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Word Problems Quiz 7

Direction: Study the following questions carefully and choose the right answer.

1. It takes 6 workers a total of 10 hours to assemble a computer, with each working at the same rate. If six workers start at 9.00 am, and one worker per hour is added beginning at 3.00 pm, at what time will the computer assembled?

A. 5.00 pm   B. 5.30 pm   C. 6.00 pm   D. 7.00 pm   E. 6.30 pm

2. Chandrbhan received Rs. 12000 on maturity of lic policy. He invested a part of it at 6% per annum and the remaining at 5% per annum simple interest. The total interest earned by him in 4 years is Rs. 2580. The sum of invested at 6% per annum is

A. Rs. 4500   B. Rs. 5000   C. Rs. 7500   D. Rs. 5500   E. None of these

3. A car costing Rs. 5,00,000 of a person depreciated at the rate of 15% in the first year, 13% in the second year and so on. House of that person, costing Rs. 7,00,000 appreciated at the rate of 10% in the first year, 12% in the second year and so on. What was the change in total value of car, house at the end of 3 years?

A. Decrease of Rs. 1,34,543   B. Increase of Rs. 1,34,543   C. Increase of Rs. 1,12,214
D. Decrease of Rs. 1,12,214   E. Increase of Rs. 1,12,241

4. A company first raises the price of articles by x% and then reduces all the new prices by x%. After one cycle, the price of a article decreased by Rs. 1,000; and after the second cycle, the article was sold for Rs. 23,040. What was the original price of the article?

A. Rs. 15,000   B. Rs. 20,000   C. Rs. 25,000   D. Rs. 30,000   E. None of these

5. A committee of 3 members is to be made out of 6 men and 5 women. What is the probability that the committee has at least two women?

A. $\frac{10}{33}$ B. $\frac{14}{33}$ C. $\frac{14}{15}$ D. $\frac{13}{25}$ E. None of these

6. The earnings of P, Q and R are in the ratio of 3 : 8 : 5. It is estimated that their earnings will respectively increase by 40%, 35% and 56% in the next year. What will be the new ratio of their earnings?

A. 8 : 17 : 11   B. 11 : 15 : 13   C. 6 : 17 : 13   D. 7 : 18 : 13   E. 7 : 17 : 13

7. The length of the side of a rectangle is four times its breadth and the area of this rectangle is 256 sq.cm. What is the area (in sq.cm) of a square whose side is equal to the average of the length and breadth of the rectangle?

A. 400   B. 256   C. 324   D. 225   E. 144

8. A storekeeper has rice of three different qualities (normal, good and excellent), each priced at Rs. 50/kg, Rs. 60/kg and Rs 90/kg respectively. A customer needs 70 kg of rice and is willing to pay exactly Rs. 70 per kg. In which of the following ratios can the storekeeper mix the three rice varieties to satisfy the customer?

A. 1 : 2 : 2   B. 1 : 3 : 4   C. 3 : 4 : 5   D. More than one of the above ratios.
E. Can't be determined

9. Mayank said to his friend "If you subtract 18 from my age the two digits of my age will reverse their positions. Also my age is six less than 8 times the sum of digits of my age". Find Mayank's age.

A. 46 years   B. 37 years   C. 56 years   D. 50 years   E. 42 years

10. A 250 metres long train running at the speed of 100 kmph crosses another train running in opposite direction at the speed of 60 kmph in 9 seconds. What is the length of the other train?

A. 300 metres   B. 240 metres   C. 150 metres   D. 200 metres   E. 180 metres

Correct Answers:

1	2	3	4	5	6	7	8	9	10
C	A	C	C	B	D	A	D	E	C

Explanations:

1. 6 workers complete some work in 10 hours.

∴ 1 worker completes the same work in 60 hours.

Let the total work be equivalent to 60 man-hours.

From 9.00 am to 3.00 pm, all 6 workers work together for 6 hours.

∴ Amount of work done by 6 workers in 6 hours is 6 × 6 = 36 man-hours

From 3.00 pm to 4.00 pm, 7 man-hours of work will be done.

From 4.00 pm to 5.00 pm, 8 man-hours of work will be done.

From 5.00 pm to 6.00 pm, 9 man-hours of work will be done.

Thus, total amount of work done up to 6.00 pm is 36 + 7 + 8 + 9 = 60 man-hours

Thus, the computer will be assembled at 6.00 pm.

Hence, option C is correct.

2. Let Chandrabhan's invested part at 6% per annum be Rs. x

∴ Other part = (12000 – x)

As per the question,

$$\frac{x \times 6 \times 4}{100} + \frac{(12000 - x) \times 5 \times 4}{100} = 2580$$

or, $\dfrac{24x + 24000 - 20x}{100} = 2580$

or, 4x + 240000 = 258000

∴ $x = \dfrac{258000 - 240000}{4} = \dfrac{18000}{4} = $ Rs. 4500

Therefore, Chandrabhan's invested part at 6% per annum = Rs. 4500

Hence, option A is correct.

3. Original cost of a car and house = 500000 + 700000 = Rs. 12,00,000

New cost of car = 500000 × 0.85 × 0.87 × 0.89 = Rs. 329077.5

New cost of house = 700000 × 1.1 × 1.12 × 1.14 = Rs. 983136

∴ Total new cost = Rs. 13,12,213.5

∴ Change = increase of Rs. 1,12,213.5 ≈ Rs. 1,12,214

Hence, option C is correct.

4. This problem can be solved by either the conventional method or by using the answer options.

After the first cycle, the value of the article decreased by Rs. 1,000.

∴ The original price has to be more than Rs. 23,040

Hence, options 1 and 2 can be eliminated.

x% increase and x% decrease is equivalent to $\left(1 + \dfrac{x}{100}\right)\left(1 - \dfrac{x}{100}\right)$

∴ Old price × $\left[1 - \dfrac{x^2}{10000}\right]$ = New price

∴ Old price − new price = old price × $\left[\dfrac{x^2}{10000}\right]$

i.e. 1000 = old price × $\left[\dfrac{x^2}{10000}\right]$

Consider option C: Old price = 25000

∴ 1000 = 25000 × $\left[\dfrac{x^2}{10000}\right]$

∴ $x^2 = 400$ i.e. x = 20%

∴ Change for second year = (1 + 0.2)(1 − 0.2) = (1.2)(0.8) = 0.96

Observe that value of old price : new price for second year = 23040 : 24000 = 0.96

Hence, original price of article = Rs. 25,000

Hence, option C is correct.

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5. Number of possible combination of 3 persons in which 2 have to be women = (2 Women out of 5 x 1 Man out of 6) or (3 Women out of 5) = ($^5C_2 \times {}^6C_1 + {}^5C_3$)

Total possible outcomes = $^{11}C_3 = \dfrac{\dfrac{5!}{2! \times 3!} \times \dfrac{6!}{5! \times 1!} + \dfrac{5!}{3! \times 2!}}{\dfrac{11!}{3! \times 8!}} = \dfrac{70}{11 \times 15} = \dfrac{14}{33}$

Hence, option B is correct.

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6. Let the original earnings of P, Q and R be 3x, 5x and 8x respectively.

New ratio = (1.4 × 3x) : (1.35 × 8x) : (1.56 × 5x) = 4.2x : 10.8x : 7.8x = 7 : 18 : 13

Hence, option D is correct.

7. Let the breadth of the rectangle be x cm. Hence, length = 4x cm.

∴ Side of square = average of length and breadth = $\dfrac{(x + 4x)}{2} = \dfrac{5x}{2}$

∴ Area of square = $\dfrac{25x^2}{4}$

Since area of the rectangle = 256, $4x^2 = 256$
∴ $x^2 = 64$

∴ Area of square = $\dfrac{25}{4} \times 64 = 25 \times 16 = 400$ sq.cm

Hence, option A is correct.

8. Let the weight of normal, good and excellent quality of oil bought by the caterer be x, y and z, respectively.

Price paid by the caterer for all the three quantities $= \dfrac{50x + 60y + 90z}{x + y + z} = 70$

∴ $50x + 60y + 90z = 70x + 70y + 70z$
∴ $2x + y = 2z$

Now, substitute the values from each option in the equation above and verify.
Option A: x = 1, y = 2, z = 2
The equation is satisfied for this set of values.
Option B: x = 1, y = 3, z = 4
The equation is not satisfied for this set of values.
Option C: x = 3, y = 4 , z = 5
The equation is satisfied for this set of values.
Hence, option D is correct.

9. Let Mayank's age be (10x + y) years
Age by reversing the digits = (10y + x) yrs
Now, 10x + y − 18= 10y + x
9x − 9y = 18
x − y = 2...................(1)
Also,
10x + y = 8(x + y) − 6
2x − 7y = −6............. (2)
Solving equations (1) and (2),
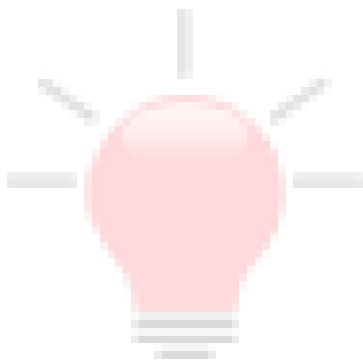x = 4 , y = 2
Therefore, Mayank's age = 10x + y
= 10(4) + 2 = 42 years
Hence, option E is correct.

10. Relative speed = (100+60) km/hr

= 160 × (5/18)

= (400/9) m/sec

Let the length of the other train = x metres

(x + 250)/9 = 400/9

x + 250 = 400

x = 150 metres

Therefore, the length of other train is 150m.

Hence, option C is correct.