Unit 4 · Ratio and Proportion

HARDER PRACTICE QUESTIONS

Full marks 28

Write your answers on separate paper. Show your working. Give every ratio in its lowest terms.

1 Two ratios into one [3]

The savings of three friends are such that $a : b = 2 : 3$ and $b : c = 4 : 5$. Together they have Rs 3,500.

i. Write $a : b : c$.

ii. How much has each saved?

2 Money changes hands [3]

The money of Alina and Salim is in the ratio 7 : 3. After Alina gives Salim Rs 200, the ratio is 3 : 2. How much did each have at first?

3 Mixing two mixtures [4]

Jar A holds milk and water in the ratio 3 : 1, and jar B holds them in the ratio 1 : 1. 4 liters from A and 2 liters from B are poured into a pot.

i. How much milk and how much water are in the pot?

ii. What is the ratio of milk to water in the pot?

iii. How much water must be added to make the ratio 1 : 1?

4 Find the number [3]

i. Find x if $4 : x :: x : 9$, with x positive.

ii. What number must be added to each of 3, 5, 6 and 9 so that the four numbers are in proportion, in that order?

5 Spot the error [3]

Find the mistake and correct it.

The ratio of boys to girls in a class is 3 : 5, and there are 12 more girls than boys. Basanta wrote: "$3 + 5 = 8$, so one part is $12 \div 8 = 1.5$. Boys: $3 \times 1.5 = 4.5$. Girls: $5 \times 1.5 = 7.5$."

6 In a real setting [4]

A school's garden club mixes soil, compost and sand in the ratio 3 : 2 : 1 for its pots. (The mix is made up for the problem.)

i. How much of each is needed for 48 liters of the mix?

ii. The club has plenty of soil and sand, but only 12 liters of compost. What is the most mix it can make, and how much soil and sand does that use?

7 Are they in proportion? [3]

A taxi's fares are shown below. (The fares are made up for the problem.)

Distance (km)	2	4	6
Fare (Rs)	130	210	290

i. Is the fare in proportion to the distance? Give a reason.

ii. How much is added for each extra kilometer?

iii. How much is charged before the taxi has moved at all?

8 Think [3]

Start with the ratio 3 : 5 and add 1 to both numbers again and again: 4 : 6, 5 : 7, 6 : 8, … Write the first four ratios as decimals. What happens to them? What would happen if you started from 5 : 3 instead? Explain.

9 Make your own [2]

Make up a ratio $a : b : c$ of whole numbers, not all equal, for sharing Rs 720 among three people so that every share is a whole number of rupees and the largest share is twice the smallest. Give the three shares.