Unit 6 · Unitary Method

HARDER PRACTICE QUESTIONS

Full marks 29

Write your answers on separate paper. Show your working. Before you calculate, say whether each pair of quantities varies directly or indirectly.

1 Direct, indirect or neither? [4]

Look at the tables.

x	2	3	6
p	30	20	10
q	9	13.5	27
r	5	7	13

i. For each of p, q and r, say whether it varies directly with x, indirectly with x, or neither. Give a reason.

ii. Find p and q when $x = 5$.

2 Halfway through the job [4]

12 workers can finish a job in 20 days. After 8 days, 4 of them leave.

i. How much of the job, in person-days, is left when they leave?

ii. How many more days do the rest take?

iii. How many days does the whole job take, and how much later is that than planned?

3 Three quantities [4]

6 pumps empty a tank of 1,80,000 liters in 5 hours.

i. How long do 4 such pumps take to empty a tank of 2,40,000 liters?

ii. How many pumps are needed to empty the 2,40,000-liter tank in 8 hours?

4 Men and boys [3]

On a farm, 2 men do as much work in a day as 3 boys. 4 men and 3 boys can plant a field in 10 days. How long do 2 men and 9 boys take to plant it at the same pace?

5 Spot the error [3]

Find the mistake and correct it.

5 masons can plaster a wall in 12 days. Lhamu worked out the time for 3 masons: "$12 \div 5 = 2.4$ days for one mason, so $2.4 \times 3 = 7.2$ days for three."

6 Making up the time [3]

A bus has to cover 240 km at 40 km per hour. After 120 km, a landslide on the road stops it for 1 hour. At what speed must it go now to arrive on time?

7 In a real setting [4]

8 workers on a road earn Rs 57,600 in 6 days, all at the same daily wage. (The numbers are made up for the problem.)

i. What is the daily wage of one worker?

ii. How many days do 5 workers take to earn Rs 1,02,000 between them?

iii. The daily wage rises by 25%. How many whole days must the 5 workers now work to earn at least Rs 1,02,000?

8 Think [2]

One tailor stitches a shirt in 2 hours. The unitary method says that 120 tailors stitch it in 1 minute. Why is that nonsense? What must be true of a job for "more workers, less time" to work?

9 Make your own [2]

Make up a problem from your own school or home in which one quantity varies directly and another indirectly with the one you find. Solve it, and choose your numbers so that the answer is a whole number.