

CLASS 8 · HOTS · OLYMPIAD PREPARATION · SHORT NOTES

Chapter 7: HOTS: Proportional Reasoning 2 (Class 8)

Topic-wise short notes with solved examples

Higher order thinking questions on proportional reasoning for Class 8: map scales, sharing in a three-part ratio, pie charts, inverse proportion and work done together, each with a full solution.

1 Solved HOTS questions

- A map scale of 1 : 50 000 means 1 cm on the map is 50 000 cm = 0.5 km on the ground. Two quantities in **inverse proportion** have a fixed product (workers $\times$ days). When people work together, add their one-day work.

Example 1.1 On a map with the scale 1 : 50 000, two towns are 4 cm apart. Find the real distance.

SOLUTION

Real distance = $4 \times 50\,000 = 200\,000$ cm.

$200\,000$ cm = 2000 m = 2 km.

2 km

Example 1.2 Divide Rs 1200 in the ratio 2 : 3 : 5.

SOLUTION

Total parts = 10, so one part is Rs 120.

The shares are 2×120 , 3×120 and 5×120 .

Rs 240, Rs 360 and Rs 600

Example 1.3 In a pie chart of 500 students, the sector for cricket has a central angle of 72° . How many students chose cricket?

SOLUTION

The fraction is $\frac{72}{360} = \frac{1}{5}$.

$\frac{1}{5} \times 500$.

100 students

Example 1.4 8 workers can finish a job in 15 days. How many days will 12 workers take?

SOLUTION

The total work is $8 \times 15 = 120$ worker-days.

$$\text{Days} = \frac{120}{12}.$$

10 days

Example 1.5 A can finish a job in 12 days and B in 6 days. How long will they take working together?

SOLUTION

In one day A does $\frac{1}{12}$ and B does $\frac{1}{6}$ of the job. Together $\frac{1}{12} + \frac{2}{12} = \frac{3}{12} = \frac{1}{4}$.

So the job takes 4 days.

4 days