

CLASS 8 · HOTS · OLYMPIAD PREPARATION · SHORT NOTES

Chapter 6: HOTS: Proportional Reasoning 1 (Class 8)

Topic-wise short notes with solved examples

Higher order thinking questions on ratio and proportion for Class 8: sharing in a ratio, the rule of three, cross multiplication and unit conversions, each with a full solution.

1 Solved HOTS questions

- The ratio $a : b$ compares two quantities of the same kind. Four numbers are in proportion if $a : b = c : d$, which means $ad = bc$ (cross multiplication). To share a quantity in the ratio $a : b$, divide it into $a + b$ equal parts.

Example 1.1 Divide Rs 840 between A and B in the ratio 3 : 4.

SOLUTION

Total parts = 7. One part = $\frac{840}{7} = 120$.

A gets 3×120 and B gets 4×120 .

Rs 360 and Rs 480

Example 1.2 If 8 pencils cost Rs 36, find the cost of 14 pencils.

SOLUTION

Cost of 1 pencil = $\frac{36}{8} = 4.5$.

Cost of 14 pencils = 14×4.5 .

Rs 63

Example 1.3 Find x if $5 : 8 = x : 24$.

SOLUTION

Cross multiplying: $8x = 5 \times 24 = 120$.

$x = 15$

Example 1.4 The ratio of the ages of a mother and her daughter is 7 : 2. The sum of their ages is 54 years. Find the daughter's age and how old the mother was when the daughter was born.

SOLUTION

One part = $\frac{54}{9} = 6$ years. Mother is 42 and daughter is 12.

Mother's age at the daughter's birth = $42 - 12$.

The daughter is 12 and the mother was 30

Example 1.5 A recipe for 4 people uses 300 g of flour. How much flour is needed for 10 people?

SOLUTION

Flour for 1 person = $\frac{300}{4} = 75$ g.

For 10 people: 75×10 .

750 g