GMAT Quant Practise Question Paper 8 with Solutions

Time Allowed : 2 hours 15 minutes	**Maximum Marks :** 100

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The GMAT exam is 2 hours and 15 minutes long (with one optional 10-minute break) and consists of 64 questions in total.
2. The GMAT exam is comprised of three sections:
3. Quantitative Reasoning: 21 questions, 45 minutes
4. Verbal Reasoning: 23 questions, 45 minutes
5. Data Insights: 20 questions, 45 minutes
6. You can answer the three sections in any order. As you move through a section, you can bookmark questions that you would like to review later.
7. When you have answered all questions in a section, you will proceed to the Question Review & Edit screen for that section.
8. If there is no time remaining in the section, you will NOT proceed to the Question Review & Edit screen and you will automatically be moved to your optional break screen or the next section (if you have already taken your optional break).
9. Each Question Review & Edit screen includes a numbered list of the questions in that section and indicates the questions you bookmarked.
10. Clicking a question number will take you to that specific question. You can review as many questions as you would like and can edit up to three (3) answers.

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1. From 7:00 AM to 11:00 AM it rained 2.25 inches. At 11:00 AM the rain increased to fall at a rate of 1.25 in. every two hours. How many inches of rain landed on the ground by 5:00 PM?

(A) 7
(B) 9.75
(C) 6
(D) 3.25
(E) 7.125

Correct Answer: (C) 6

Solution:

Step 1: Understanding the Concept:
This problem requires calculating the total rainfall by summing the rainfall from two distinct periods with different rates.

Step 2: Detailed Explanation:
The problem can be broken down into two parts:
Part 1: Rainfall from 7:00 AM to 11:00 AM
The amount of rain during this period is given directly.

$$\text{Rainfall}_1 = 2.25 \text{ inches}$$

Part 2: Rainfall from 11:00 AM to 5:00 PM
First, we need to calculate the duration of this period.

$$\text{Duration}_2 = 5:00 \text{ PM} - 11:00 \text{ AM} = 6 \text{ hours}$$

The rate of rainfall is given as 1.25 inches every two hours. We can find the number of two-hour intervals in these 6 hours.

$$\text{Number of intervals} = \frac{6 \text{ hours}}{2 \text{ hours/interval}} = 3 \text{ intervals}$$

Now, calculate the rainfall during this period.

$$\text{Rainfall}_2 = 3 \text{ intervals} \times 1.25 \text{ inches/interval} = 3.75 \text{ inches}$$

Step 3: Total Rainfall
To find the total rainfall by 5:00 PM, we add the amounts from both parts.

$$\text{Total Rainfall} = \text{Rainfall}_1 + \text{Rainfall}_2$$

$$\text{Total Rainfall} = 2.25 + 3.75 = 6.00 \text{ inches}$$

Step 4: Final Answer
The total amount of rain that landed on the ground by 5:00 PM is 6 inches.

Quick Tip

For multi-step time and rate problems, always break the problem down into distinct time intervals. Calculate the value for each interval separately before combining them for the final answer.

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2. The owner of a hobby store needed to calculate the percentage of customers who purchase wood glue. Upon completing his survey, he noticed that 60% of the people that entered his store purchased an item. Of those customers, 15 percent purchased wood glue. What percent of the people that entered the store purchased wood glue?

(A) 8%
(B) 7%
(C) 9%
(D) 12%
(E) 15%

Correct Answer: (C) 9%

Solution:

Step 1: Understanding the Concept:
This is a problem about finding a percentage of a percentage. We need to find what 15% of 60% represents in relation to the total number of people who entered the store.

Step 2: Key Formula or Approach:
To find the percentage of a percentage, convert both percentages to decimals or fractions and then multiply them. The result can then be converted back to a percentage.

$$\text{Final Percentage} = (\text{Percentage}_1) \times (\text{Percentage}_2)$$

Step 3: Detailed Explanation:
Let the total number of people who entered the store be T.
The number of people who purchased an item is 60% of T.

$$\text{Number of purchasers} = 0.60 \times T$$

Of these purchasers, 15% bought wood glue. So, the number of people who bought wood glue is 15% of the number of purchasers.

$$\text{Number of wood glue purchasers} = 15\% \times (0.60 \times T)$$

Convert 15% to a decimal: 0.15.

$$\text{Number of wood glue purchasers} = 0.15 \times 0.60 \times T$$

$$\text{Number of wood glue purchasers} = 0.09 \times T$$

To express this as a percentage of the total people (T), we convert the decimal 0.09 back to a percentage.

$$0.09 \times 100\% = 9\%$$

Step 4: Final Answer
Therefore, 9% of the people that entered the store purchased wood glue.

Quick Tip

When you see "percent of a percent," remember to multiply the values. A common mistake is to add or subtract them. For example, 15% of 60% is not 15% or 60%, but a smaller percentage that results from their product.

3. If 1/x = 3.5, then 1/(x+2) =

(A) 7/9
(B) 16/7
(C) 7/16
(D) 9/7
(E) 7/4

Correct Answer: (C) 7/16

Solution:

Step 1: Understanding the Concept:
This algebraic problem requires first solving for the variable 'x' from the given equation and then substituting its value into the target expression to evaluate it.

Step 2: Detailed Explanation:
Part 1: Solve for x
We are given the equation:

$$\frac{1}{x} = 3.5$$

It's often easier to work with fractions than decimals. Let's convert 3.5 to a fraction.

$$3.5 = \frac{35}{10} = \frac{7}{2}$$

So, the equation becomes:

$$\frac{1}{x} = \frac{7}{2}$$

To find x, we can take the reciprocal of both sides.

$$x = \frac{2}{7}$$

Part 2: Evaluate the expression 1/(x+2)
Now substitute the value of x into the expression.

$$\frac{1}{x+2} = \frac{1}{\left(\frac{2}{7}\right)+2}$$

To add the terms in the denominator, we find a common denominator, which is 7.

$$2 = \frac{2 \times 7}{7} = \frac{14}{7}$$

So the denominator becomes:

$$\frac{2}{7} + \frac{14}{7} = \frac{2+14}{7} = \frac{16}{7}$$

Now, substitute this back into the expression.

$$\frac{1}{\frac{16}{7}}$$

The reciprocal of a fraction is found by inverting it.

$$\frac{1}{\frac{16}{7}} = 1 \times \frac{7}{16} = \frac{7}{16}$$

Step 3: Final Answer
The value of the expression 1/(x+2) is 7/16.

Quick Tip

In algebra, converting decimals to fractions can simplify calculations, especially when dealing with reciprocals and complex fractions. Remember that taking the reciprocal of a number 'a' is the same as calculating 1/a.

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4. A store owner is packing small radios into larger boxes that measure 25 in. by 42 in. by 60 in. If the measurement of each radio is 7 in. by 6 in. by 5 in., then how many radios can be placed in the box?

(A) 300
(B) 325
(C) 400
(D) 420
(E) 480

Correct Answer: (A) 300

Solution:

Step 1: Understanding the Concept:
This problem asks for the number of small boxes (radios) that can fit inside a larger box. This can be solved by comparing the volumes, but it's more accurate to check how the dimensions align to ensure there's no wasted space.

Step 2: Key Formula or Approach:
The number of small items that can fit in a large container is found by dividing the volume of the large container by the volume of one small item, provided the dimensions align perfectly.

$$\text{Number of radios} = \frac{\text{Volume of large box}}{\text{Volume of one radio}}$$

Alternatively, and more reliably, divide the corresponding dimensions:

$$\text{Number of radios} = \left(\frac{\text{Length}_{\text{box}}}{\text{Length}_{\text{radio}}}\right) \times \left(\frac{\text{Width}_{\text{box}}}{\text{Width}_{\text{radio}}}\right) \times \left(\frac{\text{Height}_{\text{box}}}{\text{Height}_{\text{radio}}}\right)$$

Step 3: Detailed Explanation:
Method 1: Using Volumes
First, calculate the volume of the large box.

$$V_{\text{box}} = 25 \text{ in} \times 42 \text{ in} \times 60 \text{ in} = 63000 \text{ in}^3$$

Next, calculate the volume of one radio.

$$V_{\text{radio}} = 7 \text{ in} \times 6 \text{ in} \times 5 \text{ in} = 210 \text{ in}^3$$

Now, divide the volume of the box by the volume of a radio.

$$\text{Number of radios} = \frac{63000}{210} = \frac{6300}{21} = 300$$

This method works because the dimensions of the box are perfect multiples of the radio's dimensions.
Method 2: Aligning Dimensions
Let's check if the dimensions fit perfectly. We need to match the radio's dimensions (5, 6, 7) to the box's dimensions (25, 42, 60).
- Along the 25 in. side of the box, we can fit the 5 in. side of the radios: $\frac{25}{5} = 5$ radios.
- Along the 42 in. side of the box, we can fit the 6 in. or 7 in. side of the radios. Let's try the 7 in. side: $\frac{42}{7} = 6$ radios.
- Along the 60 in. side of the box, we can fit the remaining 6 in. side of the radios: $\frac{60}{6} = 10$ radios.

Since each division results in a whole number, there is no wasted space with this orientation.
Total number of radios $= 5 \times 6 \times 10 = 300$.

Step 4: Final Answer
A total of 300 radios can be placed in the box.

Quick Tip

For packing problems, simply dividing the volumes is a quick first step. However, always double-check by aligning the dimensions. If the larger dimensions are not integer multiples of the smaller dimensions, space will be wasted, and the volume division method will give an incorrect (overestimated) answer.

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5. Frank is 15 years younger than John. In 5 years John will be twice as old as Frank. How old will Frank be in four years?

(A) 8
(B) 10
(C) 12
(D) 14
(E) 16

Correct Answer: (D) 14

Solution:

Step 1: Understanding the Concept:
This is a word problem that can be solved by setting up a system of linear equations based on the age relationships described.

Step 2: Detailed Explanation:
Part 1: Define variables and set up equations
Let F be Frank's current age.
Let J be John's current age.

From the first sentence: "Frank is 15 years younger than John."

$$F = J - 15 \quad \text{or} \quad J = F + 15 \quad \text{(Equation 1)}$$

Now, consider their ages in 5 years:
Frank's age in 5 years = F + 5.
John's age in 5 years = J + 5.

From the second sentence: "In 5 years John will be twice as old as Frank."

$$J + 5 = 2(F + 5) \quad \text{(Equation 2)}$$

Part 2: Solve the system of equations
Substitute Equation 1 into Equation 2 to eliminate J.

$$(F + 15) + 5 = 2(F + 5)$$

Simplify both sides of the equation.

$$F + 20 = 2F + 10$$

Now, solve for F by isolating the variable.

$$20 - 10 = 2F - F$$
$$10 = F$$

So, Frank's current age is 10 years.
Part 3: Answer the specific question
The question asks for Frank's age in four years, not his current age.

$$\text{Frank's age in 4 years} = \text{Current age} + 4$$
$$\text{Frank's age in 4 years} = 10 + 4 = 14$$

Step 3: Final Answer
In four years, Frank will be 14 years old.

Quick Tip

In age-related word problems, carefully distinguish between current ages, past ages, and future ages. Always define your variables clearly (e.g., F = Frank's *current* age) and read the final question carefully to ensure you are solving for the correct value.

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6. A store owner decided to raise the price of a particular item by exactly 10%. Of the following which is NOT the new price?

(A) \$1.10
(B) \$8.80
(C) \$11.00
(D) \$57.30
(E) \$78.10

Correct Answer: (D) \$57.30

Solution:

Step 1: Understanding the Concept:
When a price is increased by 10%, the new price is 110% of the original price. This means the new price must be equal to the original price multiplied by 1.1. Consequently, the new price must be divisible by 1.1.

Step 2: Key Formula or Approach:
Let P be the original price and N be the new price.

$$N = P + 0.10 \times P = P \times (1 + 0.10) = 1.1 \times P$$

To check if a given new price N is valid, we can find the original price P by rearranging the formula:

$$P = \frac{N}{1.1}$$

The original price P should be a sensible monetary value (typically a number with at most two decimal places).

Step 3: Detailed Explanation:
We will test each option by dividing it by 1.1.
(A) For \$1.10:

$$P = \frac{1.10}{1.1} = \$1.00$$

. This is a valid original price.
(B) For \$8.80:

$$P = \frac{8.80}{1.1} = \frac{88}{11} = \$8.00$$

. This is a valid original price.
(C) For \$11.00:

$$P = \frac{11.00}{1.1} = \frac{110}{11} = \$10.00$$

. This is a valid original price.
(D) For \$57.30:

$$P = \frac{57.30}{1.1} = \frac{573}{11} \approx 52.090909...$$

This division does not result in a terminating decimal with two places. The original price would not be a standard currency amount. Therefore, \$57.30 cannot be the result of a 10% increase on a typical price.
(E) For \$78.10:

$$P = \frac{78.10}{1.1} = \frac{781}{11} = \$71.00$$

. This is a valid original price.

Step 4: Final Answer
The price \$57.30 is the only one that cannot be the result of a 10% increase from a standard price.

Quick Tip

A number is divisible by 1.1 if it is divisible by 11 after moving the decimal point. For example, to check 57.30, we check if 573 is divisible by 11. The rule for divisibility by 11 is to check if the alternating sum of the digits is a multiple of 11. For 573, the sum is 3 - 7 + 5 = 1, which is not a multiple of 11. Thus, 573 is not divisible by 11.

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7. The price of a candy bar is \$1.00. The price of a ten pack of the same candy bar is \$7.40. The ten pack of candy bars is what percentage cheaper then purchasing ten candy bars individually?

(A) 18%
(B) 26%
(C) 32%
(D) 48%
(E) The prices are the same.

Correct Answer: (B) 26%

Solution:

Step 1: Understanding the Concept:
This problem asks for the percentage discount (or percentage cheaper) when buying an item

in bulk compared to buying it individually. The percentage change is always calculated with respect to the original or standard price.

Step 2: Key Formula or Approach:
The formula for percentage discount is:

$$\text{Percentage Cheaper} = \frac{\text{Original Price} - \text{New Price}}{\text{Original Price}} \times 100\%$$

Step 3: Detailed Explanation:
Part 1: Calculate the total price of buying individually.
The price of one candy bar is \$1.00. The price for ten individual bars would be:

$$\text{Original Price} = 10 \times \$1.00 = \$10.00$$

Part 2: Identify the discounted price.
The price of the ten-pack is given as:

$$\text{New Price} = \$7.40$$

Part 3: Calculate the amount saved.

$$\text{Savings} = \text{Original Price} - \text{New Price} = \$10.00 - \$7.40 = \$2.60$$

Part 4: Calculate the percentage cheaper.
Using the formula, with the original price as the base:

$$\text{Percentage Cheaper} = \frac{\text{Savings}}{\text{Original Price}} \times 100\%$$

$$\text{Percentage Cheaper} = \frac{\$2.60}{\$10.00} \times 100\%$$

$$\text{Percentage Cheaper} = 0.26 \times 100\% = 26\%$$

Step 4: Final Answer
The ten pack of candy bars is 26% cheaper than purchasing ten candy bars individually.

Quick Tip

When calculating percentage increase or decrease, the denominator in the fraction must always be the *original* or *starting* value. A common mistake is to use the new value as the denominator.

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8. In a certain department store, which has four sizes of a specific shirt, there are 1/3 as many small shirts as medium shirts, and 1/2 as many large shirts as small shirts. If there are as many x-large shirts as large shirts, what percent of the shirts in the store are medium?

(A) 10%
(B) 25%
(C) 33%
(D) 50%
(E) 60%

Correct Answer: (E) 60%

Solution:

Step 1: Understanding the Concept:
This problem involves ratios between different quantities (shirt sizes). The goal is to find the proportion of one quantity (medium shirts) relative to the total. A good strategy is to express all quantities in terms of a single variable or to pick a convenient number to work with.

Step 2: Detailed Explanation:
Part 1: Set up the relationships
Let S, M, L, and XL be the number of small, medium, large, and x-large shirts, respectively. From the problem statement:
1. $S = \frac{1}{3}M$
2. $L = \frac{1}{2}S$
3. $XL = L$

Part 2: Express all sizes in terms of one size (M)
The relationships link from M to S, and then from S to L and XL. So, let's express everything in terms of M.
- We already have $S = \frac{1}{3}M$.
- Now substitute this into the equation for L: $L = \frac{1}{2}S = \frac{1}{2}\left(\frac{1}{3}M\right) = \frac{1}{6}M$.
- Since $XL = L$, we also have $XL = \frac{1}{6}M$.

Part 3: Choose a convenient number for M to avoid fractions
The denominators are 3 and 6. The least common multiple is 6. Let's assume there are 6 medium shirts (M = 6).
- Number of Medium shirts: $M = 6$
- Number of Small shirts: $S = \frac{1}{3} \times 6 = 2$
- Number of Large shirts: $L = \frac{1}{6} \times 6 = 1$
- Number of X-Large shirts: $XL = L = 1$

Part 4: Calculate the total number of shirts

$$\text{Total} = M + S + L + XL = 6 + 2 + 1 + 1 = 10$$

Part 5: Calculate the percentage of medium shirts

$$\text{Percentage of Medium} = \frac{\text{Number of Medium Shirts}}{\text{Total Number of Shirts}} \times 100\%$$

$$\text{Percentage of Medium} = \frac{6}{10} \times 100\% = 0.6 \times 100\% = 60\%$$

Step 5: Final Answer
Medium shirts make up 60% of the total shirts in the store.

Quick Tip

For problems involving multiple ratios, a powerful technique is to pick a concrete number for one of the quantities. Choose a number that is a multiple of all the denominators involved to keep the calculations with whole numbers, which is often faster and less error-prone.

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9. A new apartment complex purchased 60 toilets and 20 shower heads. If the price of a toilet is three times the price of a shower head, what percent of the total cost was the cost of all the shower heads?

(A) 9%
(B) 10%
(C) 11%
(D) 13%
(E) 15%

Correct Answer: (B) 10%

Solution:

Step 1: Understanding the Concept:
This problem asks for the percentage contribution of one part (the cost of shower heads) to the whole (the total cost of all items). This requires setting up algebraic expressions for the costs based on the given price relationship.

Step 2: Detailed Explanation:
Part 1: Define variables for the prices
Let P_S be the price of one shower head.
Let P_T be the price of one toilet.
From the problem statement, "the price of a toilet is three times the price of a shower head":

$$P_T = 3 \times P_S$$

Part 2: Calculate the total cost of each type of item
- Number of shower heads = 20.
Total cost of shower heads = $20 \times P_S$.
- Number of toilets = 60.
Total cost of toilets = $60 \times P_T$. Substitute the price relationship from Part 1:
Total cost of toilets = $60 \times (3 \times P_S) = 180 \times P_S$.
Part 3: Calculate the total cost of the entire purchase

$$\text{Total Cost} = (\text{Total cost of shower heads}) + (\text{Total cost of toilets})$$

$$\text{Total Cost} = (20 \times P_S) + (180 \times P_S) = 200 \times P_S$$

Part 4: Calculate the required percentage
The question asks what percent of the total cost was the cost of all shower heads.

$$\text{Percentage} = \frac{\text{Total cost of shower heads}}{\text{Total Cost}} \times 100\%$$
$$\text{Percentage} = \frac{20 \times P_S}{200 \times P_S} \times 100\%$$

The variable P_S cancels out.

$$\text{Percentage} = \frac{20}{200} \times 100\% = \frac{1}{10} \times 100\% = 10\%$$

Step 3: Final Answer
The cost of all the shower heads was 10% of the total cost.

Quick Tip

In problems where prices or quantities are relative, you don't need the actual price. You can assign a simple variable (like 'x') or even a simple number (like \$1) to the base item. The relationships will hold, and the unknown variable will cancel out in the final percentage calculation.

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10. A car averages 55 mph for the first 4 hours of a trip and averages 70 mph for each additional hour. The average speed for the entire trip was 60 mph. How many hours long is the trip?

(A) 6
(B) 8
(C) 11
(D) 12
(E) 14

Correct Answer: (A) 6

Solution:

Step 1: Understanding the Concept:
This problem deals with average speed, which is not simply the average of the speeds. The average speed is defined as the total distance traveled divided by the total time taken. We need to set up an equation based on this definition.

Step 2: Key Formula or Approach:

$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

We can also use the relationship: Distance = Speed × Time.

Step 3: Detailed Explanation:
Part 1: Define variables and break down the trip

Let 't' be the number of additional hours the car traveled at 70 mph.

The trip has two parts:
Part 1:
- $\text{Speed}_1 = 55$ mph
- $\text{Time}_1 = 4$ hours
- $\text{Distance}_1 = \text{Speed}_1 \times \text{Time}_1 = 55 \times 4 = 220$ miles.

Part 2:
- $\text{Speed}_2 = 70$ mph
- $\text{Time}_2 = \text{t}$ hours
- $\text{Distance}_2 = \text{Speed}_2 \times \text{Time}_2 = 70 \times t = 70t$ miles.

Part 2: Set up the equation for the entire trip
- Total Time = $\text{Time}_1 + \text{Time}_2 = 4 + t$ hours.
- Total Distance = $\text{Distance}_1 + \text{Distance}_2 = 220 + 70t$ miles.
- Average Speed for the entire trip is given as 60 mph.

Using the average speed formula:

$$60 = \frac{220 + 70t}{4 + t}$$

Part 3: Solve the equation for t
Multiply both sides by (4 + t) to eliminate the denominator.

$$60(4 + t) = 220 + 70t$$

Distribute the 60 on the left side.

$$240 + 60t = 220 + 70t$$

Now, isolate the variable 't'. Subtract 60t from both sides.

$$240 = 220 + 10t$$

Subtract 220 from both sides.

$$20 = 10t$$

Divide by 10.

$$t = 2$$

So, the additional time traveled was 2 hours.
Part 4: Answer the specific question
The question asks for the total length of the trip in hours.

$$\text{Total Time} = 4 + t = 4 + 2 = 6 \text{ hours}$$

Step 4: Final Answer
The entire trip was 6 hours long.

Quick Tip

Remember that average speed is a weighted average of the individual speeds, weighted by the time spent at each speed. You cannot simply average 55 and 70. Problems involving average speed almost always require using the formula: Total Distance / Total Time.
