Exercise 8A

Q20

Answer :

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

$$\Rightarrow \frac{4x+5}{3x+11} = \frac{13}{17}$$

$$\Rightarrow 68x + 85 = 39x + 143 \Rightarrow 29x = 58 \Rightarrow x = 2$$

Q21

Answer :

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

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

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

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

$$= \frac{9y+16y}{15y+24y} = \frac{25y}{39y} = \frac{25}{39}$$

$= 25 : 39$

Q22

Answer :

$$\frac{x}{y} = \frac{6}{11}$$

$$\Rightarrow x = \frac{6y}{11}$$

Now, we have:

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

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

$$= \frac{48y-33y}{18y+22y}$$

$$= \frac{15y}{40y} = \frac{3}{8}$$

∴ $(8x - 3y) : (3x + 2y) = 3 : 8$

Q23

Answer :

Suppose that the numbers are $5x$ and $7x$.

The sum of the numbers is 720.

i.e., $5x + 7x = 720$

$\Rightarrow 12x = 720$

$\Rightarrow x = 60$

Hence, the numbers are ($5 \times 60 =$) 300 and ($7 \times 60 =$) 420.

Q24

Answer :

(i) The LCM of 6 and 9 is 18.

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

$$\frac{7}{9} = \frac{7\times2}{9\times2} = \frac{14}{18} \text{ Clearly, } \frac{14}{18} < \frac{15}{18}$$

∴ $(7 : 9) < (5 : 6)$

(ii) The LCM of 3 and 7 is 21.

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

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

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

∴ $(4 : 7) < (2 : 3)$

(iii) The LCM of 2 and 7 is 14.

$$\frac{1\times7}{2\times7} = \frac{7}{14}$$
$$\frac{4\times2}{7\times2} = \frac{8}{14}$$

Clearly, $\frac{7}{14} < \frac{8}{14}$

$\therefore (1 : 2) < (4 : 7)$

(iv) The LCM of 5 and 13 is 65.

$$\frac{3}{5} = \frac{3\times13}{5\times13} = \frac{39}{65}$$
$$\frac{8}{13} = \frac{8\times5}{13\times5} = \frac{40}{65}$$
$$\text{Clearly, } \frac{39}{65} < \frac{40}{65}$$

$\therefore (3 : 5) < (8 : 13)$

Q25

Answer :

(i) We have $\frac{5}{6}$, $\frac{8}{9}$ and $\frac{11}{18}$.

$$2 \mid 6, 9, 18$$
$$3 \mid 3, 9, 9$$
$$3 \mid 1, 3, 3$$
$$\mid 1, 1, 1$$

The LCM of 6, 9 and 18 is 18. Therefore, we have:

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

$\frac{8}{9} = \frac{8\times2}{9\times2} = \frac{16}{18}$ $\frac{11}{18} = \frac{11}{18}$ **Clearly,** $\frac{11}{18} < \frac{15}{18} < \frac{16}{18}$

Hence, (11 : 18) < (5 : 6) < (8 : 9)

(ii) **We have** $\frac{11}{14}$, $\frac{17}{21}$, $\frac{5}{7}$ **and** $\frac{2}{3}$.

$$2 \mid 14, 21, 7, 3$$
$$7 \mid 7, 21, 7, 3$$
$$3 \mid 1, 3, 1, 3$$
$$\mid 1, 1, 1, 1$$

The LCM of 14, 21, 7 and 3 is 42.

$\frac{11}{14} = \frac{11\times3}{14\times3} = \frac{33}{28}$

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

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

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

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

Hence, $(2 : 3) < (5 : 7) < (11 : 14) < (17 : 21)$

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