S2

CFE Level 3

Working at Home Workbook

Proportion

Learning Intention. To be able to -
Share in any given ratio
Use basic proportion to find the value of one item
Use direct proportion to solve problems
Show direct proportion as a Linear Graph

Share in any given ratio

Question 1

Simplify each ratio as far as possible:

(a) 30 : 20   (b) 45 : 9   (c) 36 : 4   (d) 24 : 12   (e) 9 : 2

Question 2

1. Jenny wants to make punch for her party. She needs 3 glasses of orange juice to 2 glasses of cranberry.

If she uses 12 glasses of orange, how many glasses of cranberry does she need?

2.   In an orchard, the ratio of red apples to green apples is 5 : 3. If there are:

(a) 25 red apples, how many are green?   (b) 60 red apples, how many are green?

(c) 18 green apples, how many are red?   (d) 33 green apples, how many are red?

Question 3

1. Share £150 between Mark and May in the ratio 2 : 1. (Hint: remember there are 3 shares).

2. Mrs Perry shares out 15 biscuits between Gemma and Zak in the ratio 1 : 4. How many biscuits does each child get?

3. Bill and Bob win a lottery and share £1000 in the ratio 5 : 3. How much will each receive?

4. Mr Barrington decides to set up a business breeding race horses. He buys 36 horses. They are stallions, mares and foals, in the ratio 2 : 7 : 3. How many each does he have?

Use basic proportion to find the value of one item

Questions 1

A car travelled a distance of 260 miles on 10 gallons of petrol.

Calculate the rate in "miles per gallon".

Question 2

A bus travels 550 kilometres on 50 litres of petrol.

Calculate the rate in "kilometres per litre."

Question 3

A chef makes 52 pizzas in 13 minutes. Calculate the rate of pizzas/minute.

Question 4

Three slugs Toby, Slinky and Slider had a race.
Toby travelled 100 centimetres in 5 minutes.
Slinky travelled 68 centimetres in 4 minutes.
Slider travelled 63 centimetres in 3 minutes.
  (a)   For each slug, find the speed in centimetres/minute.
  (b)   What was the fastest slug?

Question 5

£10 cab be exchanged for 17.88 Australian dollars.

Calculate the rate of dollars per £.

Use direct proportion to solve problems

Questions 1

7 Mars bars cost £3.15 What would 3 cost?

Questions 2

6 litres of petrol costs £7.80. What would 9 litres cost?

Questions 3

5 comics cost £7.35. What would 4 cost?

Questions 4

15 cm^3 of gold weighs 270 grams. What would 17 cm^3 weigh?

Questions 5

A three kilogram roast of beef takes $2\frac{1}{2}$ hours to cook.

How long would it take a 5 kilogram roast?

Show direct proportion as a Linear Graph

Questions 1

(a) Copy and complete the table.

No. of pears	1	2	3	4	5	6
Cost (p)	30	60				

(b) Using an appropriate scale, plot the points (1, 30), (2, 60), ….

(c) (i) Join the points with a straight line

(ii) Does the line pass through the origin?

(iii) Explain why the line must pass through the origin.

Questions 2

(a) Copy and complete the table.

No. of plots	1	2	3	4	5	6
Cost (p)	40	80				

(b) Using an appropriate scale, plot the points (1, 40), (2, 80), ...

(c) (i) Join the points with a straight line

    (ii) Does the line pass through the origin?

Questions 3

(a) Copy and complete the table for a cycle travelling at 10 km/hr.

Time (hrs)	1	2	3	4	5
Distance (km)	10	20			

(b) Using a scale of 2 boxes to represent 1 hour on the horizontal axis and 2 boxes to represent 10 km on the vertical axis, plot the points and draw a line through them.

(c) What distance should the cycle travel in 7 hours?

Questions 4

This graph shows the annual interest given by the "Southern Building Society"

(a)   Use the graph to copy and complete this table.

Saving (£)	100	200	300	400	500
Interest (£)					

(b)   Are the quantities in direct proportion?
    Explain.

(c)   Calculate the interest gained on savings of
    £800, £1000, !200.