Exercise 8B

Q1

Answer :

We have:

Product of the extremes = $30 \times 60 = 1800$
Product of the means = $40 \times 45 = 1800$
Product of extremes = Product of means

Hence, $30 : 40 :: 45 : 60$

Q2

Answer :

We have:
Product of the extremes = $36 \times 7 = 252$
Product of the means = $49 \times 6 = 294$
Product of the extremes $\neq$ Product of the means

Hence, 36, 49, 6 and 7 are not in proportion.

Q3

Answer :

Product of the extremes = $2 \times 27 = 54$
Product of the means $= 9 \times x = 9x$

Since $2 : 9 :: x : 27$, we have:
Product of the extremes = Product of the means
$\Rightarrow 54 = 9x$

$\Rightarrow x = 6$

Q4

Answer :

Product of the extremes = $8 \times 35 = 280$
Product of the means = $16 \times x = 16x$

Since $8 : x :: 16 : 35$, we have:
Product of the extremes = Product of the means
$\Rightarrow 280 = 16x$
$\Rightarrow x = 17.5$

Q5

Answer :

Product of the extremes = $x \times 60 = 60x$
Product of the means = $35 \times 48 = 1680$

Since $x : 35 :: 48 : 60$, we have:
Product of the extremes = Product of the means
$\Rightarrow 60x = 1680$
$\Rightarrow x = 28$

Q6

Answer :

(i) Let the fourth proportional be x.
Then, $8 : 36 :: 6 : x$

$8 \times x = 36 \times 6$ [Product of extremes = Product of means]
$\Rightarrow 8x = 216$
$\Rightarrow x = 27$
Hence, the fourth proportional is 27.

(ii) Let the fourth proportional be x.
Then, $5 : 7 :: 30 : x$
$\Rightarrow 5 \times x = 7 \times 30$ [Product of extremes = Product of means]
$\Rightarrow 8x = 216$
$\Rightarrow 5x = 210$
$\Rightarrow x = 42$

Hence, the fourth proportional is 42.

(iii) Let the fourth proportional be x.
Then, $2.8 \times x = 14 \times 3.5$ [Product of extremes = Product of means]
$\Rightarrow 8x = 216$
$\Rightarrow 2.8x = 49$
$\Rightarrow x = 17.5$
Hence, the fourth proportional is 17.5.

Q7

Answer :

36, 54 and x are in continued proportion.
Then, $36 : 54 :: 54 : x$
$\Rightarrow 36 \times x = 54 \times 54$ [Product of extremes = Product of means]

$\Rightarrow 36x = 2916$
$\Rightarrow x = 81$

Q8

Answer :

27, 36 and x are in continued proportion.
Then, 27 : 36 :: 36 : x
$\Rightarrow 27 \times x = 36 \times 36$ [Product of extremes = Product of means]
$\Rightarrow 27x = 1296$
$\Rightarrow x = 48$

Hence, the value of x is 48.

Q9

Answer :

(i) Suppose that x is the third proportional to 8 and 12.
Then, 8 :12 :: 12 : x
$\Rightarrow 8 \times x = 12 \times 12$ (Product of extremes = Product of means)
$\Rightarrow 8x = 144$
$\Rightarrow x = 18$

Hence, the required third proportional is 18.

(ii) Suppose that x is the third proportional to 12 and 18.
Then, 12 : 18 :: 18 : x
$\Rightarrow 12 \times x = 18 \times 18$ (Product of extremes = Product of means)
$\Rightarrow 12x = 324$
$\Rightarrow x = 27$

Hence, the third proportional is 27.

(iii) Suppose that x is the third proportional to 4.5 and 6.
Then, 4.5 : 6:: 6 : x
$\Rightarrow 4.5 \times x = 6 \times 6$ (Product of extremes = Product of means)

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