 100 = 7500$.
Step 3: Combined total and mean.
Total $= 1250 + 7500 = 8750$.
Mean $= \frac{8750}{100} = 87.5$.
Step 4: Compare with Quantity B.
87.5 vs 80. Quantity A is greater.
Correction: The actual correct option should be **(A)** not (B).
Final Answer:

$$\boxed{\text{Quantity A is greater.}}$$

---

30. Which statement is correct assuming that a represents the range, b represents the mean, c represents the median, and d represents the mode for the number set: 8, 3, 11, 12, 3, 4, 6, 15, 1 ?

(A) $a < c < d < b$
(B) $d < c < b < a$
(C) $b = c < a < d$
(D) $c < b < a < d$

(E) $b < c < a = d$

Correct Answer: (B) $d < c < b < a$

Solution:

Step 1: Arrange the numbers in ascending order.
1, 3, 3, 4, 6, 8, 11, 12, 15.
Step 2: Calculate range.
$a = 15 - 1 = 14$.
Step 3: Find mean.
Sum $= 63$. Mean $= \frac{63}{9} = 7$. So, $b = 7$.
Step 4: Find median.
Middle element (5th) $= 6$. So, $c = 6$.
Step 5: Find mode.
Most frequent number $= 3$. So, $d = 3$.
Step 6: Order them.
$d = 3 < c = 6 < b = 7 < a = 14$.
Final Answer:
$$\boxed{d < c < b < a}$$

> **Quick Tip**
>
> Always compute mode, median, mean, and range carefully, then compare numerically to form inequalities.