Q1. If 40 boys can do a piece of work in 18 days working 6 hours per day, how many more boys are required to do the same work in 12 days working 4 hours per day?

(a) 50

(b) 56

(c) 40

(d) 45

Q2. Find the value of $\frac{7x+2}{4}$, if $16^{3x-2} = 4^{4x+8}$

(a) $\frac{21}{2}$

(b) 11

(c) 12

(d) $\frac{11}{6}$

Q3. How much time will it take for an amount of 450 to yield 81 as interest at 4.5% per annum of simple interest ?

(a) 3 years

(b) 2 years

(c) 4 years

(d) 5 years

Q4. If the mean of the numbers 3, (3p+3), 8, 14, 18, 5 and (p−2) is 9, then find their median.

(a) 6

(b) 8

(c) 9

(d) 14

Q5. A house and a bike were sold for ₹3,50,000 each. Due to renovation, the house was sold at a profit of 15%, but due to depreciation, the bike was sold at a loss of 12%. How much profit or loss resulted in the entire transaction?

(a) Loss ₹2075.10

(b) Loss ₹10,500

(c) Profit ₹2,000

(d) Profit ₹3,800

Solutions:

S1. Ans. (a)

Sol. We have

Total work $= 40 \times 18 \times 6 = 4320$

Let x more boys required

$(x + 40) \times 12 \times 4 = 4320$

$x + 40 = \frac{4320}{48}$

$x + 40 = 90$

$x = 50$

The number of additional boys required is 50.

S2. Ans. (b)

Sol. Given

$16^{3x-2} = 4^{4x+8}$

$(4^2)^{3x-2} = 4^{4x+8}$

$4^{6x-4} = 4^{4x+8}$

$6x - 4 = 4x + 8$

$6x - 4x = 8 + 4$

$2x = 12 \Rightarrow x = 6$

Now,

$\frac{7x+2}{4} = \frac{7(6)+2}{4} = \frac{42+2}{4} = \frac{44}{4} = 11$

S3. Ans. (c)

Sol. Given:

SI = 81
P (Principal) = 450
R (Rate) = 4.5%

$\text{S. I.} = \frac{\text{P} \times \text{R} \times \text{T}}{100}$

$81 = \frac{450 \times 4.5 \times T}{100}$

$81 = \frac{2025 \times T}{100}$

$T = \frac{8100}{2025} = 4$

So, the time required is 4 years.

S4. Ans. (b)
Sol. Given observations are
3, (3p+3), 8, 14, 18, 5 and (p−2)
Number of observations = 7

ATQ.

$$9 = \frac{3 + 3p + 3 + 8 + 14 + 18 + 5 + p - 2}{7}$$

$63 = 4p + 49$

$4p = 14 \Rightarrow p = 3.5$

Now, observations are

3, 13.5, 8, 14, 18, 5, 1.5

Arrange the data in ascending order

1.5, 3, 5, 8, 13.5, 14, 18

Now, median of the data is 8.

S5. Ans. (a)

Sol. CP of house = 3,50,000 $\times \frac{100}{115} = 3,04,347.83$

CP of bike = 3,50,000 $\times \frac{100}{88} = 3,97,727.27$

Profit on house = 3,50,000 - 3,04,347.83 = 45652.17

Loss on bike = 3,97,727.27 $-$ 3,50,000 $=$ 47727.27

Net loss = 45,000 $-$ 30,000 $=$ 2075.10