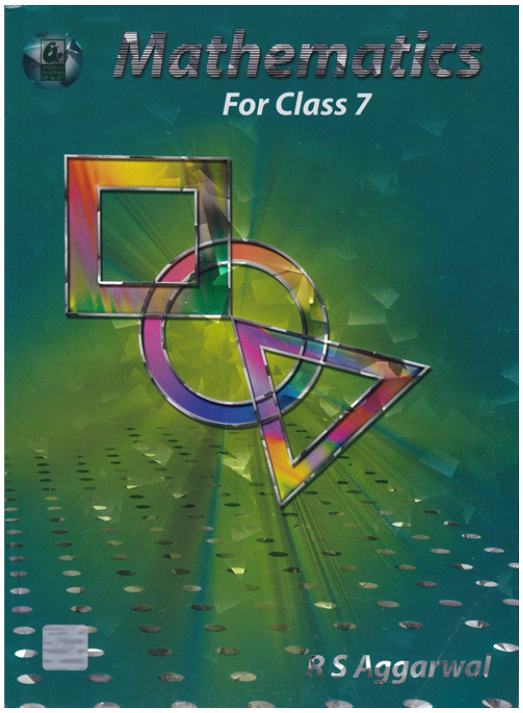
RS Aggarwal Solutions for Class 7 Maths Chapter 8–Ratio and Proportion

Class 7 - Chapter 8 Ratio and Proportion



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RS Aggarwal Solutions for Class 7 Maths Chapter 8–Ratio and Proportion

Class 7: Maths Chapter 8 solutions. Complete Class 7 Maths Chapter 8 Notes.

RS Aggarwal Solutions for Class 7 Maths Chapter 8–Ratio and Proportion

RS Aggarwal 7th Maths Chapter 8, Class 7 Maths Chapter 8 solutions

Ex 8A

Question 1.

Solution:

(i) 24 : 40

HCF of 24, 40 = 8

24 : 40 = 24 ÷ 8 : 40 ÷ 8 = 3 : 5 (Dividing by 8)

(ii) 13.5 : 15 or 135 : 150

HCF of 135 and 150 = 15

135 ÷ 15 : 150 ÷ 15 (Dividing by 15)

= 9 : 10

HCF of 25, 65, 80 = 5

Dividing by 5,

5 : 13 : 16

Question 2.

Solution:

(i) 75 paise : 3 rupees = 75 paise : 300 paise

(converting into same kind)

HCF of 75, 300 = 75

75 : 300 = 75 ÷ 75 : 300 ÷ 75 (Dividing by 75) = 1 : 4

(ii) 1 m 5 cm : 63 cm = 105 cm : 63 cm

(converting into same kind)

HCF of 105 and 63 = 21

105 ÷ 21 : 63 ÷ 21 (Dividing by 21)

= 5 : 3

(iii) 1 hour 5 minutes : 45 minutes = 65 minutes : 45 minutes

(converting into minutes)

13 : 9 (dividing by 5)

= 13 : 9

(iv) 8 months : 1 year = 8 months : 12 months

(converting into the same kind)

HCF of 8 and 12 = 4

Dividing by 4

8 ÷ 4 : 12 ÷ 4

= 2 : 3

(v) 2 kg 250 g : 3 kg = 2250 g : 3000 g (converting into the same kind)

HCF of 2250 and 3000 = 750

Dividing by 750,

2250 ÷ 750 : 3000 ÷ 750 = 3 : 4

(vi) 1 km : 750 m = 1000 m : 750 m

(converting into metre)

= 4 : 3 (dividing by 250)

= 4 : 3

Question 3.

Solution:

$$A : B = 7 : 5 \Rightarrow \frac{A}{B} = \frac{7}{5}$$

$$B : C = 9 : 14 \Rightarrow \frac{B}{C} = \frac{9}{14}$$

Multiplying we get

$$\therefore \frac{A}{B} \times \frac{B}{C} = \frac{7}{5} \times \frac{9}{14}$$

$$\Rightarrow \frac{A}{C} = \frac{9}{10}$$

$$\therefore A : C = 9 : 10$$

Question 4.

Solution:

A : B = 5 : 8, B : C = 16 : 25

$$\text{or } \frac{A}{B}=\frac{5}{8}, \frac{B}{C}=\frac{16}{25}$$

Multiplying, we get :

$$\frac{A}{B}\times\frac{B}{C}=\frac{5}{8}\times\frac{16}{25}$$

$$\frac{A}{C}=\frac{2}{5}$$

$$\therefore \quad A : C = 2 : 5$$

Question 5.

Solution:

A : B = 3 : 5, B : C = 10 : 13

$$\text{or } \frac{A}{B}=\frac{3}{5}, \frac{B}{C}=\frac{10}{13}$$

$$\frac{A}{B}=\frac{3}{5}\times\frac{2}{2}=\frac{6}{10} \quad (\because \text{in } \frac{B}{C}=B = 10)$$

$$\therefore \quad \frac{A}{B}=\frac{6}{10} \text{ and } \frac{B}{C}=\frac{10}{13}$$

A : B : C = 6 : 10 : 13

Question 6.

Solution:

A : B = 5 : 6 and B : C = 4 : 7

$\frac{A}{B}=\frac{5}{6}, \frac{B}{C}=\frac{4}{7}$

LCM of 6, 4 = 12

$\therefore \quad \frac{A}{B}=\frac{5}{6}=\frac{5\times2}{6\times2}=\frac{10}{12}$ or A : B = 10 : 12

and $\frac{B}{C}=\frac{4}{7}=\frac{4\times3}{7\times3}=\frac{12}{21}$ or B : C = 12 : 21

$\therefore$ A : B : C = 10 : 12 : 21

Question 7.

Solution:

Total amount = Rs. 360

Sum of ratios = 7 + 8 = 15

$\therefore$ Kunal's share $= \frac{360\times7}{15} = 24 \times 7$

$= Rs.\ 168$

Mohit's share $= \frac{360\times8}{15} = 24 \times 8$

$= Rs.\ 192$

Question 8.

Solution:

Total amount = Rs. 880

$$\text{Ratio in Rajan and Kamal} = \frac{1}{5} : \frac{1}{6}$$

$$= \frac{6:5}{30}$$

$$\therefore \text{ Rajan's part} = \text{Rs. } \frac{880 \times 6}{6+5}$$

$$= \text{Rs. } \frac{880 \times 6}{11} = \text{Rs. } 480$$

$$\text{and Kamal's part} = \text{Rs. } \frac{880 \times 5}{11}$$

$$= \text{Rs. } 400$$

Question 9.

Solution:

Total amount = Rs. 5600

Ratio in A : B : C = 1 : 3 : 4

$$\therefore \text{ A's share} = \text{Rs. } \frac{5600 \times 1}{1+3+4}$$

$$= \text{Rs. } \frac{5600 \times 1}{8} = \text{Rs. } 700$$

$$\text{B's share} = \text{Rs. } \frac{5600 \times 3}{8} = \text{Rs. } 2100$$

$$\text{and C's share} = \text{Rs. } \frac{5600 \times 4}{8} = \text{Rs. } 2800$$

Question 10.

Solution:

Let x be added to each term Then

9 + x : 16 + x = 2 : 3

$$\frac{9+x}{16+x}=\frac{2}{3} \Rightarrow 3(9+x)=2(16+x)$$

(By cross multiplication)

$\Rightarrow$ $27 + 3x = 32 + 2x$

$\Rightarrow$ $3x - 2x = 32 - 27$

$\Rightarrow$ $x = 5$

$\therefore$ Required number = 5

Question 11.

Solution:

Let x be subtracted from each term Then

(17 – x) : (33 – x) = 7 : 15

$$\Rightarrow \frac{17-x}{33-x}=\frac{7}{15}$$

(By cross multiplication)

$15(17 - x) = 7\ (33 - x)$

$255 - 15x = 231 - 7x$

$\Rightarrow$ $255 - 231 = -7x + 15x$

$\Rightarrow$ $24 = 8x$ $\Rightarrow x = \frac{24}{8} = 3$

$\therefore$ Required number = 3

Question 12.

Solution:

Ratio in two numbers = 7 : 11

Let first number = 7x

Then second number = 11x

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Then adding 7 to each number, the ratio is 2 : 3

7x+711x+7 = 23

By cross multiplying:

3 (7x + 7) = 2 (11x + 7)

⇒ 21x + 21 = 22x + 14

⇒ 21 – 14 = 22x – 21x

⇒ x = 7

First number = 7x = 7 x 7 = 49

and second number = 11x = 11 x 7 = 77

Hence numbers are 49, 77

Question 13.

Solution:

The ratio in two numbers = 5 : 9

Let the first number = 5x

Then second number = 9x

By subtracting 3 from each number the ratio is 1 : 2

5x–39x–3 = 12

By cross multiplication,

2 (5x – 3) = 1 (9x – 3)

⇒ 10x – 6 = 9x – 3

⇒ 10x – 9x = -3 + 6

⇒ x = 3

First number = 5x = 5 x 3 = 15

and second .number = 9x = 9 x 3 = 27

Hence numbers are 15, 27

Question 14.

Solution:

Ratio in two numbers = 3 : 4

LCM = 180

Let first number = 3x

Then second number = 4x

Now LCM = 3 x 4 x x = 12x

12x = 180

⇒ x = 15

Numbers will be 3 x 15 = 45 and 4 x 15 = 60

Question 15.

Solution:

Ratio in present ages of A and B = 8 : 3

Let A's age = 8x

Then B's age = 3x

6 years hence,

A's age will be = 8x + 6

and B's will be = 3x + 6

8x+63x+6 = 94

(By cross multiplication)

4 (8x + 6) = 9 (3x + 6)

⇒ 32x + 24 = 27x + 54

⇒ 32x – 27x = 54 – 24

⇒ 5x = 30

⇒ x = 6

A's present age = 8x = 8 x 6 = 48 years

and B's age = 3x = 3 x 6 = 18 years

Question 16.

Solution:

Ratio in copper and zinc = 9 : 5

Let alloy = x gm

$$\text{Copper} = \frac{x}{9+5} \times 9 = \frac{9x}{14}$$

$$\text{and zinc} = \frac{5x}{14}$$

According to the condition,

$$\frac{9x}{14} = 48.6 \Rightarrow x = \frac{48.6 \times 14}{9}$$

$$\Rightarrow x = 5.4 \times 14 \text{ g} = 75.6 \text{ g}$$

$$\text{and weight of zinc} = \frac{5x}{14} = \frac{5 \times 75.6}{14}$$

$$= 27 \text{ g}$$

Question 17.

Solution:

Ratio in boys and girls = 8 : 3

and total number of girls = 375

Let number of boys = 8x

Then number of girls = 3x

3x = 375

⇒ x = 125

Number of boys = 8x = 8 x 125 = 1000

Question 18.

Solution:

Ratio in income and savings = 11 : 2

Let income = 11x

Then savings = 2x

But savings = Rs. 2500

2x = 2500

⇒ x = 1250

Then income = 1250 x 11 = Rs. 13750

and expenditure = Total income – savings = 13750 – 2500 = Rs. 11250

Question 19.

Solution:

Total amount = Rs. 750

Ratio in rupee, 50 P and 25 P coins =5 : 8 : 4

Let number of rupees = 5x

Number of 50 P coins = 8x

and number of 25 coins = 4x

According to the condition,

$$5x + \frac{8x}{2} + \frac{4x}{4} = 750$$

$$\Rightarrow 20x + 16x + 4x = 3000$$

$$\Rightarrow 40x = 3000$$

$$\Rightarrow x = \frac{3000}{40} = 75$$

Number of 1 Re coins = 5x = 5 x 75 = 375

Number of 50 P coins = 8x = 8 x 75 = 600

and number of 25 P coins = 4x = 4 x 75 = 300

Question 20.

Solution:

(4x + 5) : (3x + 11) = 13 : 17

4x+53x+11 = 1317

By cross multiplication,

68x + 85 = 39x + 143

⇒ 68x – 39x = 143 – 85

⇒ 29x = 58

x = 2

Hence x = 2

Question 21.

Solution:

x : y = 3 : 4

$$\Rightarrow \frac{x}{y} = \frac{3}{4}$$

Now $(3x + 4y) : (5x + 6y)$

$$\Rightarrow \frac{3x+4y}{5x+6y} = \frac{3\frac{x}{y}+4\frac{y}{y}}{5\frac{x}{y}+6\frac{y}{y}}$$

(Dividing each term by y)

$$= \frac{3\frac{x}{y}+4}{5\frac{x}{y}+6} = \frac{3\times\frac{3}{4}+4}{5\times\frac{3}{4}+6}$$

$$\left(\because \frac{x}{y} = \frac{3}{4}\right)$$

$$= \frac{\frac{9}{4}+4}{\frac{15}{4}+6} = \frac{\frac{9+16}{4}}{\frac{15+24}{4}}$$

$$= \frac{25}{4} \times \frac{4}{39} = \frac{25}{39}$$

$\therefore (3x + 4y) : (5x + 6y) = 25 : 39$

Question 22.

Solution:

x : y = 6 : 11

xy = 611

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Now (8x – 3y) : (3x + 2y)

$$= \frac{8x-3y}{3x+2y} = \frac{8\frac{x}{y}-3\frac{y}{y}}{3\frac{x}{y}+2\frac{y}{y}}$$

(Dividing each term by y)

$$= \frac{8\frac{x}{y}-3}{3\frac{x}{y}+2} = \frac{8\times\frac{6}{11}-3}{3\times\frac{6}{11}+2}$$

$$\left(\because \frac{x}{y}=\frac{6}{11}\right)$$

$$= \frac{\frac{48}{11}-3}{\frac{18}{11}+2} = \frac{\frac{48-33}{11}}{\frac{18+22}{11}}$$

$$= \frac{\frac{15}{11}}{\frac{40}{11}} = \frac{15}{11}\times\frac{11}{40} = \frac{3}{8}$$

$$(8x-3y):(3x+2y) = 3:8$$

Question 23.

Solution:

Sum of two numbers = 720

Ratio of two numbers = 5 : 7

Let first number = 5x

Then second number = 7x

5x + 7x = 720

⇒ 12x = 720

⇒ x = 60

First number = 5x = 5 x 60 = 300

and second number = 7x = 7 x 60 = 420

Question 24.

Solution:

(i) (5 : 6) or (7 : 9)

$\Rightarrow \frac{5}{6}$ or $\frac{7}{9}$

LCM of 6, 9 = 18

$\therefore \frac{5}{6} = \frac{5\times3}{6\times3} = \frac{15}{18}$

$\frac{7}{9} = \frac{7\times2}{9\times2} = \frac{14}{18}$

It is clear that $\frac{15}{18}$ or 15 : 18 is greater

$\therefore$ (5 : 6) > (7 : 9)

(ii) 2 : 3 or 4 : 7

$\Rightarrow \frac{2}{3}$ or $\frac{4}{7}$

LCM of 3, 7 = 21

$\therefore \frac{2}{3} = \frac{2\times7}{3\times7} = \frac{14}{21}$

$\frac{4}{7} = \frac{4\times3}{7\times3} = \frac{12}{21}$

It is clear that $\frac{14}{21}$ is greater

$\therefore \frac{2}{3} > \frac{4}{7}$ or (2 : 3) > (4 : 7)

(iii) (1 : 2) or (4 : 7) $\Rightarrow \frac{1}{2}$ or $\frac{4}{7}$

LCM of 2, 7 = 14

$\therefore \frac{1}{2} = \frac{1\times7}{2\times7} = \frac{7}{14}$

$\frac{4}{7} = \frac{4\times2}{7\times2} = \frac{8}{14}$

It is clear that $\frac{8}{14}$ is greater

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$\therefore \quad \frac{8}{14} > \frac{7}{14}$ or $\frac{4}{7} > \frac{1}{2}$

or $(4 : 7) > (1 : 2)$

(iv) $(3 : 5)$ or $(8 : 13)$

$\Rightarrow \quad \frac{3}{5}$ or $\frac{8}{13}$

LCM of 5, 13 = 65

$\therefore \quad \frac{3}{5} = \frac{3 \times 13}{5 \times 13} = \frac{39}{65}$

$\frac{8}{13} = \frac{8 \times 5}{13 \times 5} = \frac{40}{65}$

It is clear that $\frac{40}{65}$ is greater

$\therefore \quad \frac{40}{65} > \frac{39}{65}$ or $\frac{8}{13} > \frac{3}{5}$

or $(8 : 13) > (3 : 5)$

Question 25.

Solution:

(i) (5 : 6), (8 : 9), (11 : 18)

or $\frac{5}{6}, \frac{8}{9}, \frac{11}{18}$

LCM of 6, 9, 18 = 18

$\therefore \quad \frac{5}{6} = \frac{5\times3}{6\times3} = \frac{15}{18}$

$\frac{8}{9} = \frac{8\times2}{9\times2} = \frac{16}{18}$

$\frac{11}{18} = \frac{11}{18}$

we see that :

$\frac{11}{18} < \frac{15}{18} < \frac{16}{18}$

$\therefore \quad (11 : 18) < (5 : 6), (8 : 9)$

(ii) (11 : 14), (17, 21), (5 : 7), (2 : 3)

or $\frac{11}{14}, \frac{17}{21}, \frac{5}{7}, \frac{2}{3}$

LCM of 14, 21, 7, 3 = 42

3	14,21,7,3
7	14,7,7,1
	2,1,1,1

LCM = 3 × 7 × 2 = 42

$\therefore \quad \frac{11}{14}=\frac{11\times3}{14\times3}=\frac{33}{42}$

$\frac{17}{21}=\frac{17\times2}{21\times2}=\frac{34}{42}$

$\frac{5}{7}=\frac{5\times6}{7\times6}=\frac{30}{42}$

$\frac{2}{3}=\frac{2\times14}{3\times14}=\frac{28}{42}$

We see that :

$\frac{28}{42}<\frac{30}{42}<\frac{33}{42}<\frac{34}{42}$

$\therefore (2:3)<(5:7)<(11:14)<(17:21)$

Ex 8B

Question 1.

Solution:

We know that a, b, c, d are in proportion if ad = bc

Now 30, 40, 45, 60 are in proportion

if 30 x 60 = 40 x 45

if 1800= 1800

which is true

30, 40, 45, 60 are in proportion.

Question 2.

Solution:

We know that if a, b, c, d are in proportion if ad = bc

Now 36, 49, 6, 7 are in proportion

if 36 x 7 = 49 x 6

if 252 = 294

But 252 ≠ 294

36, 49, 6, 7 are not in proportion

Question 3.

Solution:

2 : 9 : : x : 27

9 x x = 2 x 27

x = 2x279 = 2 x 3 = 6

Question 4.

Solution:

8 : x : : 16 : 35

x x 16 = 8 x 35

x = 8x356 = 352 = 17.5

Question 5.

Solution:

x : 35 : : 48 : 60

x x 60 = 35 x 48

x = 7 x 4 = 28

Question 6.

Solution:

Let x be the fourth proportional, then

(i) $8 : 36 : : 6 : x$

$\therefore \quad 8 \times x = 36 \times 6$

$\Rightarrow \quad x = \frac{36 \times 6}{8}$

$x = 9 \times 3 = 27$

$\therefore$ Fourth proportional = 27

(ii) $5 : 7 : : 30 : x$

$\therefore \quad 5 \times x = 7 \times 30$

$\Rightarrow \quad x = \frac{7 \times 30}{5} = 7 \times 6$

$x = 42$

$\therefore$ Fourth proportional = 42

(iii) $2.8 : 14 : : 3.5 : x$

$\therefore \quad 2.8 \times x = 14 \times 3.5$

$\Rightarrow \quad x = \frac{14 \times 3.5}{2.8} = \frac{14 \times 5}{4} = \frac{7 \times 5}{2}$

x = 352 = 17.5

Fourth proportional = 17.5

Question 7.

Solution:

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36, 54, x are in continued proportion

36 : 54 : : 54 : x

⇒ 36 x x = 54 x 54

$$\Rightarrow \quad x = \frac{54 \times 54}{36}$$

$$x = \frac{54 \times 3}{2} = 27 \times 3 = 81$$

$$\therefore \quad x = 81$$

Question 8.

Solution:

27, 36, x are in continued proportion

27 : 36 :: 36 : x

27 x x = 36 x 36

$$\Rightarrow \quad x = \frac{36 \times 36}{27}$$

$$x = \frac{4 \times 36}{3} = 4 \times 12 = 48$$

$$\therefore \quad x = 48$$

Question 9.

Solution:

Let x be the third proportional, then

(i) 8 : 12 : : 12 : x

$\Rightarrow \quad 8 \times x = 12 \times 12 \Rightarrow x = \frac{12 \times 12}{8} = 18$

$\therefore$ Third proportional = 18

(ii) 12 : 18 :: 18 : x

$\Rightarrow 12 \times x = 18 \times 18$

$\Rightarrow \quad x = \frac{18 \times 18}{12} = \frac{3 \times 18}{2} = 3 \times 9 = 27$

$\therefore$ Third proportional = 27

(iii) 4.5 : 6 :: 6 : x

$\Rightarrow \quad 4.5 : 6 :: 6 : x \quad \Rightarrow 4.5 \times x = 6 \times 6$

$\Rightarrow \quad x = \frac{6 \times 6}{4.5} = \frac{6 \times 6 \times 10}{45} = \frac{360}{45} = 8$

$\therefore$ Third proportional = 8

Question 10.

Solution:

Third proportional = 28 then

7 : x :: x : 28

⇒ 7 x 28 = x x x

⇒ x^2 = 28 x 7 = 196

⇒ x = √196 = 14

x = 14

Question 11.

Solution:

Let x be the mean proportional, then

(i) 6 : x :: x : 24

⇒ x^2 = 6 x 24 = 144

x = √144 = 12

Mean proportional = 12

(ii) 3 : x : : x : 27

$\Rightarrow x^2 = 3 \times 27 = 81$

$x = \sqrt{81} = 9$

Mean proportional = 9

(iii) 0.4 : x :: x : 0.9

$\Rightarrow x^2 = 0.4 \times 0.9$

$x = \sqrt{o.36} = 0.6$

Mean proportional = 0.6

Question 12.

Solution:

Let x be added to each of the given numbers then

5 + x, 9 + x, 7 + x, 12 + x are in proportion

5+x9+x = 7+x12+x

By cross multiplication :

(5 + x) (12 + x) = (7 + x) (9 + x)

$\Rightarrow 60 + 5x + 12x + x^2 = 63 + 7x + 9x + x^2$

$\Rightarrow 60 + 17x + x^2 = 63 + 16x + x^2$

$\Rightarrow 17x + x^2 – 16x – x^2 = 63 – 60$

$\Rightarrow x = 3$

Required number = 3

Question 13.

Solution:

Let x be subtracted from each of the given number, then

10 – x, 12 – x, 19 – x and 24 – x are in proportion

10–x12–x = 19–x24–x

By cross multiplication :

(10 – x) (24 – x) = (19 – x) (12 – x)

⇒ 240 – 10x – 24x + x^2 = 228 – 19x – 12x + x^2

⇒ 240 – 34x + x^2 = 228 – 31x + x^2

⇒ -34x + x^2 + 31x – x^2 = 228 – 240

⇒ -3x = -2

⇒ 3x = 12

⇒ x = 4

Required number = 4

Question 14.

Solution:

Scale of map = 1 : 5000000

Distance between two town on the map = 4 cm

$$\therefore \text{ Actual distance} = \frac{5000000 \times 4}{1} \text{ cm}$$

$$= \frac{5000000 \times 4}{100} \text{ m}$$

$$= \frac{5000000 \times 4}{100 \times 1000} \text{ km} = 200 \text{ km}$$

Question 15.

Solution:

Height of a tree = 6 cm

and its shadow at same time = 8 m

Shadow of a pole = 20 m

Let height of pole = x m

6 : 8 = x : 20

⇒ x= 6x208 = 15 m

Height of pole = 15 m

Ex 8C

Objective questions :

Mark (✓) against the correct answers in each of the following :

Question 1.

Solution:

(d) a : b = 3 : 4, b : c = 8 : 9

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$$\text{or } \frac{a}{b} = \frac{3}{4} \text{ and } \frac{b}{c} = \frac{8}{9}$$

Multiplying,

$$\frac{a}{b} \times \frac{b}{c} = \frac{3}{4} \times \frac{8}{9}$$

$$\Rightarrow \frac{a}{c} = \frac{2}{3}$$

$$\therefore a : c = 2 : 3$$

Question 2

Solution:

(a) A : B = 2 : 3, B : C = 4 : 5

$$\text{or } \frac{A}{B} = \frac{2}{3} \text{ and } \frac{B}{C} = \frac{4}{5}$$

$$\text{Multiplying } \frac{A}{B} \times \frac{B}{C} = \frac{2}{3} \times \frac{4}{5}$$

$$\Rightarrow \frac{A}{C} = \frac{8}{15}$$

$$\Rightarrow \frac{C}{A} = \frac{15}{8}$$

$$\therefore C : A = 15 : 8$$

Question 3.

Solution:

(d)

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$2A = 3B \Rightarrow \frac{A}{B} = \frac{3}{2}$

$4B = 5C \Rightarrow \frac{B}{C} = \frac{5}{4}$

Multiplying, we get

$\frac{A}{B} \times \frac{B}{C} = \frac{3}{2} \times \frac{5}{4} \Rightarrow \frac{A}{C} = \frac{15}{8}$

$\therefore$ A : C = 15 : 8

Question 4.

Solution:

(b) 15% of A = 20% of B

$\Rightarrow A \times \frac{15}{100} = \frac{20}{100} \times B$

$\Rightarrow \frac{A}{B} = \frac{20}{100} \times \frac{100}{15} = \frac{4}{3}$

$\therefore A : B = 4 : 3$

Question 5.

Solution:

(a)

$$A = \frac{1}{3}B, B = \frac{1}{2}C$$

$$\frac{A}{B} = \frac{1}{3}, \frac{B}{C} = \frac{1}{2}$$

$\Rightarrow A : B = 1 : 3$

$B : C = 1 : 2 = 3 : 6$

(Multiplying by 3)

$\therefore A : B : C = 1 : 3 : 6$

Question 6.

Solution:

(b) A : B = 5 : 7, B : C = 6 : 11

LCM of 7, 6 = 42

$$\therefore \frac{A}{B} = \frac{5}{7} = \frac{5 \times 6}{7 \times 6} = \frac{30}{42}$$

$$\text{and } \frac{B}{C} = \frac{6}{11} = \frac{6 \times 7}{11 \times 7} = \frac{42}{77}$$

$\therefore A : B = 30 : 42$

and $B : C = 42 : 77$

$\therefore A : B : C = 30 : 42 : 77$

Question 7.

Solution:

(c) 2A = 3B = 4C = x

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$$\therefore \quad A = \frac{x}{2}, B = \frac{x}{3}, C = \frac{x}{4}$$

$$\therefore A : B : C = \frac{x}{2} : \frac{x}{3} : \frac{x}{4} = \frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$

$$\frac{6:4:3}{12} = 6 : 4 : 3$$

Question 8.

Solution:

(a)

A3 = B4 = C5 = 1(suppose)

A = 3, B = 4, C = 5

A : B : C = 3 : 4 : 5

Question 9.

Solution:

(b)

$$\frac{1}{x} : \frac{1}{y} : \frac{1}{z} = 2 : 3 : 5$$

Let $\frac{1}{x} = 2k, \frac{1}{y} = 3k, \frac{1}{z} = 5k$

$\Rightarrow x = \frac{1}{2k}, y = \frac{1}{3k}, z = \frac{1}{5k}$

$\therefore x : y : z = \frac{1}{2k} : \frac{1}{3k} : \frac{1}{5k}$

$= \frac{15 : 10 : 6}{30k}$

$\therefore$ Ratio of $x : y : z = 15 : 10 : 6$

Question 10.

Solution:

(c)

$$x : y = 3 : 4 \Rightarrow \frac{x}{y} = \frac{3}{4}$$

Now $(7x + 3y) : (7x - 3y)$

$$= \frac{7x+3y}{7x-3y} = \frac{7\frac{x}{y}+3\frac{y}{y}}{7\frac{x}{y}-3\frac{y}{y}} \quad \text{(Dividing by } y\text{)}$$

$$= \frac{7\frac{x}{y}+3}{7x-3} = \frac{7\times\frac{3}{4}+3}{7\times\frac{3}{4}-3}$$

$$= \frac{\frac{21}{4}+3}{\frac{21}{4}-3} = \frac{\frac{21+12}{4}}{\frac{21-12}{4}}$$

$$= \frac{\frac{33}{4}}{\frac{9}{4}} = \frac{33}{4} \times \frac{4}{9} = \frac{11}{3}$$

$\therefore$ Ratio $= 11 : 3$

Question 11.

Solution:

(c) (3a + 5b) : (3a – 5b) = 5 : 1

$$\Rightarrow \frac{3a+5b}{3a-5b} = \frac{5}{1}$$

$$3a + 5b = 5\,(3a - 5b)$$

$$\Rightarrow 3a + 5b = 15a - 25b$$

$$\Rightarrow 3a - 15a = -25b - 5b$$

$$-12a = -30b$$

$$\Rightarrow \frac{a}{b} = \frac{-30}{-12} = \frac{5}{2}$$

$$\therefore a : b = 5 : 2$$

Question 12.

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Solution:

(c) 7 : x :: 35 : 45

$$\Rightarrow \frac{7}{x} = \frac{35}{45}$$
$$\Rightarrow x \times 35 = 7 \times 45$$
$$x = \frac{7 \times 45}{35} = 9$$

x = 9

Question 13.

Solution:

(b) Let x to be added to each term of 3 : 5

Then 3+x5+x = 56

By cross multiplication

18 + 6x = 25 + 5x

6x – 5x = 25 – 18

x = 7

7 is to be added

Question 14.

Solution:

(d) Ratio in two numbers = 3 : 5

Let first number = 3x

Then second number = 5x

According to the condition,

3x+105x+10 = 57

(By cross multiplication)

25x + 50 = 21x + 70

25x – 21x = 70 – 50

4x = 20

x = 5

First number = 3 x 5 = 15

and second number = 5 x 5 = 25

Sum of numbers = 15 + 25 = 40

Question 15.

Solution:

(a)

Let x be subtracted from each of the term

15–x19–x = 34

⇒ 4 (15 – x) = 3 (19 – x)

⇒ 60 – 4x = 57 – 3x

⇒ -4x + 3x = 57 – 60

⇒ -x = -3

x = 3

Required number = 3

Question 16.

Solution:

(a)

Amount = Rs. 420

and ratio = 3 : 4

Sum of ratios = 3 + 4 = 7

A's share = 420x37 = Rs. 60 x 3 = Rs. 180

Question 17.

Solution:

(d)

Let number of boys = x, then

x : 160 : : 8 : 5

⇒ x x 5 = 160 x 8

x = 160x85 = 32 x 8 = 256

Number of total students of the school = 256 + 160 = 416

Question 18.

Solution:

(a)

$\frac{2}{3}$ and $\frac{4}{7}$

LCM of 3 and 7 = 21 $\qquad \frac{4}{7}=\frac{4\times3}{7\times3}=\frac{12}{21}$

$\therefore \quad \frac{2}{3}=\frac{2\times7}{3\times7}=\frac{14}{21}$ $\qquad$ It is clear that $\frac{14}{21}$ or $\frac{2}{3}$ is greater.

Question 19.

Solution:

(c)

Let x be the third proportional to 9 and 12 then

9 : 12 :: x : 12

⇒ 9 x x = 12 x 12

⇒ x = 12x129 = 1449 = 16

Third proportional = 16

Question 20.

Solution:

Answer = (b)

Mean proportional of 9 and 16 = √(9 x 16) = √144 = 12

Question 21.

Solution:

(a)

Let age of A = 3x

and age of B = 8x

6 years hence, their ages will be 3x + 6 and 8x + 6

3x+68x+6 = 49

⇒ 9 (3x + 6) = 4 (8x + 6)

⇒ 27x + 54 = 32x + 24

⇒ 32x – 27x = 54 – 24

⇒ 5x = 30

⇒ x = 6

A’s age = 3x = 3 x 6 = 18 years

RS Aggarwal Class 7 Solutions

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He was born on January 2, 1946 in a village of Delhi. He graduated from Kirori Mal College, University of Delhi. After completing his M.Sc. in Mathematics in 1969, he joined N.A.S. College, Meerut, as a lecturer. In 1976, he was awarded a fellowship for 3 years and joined the University of Delhi for his Ph.D. Thereafter, he was promoted as a reader in N.A.S. College, Meerut. In 1999, he joined M.M.H. College, Ghaziabad, as a reader and took voluntary retirement in 2003. He has authored more than 75 titles ranging from Nursery to M. Sc. He has also written books for competitive examinations right from the clerical grade to the I.A.S. level.

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