

# STD 7 MATHS Model Paper 2

## Answer Key

### Activity 1: Ratio and Proportion

(a) Simplify the following ratios:

(i)  $18 : 24 = \frac{18}{24} = 3 : 4$

(ii)  $45 : 75 = \frac{45}{75} = 3 : 5$

(b)

- Ratio of apples to oranges = 3:5.
- If apples = 15, oranges =  $\frac{15 \times 5}{3} = 25$ .

### Activity 2: Algebra

(a)

(i)  $\frac{x}{7} + 9$

(ii)  $3x - 8$

(b) Solve for  $x$ :

(i)  $2x + 5 = 15$ :

$$2x = 15 - 5 \implies 2x = 10 \implies x = 5$$

(ii)  $3x - 4 = 11$ :

$$3x = 11 + 4 \implies 3x = 15 \implies x = 5$$

### Activity 3: Geometry

(a)

(i)  $\text{Area} = 12 \times 5 = 60 \text{ cm}^2$

(ii)  $\text{Area} = 8 \times 4 = 32 \text{ cm}^2$

(b)

- Area of triangle =  $\frac{1}{2} \times \text{Base} \times \text{Height}$ :

$$\frac{1}{2} \times 10 \times 6 = 30 \text{ cm}^2$$

---

### Activity 4: Powers and Exponents

(a)

(i)  $5 \times 5 \times 5 \times 5 = 5^4$

(ii)  $7 \times 7 = 7^2$

(b)

(i)  $4^3 \div 4^2 = 4^{3-2} = 4^1 = 4$

(ii)  $2^5 \times 2^3 = 2^{5+3} = 2^8 = 256$

## Activity 5: Factors

(a) Prime factorization:

(i)  $84 = 2^2 \times 3 \times 7$

(ii)  $90 = 2 \times 3^2 \times 5$

(b) Least Common Multiple (LCM):

(i) LCM of 18 and 24 = 72

(ii) LCM of 12 and 15 = 60

---

## Activity 6: Practical Applications of Ratio

(a)

- Ratio of boys to girls = 4:3.
- If boys = 120, girls =  $\frac{120 \times 3}{4} = 90$ .

(b)

- Ratio of apples to bananas = 5:2.
- If apples = 25, bananas =  $\frac{25 \times 2}{5} = 10$ .

## Activity 7: Problem Solving

(a)

- Perimeter = 48 m, Ratio of length to breadth = 5:3.
- Let the dimensions be  $5x$  and  $3x$ :

$$2(5x + 3x) = 48 \implies 16x = 48 \implies x = 3$$

Length =  $5 \times 3 = 15$  m, Breadth =  $3 \times 3 = 9$  m.

- Area =  $15 \times 9 = 135$  m<sup>2</sup>.

(b)

- Total length = 30 m, Ratio = 2:3:5.
- Let the parts be  $2x$ ,  $3x$ , and  $5x$ :

$$2x + 3x + 5x = 30 \implies 10x = 30 \implies x = 3$$

Lengths are  $2 \times 3 = 6$  m,  $3 \times 3 = 9$  m,  $5 \times 3 = 15$  m.