Exercise 8B

$\Rightarrow 4.5x = 36$
$\Rightarrow x = 8$

Hence, the third proportional is 8.

Q10

Answer :

The third proportional to 7 and x is 28.
Then, $7 : x :: x : 28$
$\Rightarrow 7 \times 28 = x^2$ (Product of extremes = Product of means)
$\Rightarrow x = 14$

Q11

Answer :

(i) Suppose that x is the mean proportional.

Then, $6 : x :: x : 24$

$\Rightarrow 6 \times 24 = x \times x$ (Product of extremes = Product of means)
$\Rightarrow x^2 = 144$
$\Rightarrow x = 12$

Hence, the mean proportional to 6 and 24 is 12.

(ii) Suppose that x is the mean proportional.

Then, $3 : x :: x : 27$
$\Rightarrow 3 \times 27 = x \times x$ (Product of extremes =Product of means)
$\Rightarrow x^2 = 81$
$\Rightarrow x = 9$

Hence, the mean proportional to 3 and 27 is 9.

(iii) Suppose that x is the mean proportional.

Then, 0.4 : x :: x : 0.9

$\Rightarrow 0.4 \times 0.9 = x \times x$ (Product of extremes =Product of means)
$\Rightarrow x^2 = 0.36$
$\Rightarrow x = 0.6$

Hence, the mean proportional to 0.4 and 0.9 is 0.6.

Q12

Answer :

Suppose that the number is x.

Then, $(5 + x) : (9 + x) :: (7 + x) : (12 + x)$

$\Rightarrow (5 + x) \times (12 + x) = (9 + x) \times (7 + x)$
$(\text{Product of extremes} = \text{Product of means})$
$\Rightarrow 60 + 5x + 12x + x^2 = 63 + 9x + 7x + x^2$
$\Rightarrow 60 + 17x = 63 + 16x$
$\Rightarrow x = 3$

Hence, 3 must be added to each of the numbers: 5, 9, 7 and 12, to get the numbers which are in proportion.

Q13

Answer :

Suppose that x is the number that is to be subtracted.

Then, $(10 - x) : (12 - x) :: (19 - x) : (24 - x)$

$\Rightarrow (10 - x) \times (24 - x) = (12 - x) \times (19 - x)$
$(\text{Product of extremes} = \text{Product of means})$
$\Rightarrow 240 - 10x - 24x + x^2 = 228 - 12x - 19x + x^2$
$\Rightarrow 240 - 34x = 228 - 31x$
$\Rightarrow 3x = 12$
$\Rightarrow x = 4$

Hence, 4 must be subtracted from each of the numbers: 10, 12, 19 and 24, to get the numbers which are in proportion.

Q14

Answer :

Distance represented by 1 cm on the map = 5000000 cm = 50 km

Distance represented by 3 cm on the map = 50 × 4 km = 200 km

∴ The actual distance is 200 km.

Q15

Answer :

(Height of tree) : (height of its shadow) = (height of the pole) : (height of its shadow)

Suppose that the height of pole is x cm.

Then, 6 : 8 = x : 20

$$\Rightarrow x = \frac{6 \times 20}{8} = 15$$

$\therefore$ Height of the pole = 15 cm

********** END **********