

# INTEGRATED

①

## Class: VI, MATHEMATICS

### 6. RATIO

#### TEACHING TASK (JEE MAINS)

01. 5 note books = ₹ 75  
1 note book =  $\frac{75}{5} = ₹ 15$   
cost: quantity = 151  
Ans: A
02. Sugar = 2 parts, Flour = 5 parts  
2 parts = 8 kg  $\Rightarrow$  1 part = 4 kg  
Flour = 5 parts =  $5 \times 4 = 20$  kg  
Ans: B
03. Walking rate =  $\frac{9}{2} = 45:1$   
Ans: A
04.  $7:5 = 84:x$   
 $\Rightarrow x = \frac{5 \times 84}{7} = 5 \times 12 = 60$   
Ans: C
05. 5 paise =  $\frac{5}{100} = 0.05$   
Ratio =  $2:0.05 = 2:\frac{5}{100} = 200:5 = 4:1$   
Ans: D
06.  $l:m = 2\frac{1}{2}:1\frac{2}{3} = \frac{5}{2}:\frac{5}{3} = \frac{5}{2} \times \frac{3}{5} = 3:2$   
 $m:n = 1\frac{1}{4}:3\frac{1}{2} = \frac{5}{4}:\frac{7}{2} = \frac{5}{4} \times \frac{2}{7} = 5:14$   
 $l:m:n = 15:10:28$   
Ans: C

67.  $\frac{3 \cdot 5}{4} : \frac{5}{2} \left| \begin{array}{l} = \binom{2}{2} \frac{5}{2} : 2 \frac{5}{2} \\ = 2^2 : 1 \end{array} \right. \quad \text{Ans: B}$   
 $\Rightarrow \frac{1}{4} \frac{5}{2} : \frac{5}{2} \left| \begin{array}{l} = 7 : 2 \frac{5}{2} \\ = 4 : 1 \end{array} \right. \quad \text{Ans: B}$

08  $2A = 3B \Rightarrow A : B = 3 : 2$   
 $4B = 5C \Rightarrow B : C = 5 : 4$   
 $A : B : C = 15 : 10 : 8 \Rightarrow A : C = 15 : 8$   
 Ans: C

09 Let the numbers be  $3x, 4x, 5x$   
 $(3x)^2 + (4x)^2 + (5x)^2 = 1250$   
 $\Rightarrow x = 5$   
 Numbers:  $3x = 15, 4x = 20, 5x = 25$   
 $\text{Sum} = 15 + 20 + 25 = 60$   
 Ans: C

10. A)  $5 : 7 \rightarrow 12$  parts  $\frac{72}{12} = 6 \checkmark$  1 part =  $\frac{72}{8} = 9 \checkmark$   
 B)  $3 : 5 \rightarrow 8$  parts  
 C)  $3 : 4 \rightarrow 7$  parts  $\frac{72}{7} \times$  1 part =  $\frac{72}{9} = 8 \checkmark$   
 D)  $4 : 5 \rightarrow 9$  parts  
 Ans: C

### JEE ADVANCED LEVEL

11. Ratio:  $\frac{150}{3} = \frac{50}{1}$  or  $\frac{100}{2}$  Ans: A, B, D

12. A)  $2 : 1 \rightarrow \text{Total} = 3 \checkmark$   
 $\Rightarrow \frac{12}{3} = 4 \checkmark$   
 B)  $3 : 1 \rightarrow \text{Total} = 4$   
 $\Rightarrow \frac{12}{4} = 3 \checkmark$   
 C)  $3 : 2 \rightarrow 5$  parts  $\frac{72}{5} \times$   
 D)  $7 : 5 \rightarrow 12$  parts  $\frac{72}{12} = 6 \checkmark$   
 Ans: A, B, D

(3)

13. Statement I: 1 cm  $\rightarrow$  5 km

3 cm  $\rightarrow$  3  $\times$  5 km = 15 km (True)

Statement II: 2 km = 2000 m

$\therefore$  2000 : 500 = 4 : 1 (False) Ans: C

14. Statement I:

Boys : Girls = 5 : 3

Total = 8 parts

Girls  $\therefore$  Total : 3 : 8 (True)

Statement II:

Boys : Total = 5 : 8 (True)  
Ans: A

15

Assertion: Water : milk = 2 : 3

Total parts = 5

milk fraction =  $\frac{3}{5}$

Percentage =  $\frac{3}{5} \times 100 = 60\%$  (True)

Reason: Conceptual (False)

Ans: C

16

Assertion: Mathematically (False)

Reason: Conceptual (True)

Ans: D

17.

Ratio = A : B : C = 2 : 5 : 7

Total parts = 2 + 5 + 7 = 14

A's salary = ~~Rs. 4,000~~ 5000

2 parts = ~~Rs. 4,000~~ 5000

$\Rightarrow$  1 part = ~~Rs. 2,000~~ 2500

Total money = 14  $\times$  ~~4000~~ 2500  
= Rs. 35,000

Ans: D

18.  $B:C = 5:7$

(4)

TriPLICATE ratio =  $5^3:7^3 = 125:343$

Ans: B

19. Given  $A:B = 7:9$

Given A's salary = Rs 14,000.

i.e. 7 parts = Rs 14,000

$\Rightarrow$  1 part = Rs 2,000.

Now, B's salary = 9 parts  
=  $9 \times 2,000$

= Rs 18,000

Ans: B

20. Total salary =  $14,000 + 18,000$   
= Rs 32,000.

Ans: B

21. TriPLICATE ratio of  $4:5 = 4^3:5^3 = 64:125$   
Sum =  $64 + 125 = 189$

Ans: 189

22. Given 25P: 10P: 5P = 1:2:3

Let no. of 25P coins =  $x$

=  $2x$

" 10P " =  $3x$

" 5P " =  $3x$

Now, total value

$25x + 10(2x) + 5(3x) = 3,000$  paise

$x = 50$ .

$\Rightarrow$  No. of 5P coins =  $3x = 3 \times 50 = 150$

Ans: 150

203. ~~TriPLICATE ratio~~

- 23 a)  $A : B : C = 2 : 5 : 7 \rightarrow \text{Total} = \text{Rs } 14,000$  (5)  
 Now, A's share =  $\frac{2}{17} \times 14,000 = \text{Rs } 2000$  (P)
- b) milk : water =  $4 : 5 \rightarrow \text{Total} = 90 \text{ L}$ .  
 milk =  $\frac{4}{9} \times 90 = 40 \text{ Lit (U)}$
- c)  $\frac{36}{60} = \frac{3}{5}$  (2)
- d) Reciprocal of  $8 : 3 = 3 : 8$  (5)      Ans: P, Q, R, S

24 a) Boys: Girls =  $20 : 30 = 2 : 3$  (P)

b) pens: pencils =  $15 : 25 = 3 : 5$  (Q)

c) saving =  $60 - 40 = \text{Rs } 20$ .

saving: Earning =  $20 : 60 = 1 : 3$  (S)

d) Oranges: Apples =  $20 : 12 = 5 : 3$  (R)      Ans: P, Q, S, R

### LEARNERS TASK (QUEST)

01. Conceptual      Ans: B

02. Conceptual      Ans B

03. Conceptual      Ans: C

04. Conceptual      Answer

05. Conceptual      Ans: A

6 Ans: D

06 5:4

07 2kg = 2000 grams

∴ 2000 : 900 = 20:9

Ans: C

08 6:9 = 2:3

Ans: C

09 Largest Angle =  $\frac{3}{6} \times 180^\circ = 90^\circ$

Ans: C

10. 384 : 480 = 4:5

Ans: C

### JEE MAINS (LEVEL)

01.  $\frac{4}{5} : \frac{4}{5} = 1:1$

Ans: C

∴ Reciprocal ratio = 1:1

02 Sub triplicate ratio =  $\sqrt[3]{27} : \sqrt[3]{64}$   
= 3:4

Ans: A

03 125 : 200 = 5:8

Ans: A

04 Mother age : Daughter age = 5:2

Given daughter age = 12 years

∴ 2 parts = 12 ⇒ 1 part = 6

Ans: A

∴ Mother age = 5 parts = 5 × 6 = 30 years

⇒ 1 part = 5

B:G = 7:5

Boys = 35

⇒ 5 parts = 5 × 5 = 25

No. of girls = 25

∴ 7 parts = 35

Ans: B

06.

$$L:W = 5:3$$

$$3 \text{ parts} = 42$$

$$\Rightarrow 1 \text{ part} = 14$$

$$\text{Length} = 5 \text{ parts}$$

$$= 5 \times 14$$

$$= 70 \text{ mt}$$

7

Ans: B

07

$$A:B:C = 2:3:4$$

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

$$= 8:9:24$$

(LCM of 3, 4, 2

$$= 12)$$

Ans: B

08

$$A:B = 2:3, B:C = 4:5, C:D = 6:7$$

$$A:B:C = 2:3:4:5$$

$$16:24:30$$

$$= 8:12:15$$

$$= 6:7:30:35$$

Given C:D = ~~8:12:15~~

$$A:B:C:D = \frac{6}{6} : \frac{7}{7} : \frac{30}{6} : \frac{35}{7}$$

$$= 1:1:5:5$$

$$= 16:24:30$$

$$= 30:35$$

$$= 16:24:30:35$$

Ans: C

69. Given sat

Q9

Given ratio of present salaries of Ravi and Somit 2:3. ⑧

Somit  $2x$ .

Let the salary of Ravi =  $Rs\ 3x$

" " Somit =  $Rs\ 2x$ .

" " After increment of  $Rs\ 4000$ .

$$\frac{2x + 4000}{3x + 4000} = \frac{40}{57}$$

$$\frac{2x + 4000}{3x + 4000}$$

$$\Rightarrow x = \frac{68000}{6} = \frac{34000}{3}$$

$3x$

$$\text{Somit's present salary} = 3x = \frac{34000}{1}$$

$$= Rs\ 34000.$$

Ans: —

10. Given  $\frac{x}{y} = \frac{4}{5}$  ✓

Option A:  $\frac{x+y}{y} = \frac{x}{y} + 1 = \frac{4}{5} + 1 = \frac{9}{5}$  ✓

Option A:

Opt. B:  $\frac{y+2x}{x} = \frac{y}{x} + 2 = \frac{5}{4} + 2 = \frac{13}{4}$  ✓

Opt. B:

Opt. C:  $\frac{x^2+y^2}{xy} = \frac{x}{y} + \frac{y}{x}$  ✓

Opt. C:

$$= \frac{4}{5} + \frac{5}{4} = \frac{16+25}{20} = \frac{41}{20}$$

Opt. D:  $\frac{2x^2-y^2}{xy} = 2\left(\frac{x}{y}\right) - \frac{y}{x} = 2\left(\frac{4}{5}\right) - \frac{5}{4}$

$$= \frac{7}{20} \times$$

Ans: D

# IEEE ADVANCED

9

11. opt: B  $\rightarrow$

percentage of orange juice =  $\frac{3}{5} \times 100 = 60\%$

opt: C Total mixture = 15 lit

Each part =  $\frac{15}{5} = 3$  lit

Orange Juice =  $3 \times 3 = 9$  lit  $\checkmark$

Ans: B, C, D

opt: D  $3:2 = 9:6 \checkmark$

= 3:4

Ratio =  $45:60$

(C)  $9:12 = 3:4 \checkmark$

opt: A)  $3:4 \checkmark$

(D)  $15:20 = 3:4 \checkmark$

B)  $45:60 \checkmark$

Ans: A, B, C, D

12

13. Statement I: 2 hours =  $2 \times 60 = 120$  minutes

$\therefore$  ~~24:120~~  $30:120 = 1:4$  (True)

Statement II: Conceptual (True) Ans: A

14. Statement I:  $80:120 = 2:3$  (True)

Statement II:  $24:36 = 2:3$  (False)

Ans: C

15	<u>Assertion:</u> 3 hours = $3 \times 60 = 180$ minutes (10) $\therefore$ 180 minutes: 180 minutes = 1:1 (True) <u>Reason:</u> Conceptual (True)      Ans: A
16	<u>Assertion:</u> Conceptual (False) <u>Reason:</u> Conceptual (True)      Ans: P
17	$F : S : B = 5 : 3 : 2$ $\Rightarrow$ Flour = 400 g $\therefore$ 5 parts = 400 $\Rightarrow$ 1 part = 80 Sugar = 3 parts = $3 \times 80 = 240$ g      Ans: D
18	$S : B = 3 : 2$ duplicate ratio = $3^2 : 2^2 = 9 : 4$ Ans: B
19.	Smallest no = $\frac{5}{12} \times 72 = 30$ .      Ans: C Larger no = $\frac{7}{12} \times 72 = 42$ Ans: B
21	$18 : 24 = 3 : 4$ multiplied by 3 = $9 : 12 = 3 : 4$ Ans: 7 Sum = $3 + 4 = 7$
22	

22.  $A : B = 5 : 8$

Difference =  $8 - 5 = 3$  parts

$\therefore 3 \text{ parts} = 6000$

$\Rightarrow 1 \text{ part} = 2000$

A's salary  
 $= 5 \text{ parts}$   
 $= 5 \times 2000$   
 $= 10,000$

Ans: 10,000

(11)

23 a)  $2.5 \text{ km} = 2.5 \times 1000 \text{ mt} = 2500 \text{ mt}$

$2500 : 500 = 5 : 1 (P)$

b)  $7 : 12 (Q)$

c)  $5^2 : 6^2 = 25 : 36 (R)$

d)  $1^3 : 2^3 = 1 : 8 (S)$

Ans: 2, 2, 2, 5

24 a)  $500 \text{ mt} : 2 \text{ km}$

$= 500 : 2000 = 1 : 4 (Q)$

b)  $250 \text{ g} : 1 \text{ kg}$   
 $= 250 : 1000 = 1 : 4 (Q)$

c)  $2 \text{ hr} : 30 \text{ min} = 2 \times 60 : 30$   
 $= 120 : 30 = 4 : 1 (S)$

d)  $50 \text{ cm} : 5 \text{ m} = 50 : 5 \times 100$   
 $= 50 : 500 = 1 : 10 (P)$

Ans: 2, 2, 2, 5, P

$\Rightarrow$  T A E END  $\Leftarrow$