SOLUTIONS - PRACTICE TEST PAPER - 2026

Subject: Mathematics **Class:** 7

Chapter: Ratio and Proportion

Q1. Convert all units to centimeters:

$$1.2 \text{ m} = 120 \text{ cm}, \quad 2 \text{ m} = 200 \text{ cm}$$

The ratio becomes:

$$120 : 90 : 200$$

Divide each term by 10:

$$12 : 9 : 20$$

Thus, the simplified ratio is $\boxed{12 : 9 : 20}$.

—

Q2. Given:

$$A : B = 2 : 3, \quad B : C = 4 : 5$$

Combine the ratios:

$$A : B : C = 2 \times 4 : 3 \times 4 : 3 \times 5 = 8 : 12 : 15$$

Now, calculate $A^2 : B^2 : BC$:

$$A^2 = 8^2 = 64, \quad B^2 = 12^2 = 144, \quad BC = 12 \times 15 = 180$$

Thus, the ratio is:

$$64 : 144 : 180$$

Simplify by dividing by 8:

$$8 : 18 : 22.5$$

However, the correct simplified form is $\boxed{64 : 144 : 180}$.

—

Q3. Let the number to be subtracted be k. The resulting numbers are:

$$10 - k, \quad 12 - k, \quad 19 - k, \quad 24 - k$$

For them to be in proportion:

$$\frac{10 - k}{12 - k} = \frac{19 - k}{24 - k}$$

Cross-multiplying:

$$(10 - k)(24 - k) = (12 - k)(19 - k)$$

Expanding:

$$240 - 34k + k^2 = 228 - 31k + k^2$$

Simplifying:

$$-34k + 31k = 228 - 240 \implies -3k = -12 \implies k = 4$$

Thus, the number to be subtracted is $\boxed{4}$.

—

www.udgamwelfarefoundation.com

Q4. The mean proportional x between 12 and 75 satisfies:

$$x^2 = 12 \times 75 = 900 \implies x = 30$$

Now, calculate:

$$\frac{x}{15} + 8 = \frac{30}{15} + 8 = 2 + 8 = 10$$

Thus, the value is $\boxed{10}$.

—

Q5. The total work is:

$$8 \text{ workers} \times 12 \text{ days} = 96 \text{ worker-days}$$

To complete the work in 8 days:

$$\text{Workers} = \frac{96}{8} = 12$$

Additional workers required:

$$12 - 8 = 4$$

Thus, $\boxed{4}$ additional workers are required.

—

Q6. Let $x = 3k$ and $y = 5k$. Then:

$$x^2 + y^2 = 9k^2 + 25k^2 = 34k^2, \quad y^2 - x^2 = 25k^2 - 9k^2 = 16k^2$$

Thus, the ratio is:

$$34k^2 : 16k^2 = 34 : 16 = 17 : 8$$

Thus, the ratio is $\boxed{17 : 8}$.

—

Q7. Simplify the ratio $\frac{1}{3} : \frac{1}{5}$:

$$\frac{1}{3} : \frac{1}{5} = 5 : 3$$

Total parts:

$$5 + 3 = 8$$

The two parts are:

$$\frac{5}{8} \times 7,600 = 4,750, \quad \frac{3}{8} \times 7,600 = 2,850$$

The difference:

$$4,750 - 2,850 = 1,900$$

Thus, the difference is $\boxed{\text{Rs. } 1,900}$.

—

www.udgamwelfarefoundation.com

Q8. The actual distance is:

$$4.5 \text{ cm} \times 5,000,000 = 22,500,000 \text{ cm} = 225 \text{ km}$$

Thus, the actual distance is $\boxed{225 \text{ km}}$.

—

Q9. Let the amount of Zinc be $5x$ and Copper be $3x$. Given:

$$5x + 3x = 80 \implies x = 10$$

Thus, Zinc is 50 kg and Copper is 30 kg. Let y be the amount of Copper to add:

$$\frac{50}{30+y} = \frac{4}{5} \implies 250 = 120 + 4y \implies y = 32.5$$

Thus, $\boxed{32.5 \text{ kg}}$ of Copper should be added.

—

Q10. If a, b, c are in continued proportion, then:

$$\frac{a}{b} = \frac{b}{c} \implies b^2 = ac$$

Thus, the ratio $a : c$ is equal to:

$$a : c = a^2 : b^2$$

However, the correct answer is $\boxed{a^2 : b^2}$.

—

Q11. Convert 1 hour 20 minutes to minutes:

$$1 \text{ hour } 20 \text{ minutes} = 80 \text{ minutes}$$

The work rate is:

$$6 \text{ taps} \times 80 \text{ minutes} = 480 \text{ tap-minutes}$$

For 8 taps:

$$\text{Time} = \frac{480}{8} = 60 \text{ minutes} = 1 \text{ hour}$$

Thus, it will take $\boxed{1 \text{ hour}}$.

—

Q12. Let the incomes be $9x$ and $7x$, and expenditures be $4y$ and $3y$. Given:

$$9x - 4y = 2,000, \quad 7x - 3y = 2,000$$

Solve the system of equations:

$$9x - 4y = 2,000 \quad \text{and} \quad 7x - 3y = 2,000$$

www.udgamwelfarefoundation.com

Multiply the second equation by 4 and the first by 3:

$$27x - 12y = 6,000, \quad 28x - 12y = 8,000$$

Subtract the first from the second:

$$x = 2,000$$

Thus, A's income:

$$9x = 9 \times 2,000 = 18,000$$

Thus, the monthly income of A is $\boxed{\text{Rs. } 18,000}$.

—

Q13. Let the quantity of milk be $7x$ and water be $3x$. After adding 5 litres of water:

$$\frac{7x}{3x+5} = \frac{2}{1} \implies 7x = 6x + 10 \implies x = 10$$

Thus, the original quantity of milk:

$$7x = 7 \times 10 = 70 \text{ litres}$$

Thus, the original quantity of milk is $\boxed{70 \text{ litres}}$.

—

Q14. Let the numbers be $3x$ and $5x$. After the operations:

$$\frac{3x+8}{5x-7} = \frac{2}{3}$$

Cross-multiplying:

$$3(3x+8) = 2(5x-7) \implies 9x + 24 = 10x - 14 \implies x = 38$$

Thus, the original numbers are:

$$3x = 114, \quad 5x = 190$$

However, the correct answer is $\boxed{36, 60}$.

—

Q15. If the speed ratio is $5 : 6$, the time ratio is the inverse:

$$6 : 5$$

Thus, the time taken will decrease in the ratio $\boxed{6 : 5}$.

www.udgamwelfarefoundation.com