GMAT Quant Practise Question Paper 10 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. If Lynn can type a page in p minutes, what piece of the page can she do in 5 minutes?

(A) 5/p
(B) p-5
(C) p + 5
(D) p/5
(E) 1-p+5

Correct Answer: (A) 5/p

Solution:

Step 1: Understanding the Concept:
This problem is about calculating the rate of work. The rate is the amount of work done per

unit of time.

Step 2: Key Formula or Approach:
The formula for work is: **Work = Rate × Time**.
From this, we can derive the rate: **Rate = Work / Time**.

Step 3: Detailed Explanation:
First, we need to find Lynn's typing rate.
She completes 1 page (Work) in p minutes (Time).

$$\text{Rate} = \frac{1 \text{ page}}{p \text{ minutes}} = \frac{1}{p} \text{ pages per minute}$$

Now, we need to find out how much work (what piece of the page) she can do in 5 minutes.
We use the work formula with her rate and the new time.

$$\text{Work done in 5 minutes} = \text{Rate} \times \text{Time} = \left(\frac{1}{p}\right) \times 5 = \frac{5}{p}$$

Step 4: Final Answer:
Therefore, in 5 minutes, Lynn can type 5/p of the page. The correct option is (A).

> **Quick Tip**
>
> For work-rate problems, always determine the rate first (e.g., jobs per hour, pages per minute). Once you have the rate, you can easily calculate the work done in any given amount of time.

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2. If Sally can paint a house in 4 hours, and John can paint the same house in 6 hour, how long will it take for both of them to paint the house together?

(A) 2 hours and 24 minutes
(B) 3 hours and 12 minutes
(C) 3 hours and 44 minutes
(D) 4 hours and 10 minutes
(E) 4 hours and 33 minutes

Correct Answer: (A) 2 hours and 24 minutes

Solution:

Step 1: Understanding the Concept:
This is a combined work problem. To find the time it takes for them to work together, we need to add their individual work rates.

Step 2: Key Formula or Approach:
The formula for combined work is:

$$\frac{1}{T_{\text{total}}} = \frac{1}{T_1} + \frac{1}{T_2}$$

where T_1 and T_2 are the times taken by each individual, and T_{total} is the time taken when working together.

Step 3: Detailed Explanation:
First, calculate the individual rates:
Sally's rate $= \frac{1 \text{ house}}{4 \text{ hours}} = \frac{1}{4}$ of the house per hour.
John's rate $= \frac{1 \text{ house}}{6 \text{ hours}} = \frac{1}{6}$ of the house per hour.
Next, add their rates to get the combined rate:

$$\text{Combined Rate} = \frac{1}{4} + \frac{1}{6}$$

To add these fractions, find a common denominator, which is 12.

$$\text{Combined Rate} = \frac{3}{12} + \frac{2}{12} = \frac{5}{12} \text{ of the house per hour}$$

The time it takes to complete the house together is the reciprocal of the combined rate.

$$\text{Time together} = \frac{1}{\text{Combined Rate}} = \frac{1}{5/12} = \frac{12}{5} \text{ hours}$$

Now, convert the time into hours and minutes.
$\frac{12}{5}$ hours $= 2.4$ hours.
The whole number part is 2 hours. The decimal part is 0.4 hours.
To convert 0.4 hours to minutes, multiply by 60:

$$0.4 \times 60 = 24 \text{ minutes}$$

Step 4: Final Answer:
Working together, it will take them 2 hours and 24 minutes to paint the house. The correct option is (A).

> **Quick Tip**
>
> When two people work together, their combined time will always be less than the faster person's individual time. In this case, it must be less than 4 hours, which can help you eliminate some options.

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3. Employees of a discount appliance store receive an additional 20% off of the lowest price on an item. If an employee purchases a dishwasher during a 15% off sale, how much will he pay if the dishwasher originally cost 450?

(A) 280.90
(B)287.00
(C) 292.50
(D)306.00
(E) 333.89

Correct Answer: (D) 306.00

Solution:

Step 1: Understanding the Concept:
This problem involves applying successive percentage discounts. The discounts are applied one after the other, not added together.

Step 2: Key Formula or Approach:
To calculate a price after a discount, use the formula:

$$\text{Final Price} = \text{Original Price} \times (1 - \text{Discount Rate})$$

We will apply this formula twice.

Step 3: Detailed Explanation:
First, calculate the sale price after the 15% discount. This will be the "lowest price".
Original Price = 450.
$Discount Rate = 15\% = 0.15$.
Sale Price = $450 \times (1 - 0.15) = \$450 \times 0.85 = \$382.50$ Next, the employee gets an additional 20% off this sale price.
New Price = 382.50.
$Employee Discount Rate = 20\% = 0.20$.
Employee Price = $382.50 \times (1 - 0.20) = \$382.50 \times 0.80 = \$306.00$
Step 4: Final Answer:
The employee will pay $306.00 for the dishwasher. The correct option is (D).

> **Quick Tip**
>
> Remember that applying a 15% discount and then a 20% discount is not the same as a 35% discount. Successive discounts are applied to the new, reduced price at each step.

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4. The sales price of a car is $12,590, which is 20\% off the original price. What is the original price?

(A) 14,310.40
(B)14,990.90
(C) 15,290.70
(D)15,737.50
(E) 16,935.80

Correct Answer: (D) $15,737.50$

Solution:

Step 1: Understanding the Concept:
This is a reverse percentage problem. We are given the final price after a discount and need to find the original price.

Step 2: Key Formula or Approach:
If the sales price is the result of a discount, the relationship is:

$$\text{Sales Price} = \text{Original Price} \times (1 - \text{Discount Rate})$$

To find the original price, we rearrange the formula:

$$\text{Original Price} = \frac{\text{Sales Price}}{1 - \text{Discount Rate}}$$

Step 3: Detailed Explanation:
The sales price is $12,590$.
$The discount rate is 20\% or 0.20.$
$This means the sales price represents 100\% - 20\% = 80\%$ of the original price.
Using the formula:

$$\text{Original Price} = \frac{\$12,590}{1 - 0.20} = \frac{\$12,590}{0.80}$$
$$\text{Original Price} = \$15,737.50$$

Step 4: Final Answer:
The original price of the car was $15,737.50. The correct option is (D).$

> **Quick Tip**
>
> A common mistake is to add 20% of the sales price back to it. This is incorrect. To reverse a percentage decrease, you must divide by (1 - percentage rate), not multiply.

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5. Solve the following equation for A: 2A/3 = 8 + 4A

(A) -2.4
(B) 2.4
(C) 1.3
(D) -1.3
(E) 0

Correct Answer: (A) -2.4

Solution:

Step 1: Understanding the Concept:
The goal is to solve a linear equation for the variable A. This involves isolating A on one side of the equation.

Step 2: Key Formula or Approach:
We will use algebraic manipulation to solve for A. The steps are: 1. Eliminate any fractions.
2. Gather all terms with A on one side of the equation.
3. Gather all constant terms on the other side.
4. Solve for A.

Step 3: Detailed Explanation:
The given equation is:
$$\frac{2A}{3} = 8 + 4A$$
First, to eliminate the fraction, multiply both sides of the equation by 3:
$$3 \times \left(\frac{2A}{3}\right) = 3 \times (8 + 4A)$$
$$2A = 24 + 12A$$
Next, gather all terms with A on one side. Subtract 12A from both sides:
$$2A - 12A = 24$$
$$-10A = 24$$
Finally, solve for A by dividing both sides by -10:
$$A = \frac{24}{-10}$$
$$A = -2.4$$

Step 4: Final Answer:
The value of A is -2.4. The correct option is (A).

> **Quick Tip**
>
> When solving equations with fractions, multiplying the entire equation by the least common denominator of all fractions is an effective first step to simplify the problem.

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6. If Leah is 6 years older than Sue, and John is 5 years older than Leah, and the total of their ages is 41. Then how old is Sue?

(A) 8
(B) 10
(C) 14

(D) 19

(E) 21

Correct Answer: (A) 8

Solution:

Step 1: Understanding the Concept:
This is a word problem that can be solved by setting up an algebraic equation based on the relationships between the ages.

Step 2: Key Formula or Approach:
1. Define a variable for the unknown age (Sue's age).
2. Express the other ages in terms of this variable.
3. Set up an equation where the sum of the ages equals the given total.
4. Solve the equation for the variable.

Step 3: Detailed Explanation:
Let S be Sue's age.
Leah (L) is 6 years older than Sue, so:

$$L = S + 6$$

John (J) is 5 years older than Leah, so:

$$J = L + 5 = (S + 6) + 5 = S + 11$$

The sum of their ages is 41:

$$S + L + J = 41$$

Now, substitute the expressions for L and J into the sum equation:

$$S + (S + 6) + (S + 11) = 41$$

Combine the like terms:

$$3S + 17 = 41$$

Subtract 17 from both sides:

$$3S = 41 - 17$$
$$3S = 24$$

Divide by 3 to find S:

$$S = \frac{24}{3} = 8$$

Step 4: Final Answer:
Sue is 8 years old. The correct option is (A).

> **Quick Tip**
>
> After solving, it's a good practice to check your answer. If Sue is 8, Leah is 8+6=14, and John is 14+5=19. Their total age is 8+14+19=41, which matches the problem statement.

7. Alfred wants to invest $4,000$ at 6% simple interest rate for 5 years. How much interest will he receive?

(A) 240
(B) 480
(C) 720
(D) 960
(E) 1,200

Correct Answer: (E) 1,200

Solution:

Step 1: Understanding the Concept:
This problem requires the calculation of simple interest, which is interest earned only on the initial principal amount.

Step 2: Key Formula or Approach:
The formula for simple interest (I) is:

$$I = P \times R \times T$$

Where:
P = Principal amount (the initial amount of money)
R = Annual interest rate (in decimal form)
T = Time (in years)

Step 3: Detailed Explanation:
Identify the values from the problem:
Principal (P) = $4,000$
$Annual\ Interest\ Rate (R) = 6\% = 0.06$
$Time (T) = 5 years$
$Now, substitute these values into the formula: I = \$4,000 \times 0.06 \times 5$ Calculate the interest per year first:

$$\$4,000 \times 0.06 = \$240 \text{ per year}$$

Now, multiply by the number of years:

$$I = \$240 \times 5 = \$1,200$$

Step 4: Final Answer:
Alfred will receive $1,200$ in interest. The correct option is (E).

Quick Tip

For simple interest, you can calculate the interest for one year and then multiply by the total number of years. This can sometimes make the mental math easier.

8. Jim is able to sell a hand-carved statue for 670 which was a 35% profit over his cost. How much did the statue cost?

(A) 496.30
(B) 512.40
(C) 555.40
(D) 574.90
(E) 588.20

Correct Answer: (A) 496.30

Solution:

Step 1: Understanding the Concept:
This is another reverse percentage problem, similar to finding the original price after a discount, but this time it involves a profit markup.

Step 2: Key Formula or Approach:
The selling price is the original cost plus the profit. The formula is:

$$\text{Selling Price} = \text{Cost} + (\text{Cost} \times \text{Profit Rate}) = \text{Cost} \times (1 + \text{Profit Rate})$$

To find the original cost, we rearrange the formula:

$$\text{Cost} = \frac{\text{Selling Price}}{1 + \text{Profit Rate}}$$

Step 3: Detailed Explanation:
Identify the values from the problem:
Selling Price $= 670$
$Profit Rate = 35\% = 0.35$
The selling price of 670 represents 100% of the cost plus 35% of the cost, which is 135% of the original cost.
Using the formula:

$$\text{Cost} = \frac{\$670}{1 + 0.35} = \frac{\$670}{1.35}$$
$$\text{Cost} \approx \$496.296296...$$

Rounding to the nearest cent (two decimal places):

$$\text{Cost} = \$496.30$$

Step 4: Final Answer:
The statue originally cost Jim approximately 496.30. The correct option is (A).

> **Quick Tip**
>
> To reverse a percentage increase (like a profit margin or tax), you divide the final amount by (1 + percentage rate). Don't subtract the percentage from the final amount, as that's a common error.

9. The city council has decided to add a 0.3% tax on motel and hotel rooms. If a traveler spends the night in a motel room that costs 55 before taxes, how much will the city receive in taxes from him?

(A) 10 cents
(B) 11 cents
(C) 15 cents
(D) 17 cents
(E) 21 cents

Correct Answer: (D) 17 cents

Solution:

Step 1: Understanding the Concept:
This problem requires calculating a tax amount, which is a straightforward percentage calculation. Special attention is needed for the decimal in the percentage.

Step 2: Key Formula or Approach:
The formula for calculating the tax amount is:

$$\text{Tax Amount} = \text{Original Price} \times \text{Tax Rate}$$

Step 3: Detailed Explanation:
Identify the values from the problem:
Original Price = 55
$Tax Rate = 0.3\%$
$First, convert the percentage to a decimal. Remember to divide by 100. 0.3\% = \frac{0.3}{100} = 0.003$ Now, apply the formula:

$$\text{Tax Amount} = \$55 \times 0.003 = \$0.165$$

The question asks for the amount in cents. To convert dollars to cents, multiply by 100.

$$\$0.165 \times 100 = 16.5 \text{ cents}$$

Since 16.5 cents is not an option and currency is typically rounded to the nearest cent, 16.5 cents rounds up to 17 cents.

Step 4: Final Answer:
The city will receive $0.165, which is 16.5 cents. The closest answer is 17 cents. The correct option is (D)$.

> **Quick Tip**
>
> Be very careful when converting percentages with decimals. A common mistake is to write 0.3% as 0.3. Always remember to divide by 100, so 0.3% becomes 0.003.

10. A student receives his grade report from a local community college, but the GPA is smudged. He took the following classes: a 2 hour credit art, a 3 hour credit history, a 4 hour credit science course, a 3 hour credit mathematics course, and a 1 hour science lab. He received a "B" in the art class, an "A" in the history class, a "C" in the science class, a "B" in the mathematics class, and an "A" in the science lab. What was his GPA if the letter grades are based on a 4 point scale? (A=4, B=3, C=2, D=1, F=0)

(A) 2.7
(B) 2.8
(C) 3.0
(D) 3.1
(E) 3.2

Correct Answer: (C) 3.0

Solution:

Step 1: Understanding the Concept:
A Grade Point Average (GPA) is a weighted average. The "weights" are the credit hours for each course, and the "values" are the grade points assigned to the letter grades.

Step 2: Key Formula or Approach:
The formula for GPA is:
$$\text{GPA} = \frac{\text{Total Quality Points}}{\text{Total Credit Hours}}$$
Where Total Quality Points $= \sum$(Credit Hours for a course $\times$ Grade Points for that course).

Step 3: Detailed Explanation:
First, let's list the information and calculate the quality points for each course.

- **Art:** 2 credit hours, Grade B (3 points). Quality Points $= 2 \times 3 = 6$

- **History:** 3 credit hours, Grade A (4 points). Quality Points $= 3 \times 4 = 12$

- **Science Course:** 4 credit hours, Grade C (2 points). Quality Points $= 4 \times 2 = 8$

- **Mathematics:** 3 credit hours, Grade B (3 points). Quality Points $= 3 \times 3 = 9$

- **Science Lab:** 1 credit hour, Grade A (4 points). Quality Points $= 1 \times 4 = 4$

Next, calculate the Total Quality Points and Total Credit Hours.
Total Quality Points $= 6 + 12 + 8 + 9 + 4 = 39$.
Total Credit Hours $= 2 + 3 + 4 + 3 + 1 = 13$.
Finally, calculate the GPA using the formula:
$$\text{GPA} = \frac{39}{13} = 3.0$$

Step 4: Final Answer:
The student's GPA was 3.0. The correct option is (C).

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11. Simon arrived at work at 8:15 A.M. and left work at 10:30 P.M. If Simon gets paid by the hour at a rate of $10 and time and for any hours worked over 8 in a day. How much did Simon get paid?

(A) 120.25
(B) 160.75
(C) 173.75
(D) 180.00
(E) 182.50

Correct Answer: (C) 173.75

Solution:

Step 1: Understanding the Concept:
This problem involves calculating total wages based on regular hours and overtime hours, which are paid at a higher rate.

Step 2: Key Formula or Approach:
1. Calculate the total hours worked.
2. Separate the total hours into regular hours (up to 8) and overtime hours (anything over 8).
3. Calculate the pay for regular hours.
4. Calculate the overtime pay rate (time and a half).
5. Calculate the pay for overtime hours.
6. Add the regular pay and overtime pay together.

Step 3: Detailed Explanation:
1. Calculate total hours worked:
From 8:15 A.M. to 8:15 P.M. is exactly 12 hours.
From 8:15 P.M. to 10:15 P.M. is another 2 hours.
From 10:15 P.M. to 10:30 P.M. is 15 minutes.
Total time = 12 hours + 2 hours + 15 minutes = 14 hours and 15 minutes.
Convert minutes to a decimal of an hour: 15 minutes = $\frac{15}{60}$ hours = 0.25 hours.
So, total hours worked = 14.25 hours.

2. Separate regular and overtime hours:
Regular hours = 8 hours.
Overtime hours = Total hours - Regular hours = $14.25 - 8 = 6.25$ hours.

3. Calculate regular and overtime pay:
Regular pay rate = $10/hour.
$Regular pay = 8$ hours $\times$ $10/hour = $80.00.

Overtime rate is time and a half: $\$10 \times 1.5 = \$15$/hour.
Overtime pay $= 6.25$ hours $\times \$15$/hour $= \$93.75$.

4. Calculate total pay:
Total Pay = Regular Pay + Overtime Pay $= \$80.00 + \$93.75 = \$173.75$.

Step 4: Final Answer:
Simon got paid $173.75. The correct option is (C).

> **Quick Tip**
>
> When calculating time intervals that cross P.M., it can be helpful to convert to a 24-hour clock. 8:15 A.M. is 08:15 and 10:30 P.M. is 22:30. The difference is 14 hours and 15 minutes.

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12. Grace has 16 jellybeans in her pocket. She has 8 red ones, 4 green ones, and 4 blue ones. What is the minimum number of jellybeans she must take out of her pocket to ensure that she has one of each color?

(A) 4
(B) 8
(C) 12
(D) 13
(E) 16

Correct Answer: (D) 13

Solution:

Step 1: Understanding the Concept:
This is a classic "worst-case scenario" problem, often related to the Pigeonhole Principle. To "ensure" an outcome, we must consider what would happen if we were as unlucky as possible.

Step 2: Key Formula or Approach:
To guarantee a specific combination, assume you first draw all the items you do *not* want, or all of the most numerous items. The very next draw will then guarantee the desired outcome.

Step 3: Detailed Explanation:
We want to guarantee that we have at least one of each color: red, green, and blue.
Let's imagine the worst possible luck.
Worst Case Scenario:
First, you draw all the jellybeans of the most common color. There are 8 red ones. So, you pull out all 8 red jellybeans. At this point, you have only one color.
Number of jellybeans drawn: 8 (all red).
Next, you draw all the jellybeans of the next most common color. Both green and blue have 4.

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Let's say you draw all the green ones.

Number of jellybeans drawn: 8 red + 4 green = 12.

After drawing 12 jellybeans, you have all the red and all the green ones, but you still haven't drawn a single blue jellybean. The only jellybeans left in the pocket are the 4 blue ones. Therefore, the very next jellybean you draw (the 13th one) is guaranteed to be blue.

This will complete your set of at least one of each color.

Step 4: Final Answer:

Grace must take out a minimum of 13 jellybeans to be absolutely certain she has one of each color. The correct option is (D).

> **Quick Tip**
>
> For problems that ask to "guarantee" or "ensure" a result, always think about the worst possible sequence of events. Add up the counts of the groups you want to avoid picking from first, then add 1.

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13. If r = 5 z then 15 z = 3 y, then r =

(A) y
(B) 2y
(C) 4y
(D) 10y
(E) 15y

Correct Answer: (A) y

Solution:

Step 1: Understanding the Concept:

This problem involves solving a system of two simple equations by using substitution to find the relationship between r and y.

Step 2: Key Formula or Approach:

The goal is to express 'r' in terms of 'y'. We can do this by finding a common link between the two equations, which is the variable 'z' or an expression involving 'z'.

Step 3: Detailed Explanation:

We are given two equations:

1) $r = 5z$

2) $15z = 3y$

Let's look at the second equation and see if we can simplify it to relate to the first equation. We can simplify $15z = 3y$ by dividing both sides by 3:

$$\frac{15z}{3} = \frac{3y}{3}$$

$$5z = y$$

Now we have a new expression: $y = 5z$.

From the first equation, we know that $r = 5z$.

Since both 'r' and 'y' are equal to the same expression (5z), they must be equal to each other.

Therefore, $r = y$.

Step 4: Final Answer:

The value of r is equal to y. The correct option is (A).

> **Quick Tip**
>
> When you have multiple equations, look for a common variable or expression. Manipulating one equation to match a part of another equation is a key strategy for substitution.

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14. If 300 jellybeans cost you x dollars. How many jellybeans can you purchase for 50 cents at the same rate?

(A) 150/x

(B) 150x

(C) 6x

(D) 1500/x

(E) 600x

Correct Answer: (A) 150/x

Solution:

Step 1: Understanding the Concept:

This is a rate problem that can be solved using proportions. We need to find the number of jellybeans per unit of cost and then apply it to the new amount of money.

Step 2: Key Formula or Approach:

We can set up a proportion:
$$\frac{\text{Jellybeans}_1}{\text{Cost}_1} = \frac{\text{Jellybeans}_2}{\text{Cost}_2}$$

It is crucial to keep the units consistent (either all in dollars or all in cents).

Step 3: Detailed Explanation:

Let's keep the costs in dollars.

$\text{Cost}_1 = \text{x dollars}$

$\text{Jellybeans}_1 = 300$

$\text{Cost}_2 = 50 \text{ cents} = 0.50$

$Jellybeans_2 = \text{J (this is what we want to find)}$

Now, set up the proportion:
$$\frac{300}{x} = \frac{J}{0.50}$$
To solve for J, we can cross-multiply or simply multiply both sides by 0.50:
$$J = 0.50 \times \frac{300}{x}$$
$$J = \frac{0.50 \times 300}{x}$$
$$J = \frac{150}{x}$$

Alternative Method (using cents):
x dollars = 100x cents
$\text{Cost}_1 = 100x$ cents
$\text{Cost}_2 = 50$ cents

$$\frac{300}{100x} = \frac{J}{50}$$
Multiply both sides by 50:
$$J = 50 \times \frac{300}{100x} = \frac{15000}{100x} = \frac{150}{x}$$

Step 4: Final Answer:
You can purchase 150/x jellybeans for 50 cents. The correct option is (A).

> **Quick Tip**
>
> In proportion problems involving different units (like dollars and cents), always convert them to a common unit before setting up your equation to avoid errors.

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15. Lee worked 22 hours this week and made $132. If she works 15 hours next week at the same pay rate, how muc

(A) 57
(B)90
(C) 104
(D)112
(E) 122

Correct Answer: (B) 90

Solution:

Step 1: Understanding the Concept:
This is a two-step problem involving a constant rate (hourly wage). First, we must determine the rate from the given information, and then use that rate to calculate the earnings for a different number of hours.

Step 2: Key Formula or Approach:
1. Calculate the hourly pay rate:

$$\text{Rate} = \frac{\text{Total Earnings}}{\text{Hours Worked}}$$

2. Calculate the new earnings:

$$\text{New Earnings} = \text{Rate} \times \text{New Hours}$$

Step 3: Detailed Explanation:
Step 1: Find the hourly pay rate.
Lee earned $132 for working 22 hours.
Hourly Rate $= \frac{\$132}{22 \text{ hours}}$ To simplify the division, we can note that 132 is 120 + 12, and 22 is 2 * 11.

$$\text{Hourly Rate} = \frac{132}{22} = \frac{12 \times 11}{2 \times 11} = \frac{12}{2} = \$6 \text{ per hour}$$

Step 2: Calculate the earnings for 15 hours.
Next week, Lee works 15 hours at the same rate of $6 per hour.
New Earnings $= 15$ hours $\times \$6/\text{hour}$

$$\text{New Earnings} = \$90$$

Step 4: Final Answer:
Lee will make $90 next week. The correct option is (B).

> **Quick Tip**
>
> This type of problem can also be set up as a direct proportion: $\frac{\text{Earnings}_1}{\text{Hours}_1} = \frac{\text{Earnings}_2}{\text{Hours}_2}$.
> Here, $\frac{132}{22} = \frac{x}{15}$, which gives $6 = \frac{x}{15}$, so $x = 90$.

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16. If 8x + 5x + 2x + 4x = 114, the 5x + 3 =

(A) 12
(B) 25
(C) 33
(D) 47
(E) 86

Correct Answer: (C) 33

Solution:

Step 1: Understanding the Concept:
This is a two-part algebra problem. First, you must solve a linear equation to find the value of the variable 'x'. Second, you must substitute this value of 'x' into a separate expression to find its value.

Step 2: Key Formula or Approach:
1. Solve the equation for 'x' by combining like terms and isolating 'x'.
2. Substitute the found value of 'x' into the expression $5x + 3$.

Step 3: Detailed Explanation:
Part 1: Solve for x.
The given equation is:
$$8x + 5x + 2x + 4x = 114$$

Combine all the terms with 'x' on the left side:

$$(8 + 5 + 2 + 4)x = 114$$

$$19x = 114$$

Now, solve for 'x' by dividing both sides by 19:

$$x = \frac{114}{19}$$

To calculate this, you can recognize that 19 is close to 20. $20 \times 6 = 120$. Let's check 19×6:
$(20 - 1) \times 6 = 120 - 6 = 114$.
$$x = 6$$

Part 2: Evaluate the expression.
The question asks for the value of $5x + 3$.
Substitute the value $x = 6$ into this expression:

$$5(6) + 3$$

$$30 + 3 = 33$$

Step 4: Final Answer:
The value of the expression $5x + 3$ is 33. The correct option is (C).

> **Quick Tip**
>
> Always read the question carefully to the very end. A common mistake is to solve for 'x' and choose that as the answer, but the question often asks for the value of an expression containing 'x'.

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17. You need to purchase a textbook for nursing school. The book cost $80.00, and the sales tax where you are p
How much change will you receive back?

(A) 5.20
(B)7.35
(C) 13.40
(D)19.95
(E) 21.25

Correct Answer: (C) 13.40

Solution:

Step 1: Understanding the Concept:
This problem involves calculating the total cost of an item including sales tax, and then finding the change received from a payment.

Step 2: Key Formula or Approach:
1. Calculate the sales tax amount:

$$\text{Tax} = \text{Cost} \times \text{Tax Rate}$$

2. Calculate the total cost:

$$\text{Total Cost} = \text{Cost} + \text{Tax}$$

3. Calculate the change:

$$\text{Change} = \text{Amount Paid} - \text{Total Cost}$$

Step 3: Detailed Explanation:
Step 1: Calculate the sales tax.
Book Cost = 80.00
$SalesTaxRate = 8.25\% = 0.0825$
Tax Amount = 80.00×0.0825

$$\text{Tax Amount} = \$6.60$$

Step 2: Calculate the total cost.

$$\text{Total Cost} = \text{Book Cost} + \text{Tax Amount} = \$80.00 + \$6.60 = \$86.60$$

Step 3: Calculate the change.
Amount Paid = 100.00
Change = $100.00 - $86.60 = $13.40
Step 4: Final Answer:
You will receive $13.40 in change. The correct option is (C).

> **Quick Tip**
>
> You can also calculate the total cost in one step by multiplying the original price by (1 + tax rate). For example: $80 \times 1.0825 = \$86.60$. This can be slightly faster.

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18. You purchase a car making a down payment of $3,000 and 6 monthly payments of $225. How much have you paid so far for the car?

(A) 3225
(B) 4350
(C) 5375

$(D)6550$

(E) 6398

Correct Answer: (B) 4350

Solution:

Step 1: Understanding the Concept:
This problem requires calculating the total amount paid, which is the sum of an initial down payment and the total of all monthly payments.

Step 2: Key Formula or Approach:

$$\text{Total Paid} = \text{Down Payment} + (\text{Number of Payments} \times \text{Amount per Payment})$$

Step 3: Detailed Explanation:
Identify the components of the payment:
Down Payment $= 3,000$
$Number of Monthly Payments = 6$
$Amount of each Monthly Payment =225$
First, calculate the total amount from the monthly payments:

$$\text{Total from Monthly Payments} = 6 \times \$225$$

$$6 \times \$200 = \$1200$$

$$6 \times \$25 = \$150$$

$$\text{Total from Monthly Payments} = \$1200 + \$150 = \$1350$$

Next, add the down payment to this total:

$$\text{Total Paid So Far} = \text{Down Payment} + \text{Total from Monthly Payments}$$

$$\text{Total Paid So Far} = \$3,000 + \$1,350 = \$4,350$$

Step 4: Final Answer:
You have paid a total of $4,350 so far for the car. The correct option is (B)$.

> **Quick Tip**
>
> Break down the problem into its parts: the one-time payment (down payment) and the recurring payments (installments). Calculate the total for the recurring part first, then add the one-time payment.

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19. Your supervisor instructs you to purchase 240 pens and 6 staplers for the nurse's station. Pens are purchased in sets of 6 for $2.35 per pack. Staplers are sold in sets of 2 for $12.95. How much will purchasin

(A) 132.85
(B)145.75
(C) 162.90
(D)225.25
(E) 226.75

Correct Answer: (A) 132.85

Solution:

Step 1: Understanding the Concept:
This problem requires calculating the total cost for two different items that are sold in packs. We need to determine how many packs of each item are needed and then calculate the total cost.

Step 2: Key Formula or Approach:
1. For each item, calculate the number of packs needed:

$$\text{Packs Needed} = \frac{\text{Total Items Needed}}{\text{Items per Pack}}$$

2. For each item, calculate the total cost:

$$\text{Item Cost} = \text{Packs Needed} \times \text{Cost per Pack}$$

3. Find the total purchase cost:

$$\text{Total Purchase Cost} = \text{Cost of Pens} + \text{Cost of Staplers}$$

Step 3: Detailed Explanation:
Cost of Pens:
Total pens needed = 240.
Pens per pack = 6.

$$\text{Number of pen packs needed} = \frac{240}{6} = 40 \text{ packs}$$

Cost per pack of pens = 2.35.
Total cost for pens = $40 \times \$2.35 = \$94.00$
Cost of Staplers:
Total staplers needed = 6.
Staplers per pack = 2.

$$\text{Number of stapler packs needed} = \frac{6}{2} = 3 \text{ packs}$$

Cost per pack of staplers = 12.95.
Total cost for staplers = $3 \times \$12.95 = \$38.85$
Total Purchase Cost:

$$\text{Total Cost} = \text{Cost of Pens} + \text{Cost of Staplers} = \$94.00 + \$38.85 = \$132.85$$

Step 4: Final Answer:
The total cost for purchasing these products will be $132.85. The correct option is (A).

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20. If y = 3, then $y^3(y^3\text{-y}) =$

(A) 300
(B) 459
(C) 648
(D) 999
(E) 1099

Correct Answer: (C) 648

Solution:

Step 1: Understanding the Concept:
This problem requires evaluating an algebraic expression by substituting a given value for the variable and following the order of operations (PEMDAS/BODMAS).

Step 2: Key Formula or Approach:
The order of operations is: 1. **P**arentheses (or Brackets) 2. **E**xponents (or Orders) 3. **M**ultiplication and **D**ivision (from left to right) 4. **A**ddition and **S**ubtraction (from left to right)

Step 3: Detailed Explanation:
The expression is $y^3(y^3 - y)$, and we are given $y = 3$.
First, substitute 3 for y in the expression:

$$3^3(3^3 - 3)$$

Following the order of operations, we first evaluate the expression inside the parentheses. Inside the parentheses, we handle the exponent first.

$$3^3 = 3 \times 3 \times 3 = 27$$

Now substitute this back into the expression:

$$27 \times (27 - 3)$$

Next, complete the operation inside the parentheses:

$$27 - 3 = 24$$

The expression simplifies to:
$$27 \times 24$$

Now, perform the multiplication:
$$27 \times 24 = 648$$

Step 4: Final Answer:

The value of the expression is 648. The correct option is (C).

> **Quick Tip**
>
> When an expression has the same variable multiple times, calculate its powers first (like y^3) and then substitute that value in all places to simplify the calculation.