Exercise 8C

$\frac{3a+5b}{3a-5b} = \frac{5}{1}$
$3a + 5b = 15a - 25b$
$12a = 30b$
$\frac{a}{b} = \frac{30}{12} = \frac{5}{2}$

$\therefore a : b = 5 : 2$

Q12

Answer :

(c) 9

$7 \times 45 = x \times 35 \quad \text{(Product of extremes = Product of means)}$
$\Rightarrow 35x = 315$
$\Rightarrow x = 9$

Q13

Answer :

(b) 7

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

Then, $(3 + x) : (5 + x) = 5 : 6$

$\Rightarrow \frac{3+x}{5+x} = \frac{5}{6}$
$\Rightarrow 18 + 6x = 25 + 5x$
$\Rightarrow x = 7$

Q14

Answer :

(d) 40

Suppose that the numbers are *x* and *y*.

Then, *x* : *y* = 3 : 5 and (*x* + 10) : (*y* + 10) = 5 : 7

$\frac{x}{y} = \frac{3}{5}$

$x = \frac{3y}{5}$

$\Rightarrow \frac{x+10}{y+10} = \frac{5}{7} \Rightarrow 7x + 70 = 5y + 50 \Rightarrow 7 \times \frac{3y}{5} + 70 = 5y + 50 \Rightarrow 5y - \frac{21y}{5} = 20 \Rightarrow \frac{4y}{5} = 20 \Rightarrow y = 25 \text{Therefore, } x = \frac{3 \times 25}{5} = 15$

Hence, sum of numbers = 15 + 25 = 40

Q15

Answer :

(a) 3

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

Then, (15 − x) : (19 − x) = 3 : 4

$\Rightarrow \frac{15-x}{19-x} = \frac{3}{4}$

$\text{Cross multiplying, we get :}$

$60 - 4x = 57 - 3x$

$\Rightarrow x = 3$

Q16

Answer :

(a) Rs 180

A's share = $\frac{3}{7} \times 420 = 180$

Q17

Answer :

(d) 416

Let *x* be the number of boys.

Then, 8 : 5 = *x* : 160

$\Rightarrow \frac{8}{5} = \frac{x}{160}$

$\Rightarrow x = \frac{8 \times 160}{5} = 256$

$\therefore \text{ Total strength of the school } = 256 + 160 = 416$

Q18

Answer :

(a) (2 :3)

LCM of 3 and 7 = $7 \times 3 = 21$

$\frac{2 \times 7}{3 \times 7} = \frac{14}{21}$ and $\frac{4 \times 3}{7 \times 3} = \frac{12}{21}$

$\text{Clearly, } \frac{12}{21} < \frac{14}{21}$

$\text{Hence, } \left(4 : 7\right) < \left(2 : 3\right)$

Q19

Answer :

(c) 16

Suppose that the third proportional is *x*.
Then, 9 : 12 :: 12 : x

$\Rightarrow 9 \times x = 12 \times 12$ (Product of extremes = Product of means)
$\Rightarrow 9x = 144$
$\Rightarrow x = 16$

Q20

Answer :

(b) 12

Suppose that the mean proportional is *x*.

Then, 9 : x :: x : 16

$9 \times 16 = x \times x$ (Product of extremes = Product of means)
$\Rightarrow x^2 = 144$
$\Rightarrow x = 12$

Q21

Answer :

(a) 18 years

Suppose that the present ages of A and B are 3*x* yrs and 8*x* yrs, respectively.
After six years, the age of A will be (3*x*+6) yrs and that of B will be (8*x*+6) yrs.
Then, (3*x* +6) : (8*x* + 6) = 4 : 9

$\Rightarrow \frac{3x+6}{8x+6} = \frac{4}{9}$
$\Rightarrow 27x + 54 = 32x + 24$
$\Rightarrow 5x = 30$
$\Rightarrow x = 6$
Hence, the present ages of A and B are 18 yrs and 48 yrs, respectively.

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