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Q1. The ratio of marks obtained by Vinod and Basu is 6:5. If the combined average of their percentage is 68.75 and their sum of the marks is 275, find the total marks for which exam was conducted.

Solution:

Let Vinod marks be $6x$ and Basus is $5x$. Therefore, the sum of the marks = $6x + 5x = 11x$.
But the sum of the marks is given as 275 = 11x. We get $x = 25$
therefore, vinod marks is $6x = 150$ and Basu marks = $5x = 125$.
Therefore, the combined average of their marks = $(150 + 125) / 2 = 137.5$.
If the total mark of the exam is 100 then their combined average of their percentage is 68.75
Therefore, if their combined average of their percentage is 137.5 then the total marks would be $(137.5 / 68.75)*100 = 200$.

Q2) If the cost price of 20 articles is equal to the selling price of 16 articles, What is the percentage of profit or loss that the merchant makes?

Solution:

Let Cost price of 1 article be Re.1.
Therefore, Cost price of 20 articles = Rs. 20.
Selling price of 16 articles = Rs. 20
Therefore, Selling price of 20 articles = $(20/16) * 20 = 25$
Profit = Selling price – Cost price
= 25 – 20 = 5
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Percentage of profit = Profit / Cost price * 100.
= 5 / 20 * 100 = 25% Profit

Q3. A candidate who gets 20% marks fails by 10 marks but another candidate who gets 42% marks gets 12% more than the passing marks. Find the maximum marks.

Solution:

Let the maximum marks be x.
From the given statement pass percentage is 42% – 12% = 30%
By hypothesis, 30% of x – 20% of x = 10 (marks)
i.e., 10% of x = 10
Therefore, x = 100 marks.

Q4. When processing flower-nectar into honeybees extract, a considerable amount of water gets reduced. How much flower-nectar must be processed to yield 1kg of honey, if nectar contains 50% water, and the honey obtained from this nectar contains 15% water?

Solution:

Flower-nectar contains 50% of non-water part.
In honey this non-water part constitutes 85% (100-15).
Therefore 0.5 X Amount of flower-nectar = 0.85 X Amount of honey = 0.85 X 1 kg
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Therefore amount of flower-nectar needed = \((0.85/0.5) \times 1\)kg = 1.7 kg.

Q5. A man can row 50 km upstream and 72 km downstream in 9 hours. He can also row 70 km upstream and 90 km downstream in 12 hours. Find the rate of current.

Solution:

Let \(x\) and \(y\) be the upstream and downstream speed respectively.

Hence \(50/x + 72/y = 9\) and \(70/x + 90/y = 12\)

Solving for \(x\) and \(y\) we get \(x = 10\) km/hr and \(y = 18\) km/hr

We know that Speed of the stream = \(1/2 \times (downstream\ speed - upstream\ speed) = 1/2 (18 - 10) = 4\) km/hr.

Q6. How long will it take for a sum of money to grow from Rs.1250 to Rs.10,000, if it is invested at 12.5% p.a simple interest?

Solution:

Simple interest is given by the formula \(SI = (pnr/100)\), where \(p\) is the principal, \(n\) is the number of years for which it is invested, \(r\) is the rate of interest per annum

In this case, Rs. 1250 has become Rs.10,000.

Therefore, the interest earned = \(10,000 - 1250 = 8750\).

\[8750 = \left[\left(1250\times n\times 12.5\right)/100\right]\]

\[=> n = 700 / 12.5 = 56\] years.
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Q7) The time in a clock is 20 minute past 2. Find the angle between the hands of the clock.

**Solution:**

*Time is 2:20. Position of the hands: Hour hand at 2 (nearly). Minute hand at 4*

Angle between 2 and 4 is 60 degrees \[\frac{(360/12)}{4-2}\]

Angle made by the hour hand in 20 minutes is 10 degrees, since it turns through \(\frac{1}{2}\) degrees in a minute.

Therefore, angle between the hands is 60 degrees – 10 degrees = 50 degrees

Q8. A man buys an article for Rs. 27.50 and sells it for Rs. 28.60. Find his gain percent.

**Solution:**

\[C.P. = \text{Rs.} 27.50, \ S.P. = \text{Rs.} 28.60.\]

Therefore Gain = \(\text{Rs.} (28.60 - 27.50) = \text{Rs.} 1.10.\)

Therefore Gain \% = \(\frac{1.10*100}{27.50}\) \% = 4%.

9) Find S.P., when:

(i) C.P. = Rs. 56.25, gain = 20%.
(ii) C.P. = Rs. 80.40, loss = 15%.

**Solution:**

(i) S.P. = 120\% of Rs. 56.25 = Rs. \(120*56.25/100\) = Rs. 67.50.
(ii) S.P. = 85\% of Rs. 80.40 = Rs. \(85*80.40/100\) = Rs. 68.34.

Q10. A scooterist covers a certain distance at 36 kmph. How many meters does he cover in 2 min?
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**Solution:**

*Speed = 36 kmph = 36 * 5/18 = 10 mps*

*Therefore, Distance covered in 2 min = (10 * 2 * 60)m = 1200m*