Ratio and proportion problems

1   Whitney buys 6 cans of lemonade for £3

    ×2

a) How much do 12 cans cost?   £6   ×2

    ÷2   ÷2

b) How much do 3 cans cost?   £1·50

    ×5   ×5

c) How much do 15 cans cost?   £7·50

£3

2   The ratio of red to green grapes in a bowl is 3 : 1

a) Explain what this means.

For every 3 red grapes there is 1 green grape.

b) There are 12 more red grapes than green grapes.

    What is the total number of grapes in the bowl?

Red | 6 | 6 | 6   12 ÷ 2 = 6

?   4 × 6 = 24

Green | 6 ← 12 →

24

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3   Amir is making some chocolate chip biscuits.

He has this list of ingredients to make 6 biscuits.

> **Chocolate chip biscuits** (makes 6)
>
> 120 g butter
>
> 72 g sugar
>
> 180 g plain flour
>
> 60 g chocolate chips

a) How much of each ingredient does Amir need to make 2 biscuits?   6 ÷ 3 = 2

   120 ÷ 3   180 ÷ 3

butter   40 g   plain flour   60 g

   72 ÷ 3   60 ÷ 3

sugar   24 g   chocolate chips   20 g

b) How much of each ingredient does Amir need to make 10 biscuits?   2 × 5 = 10

   40 × 5   60 × 5

butter   200 g   plain flour   300 g

   24 × 5   20 × 5

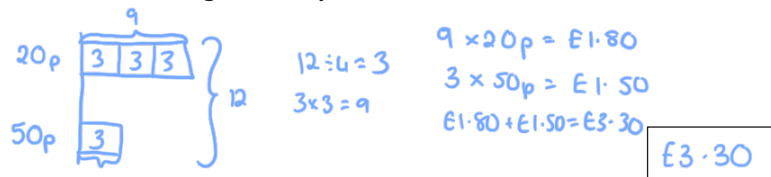sugar   120 g   chocolate chips   100 g

c) Amir has 240 g of chocolate chips.

What is the maximum number of biscuits he can make?

   60g   6 biscuits

×4   ×4

     240g   24 biscuits

24

4 Dexter has some 20p and 50p coins in a jar.

For every three 20p coins he has one 50p coin.

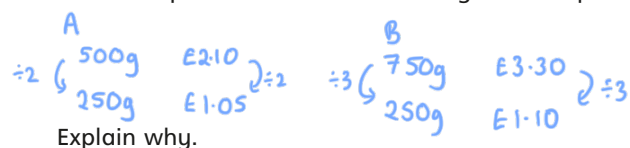There are 12 coins in the jar in total.

How much money is in the jar?

20p | 3 | 3 | 3   (9)
50p | 3

12

$12 \div 4 = 3$
$3 \times 3 = 9$

$9 \times 20p = £1.80$
$3 \times 50p = £1.50$
$£1.80 + £1.50 = £3.30$

£3.30

5 A drink is made using 3 parts orange juice to 2 parts lemonade.

Esther makes 1.2 litres of this drink.
(1,200ml)

How much orange juice does she need?

O | 240 | 240 | 240
L | 240 | 240

1,200 mL

$1,200 \div 5 = 240$
$3 \times 240 = 720$

720 ml
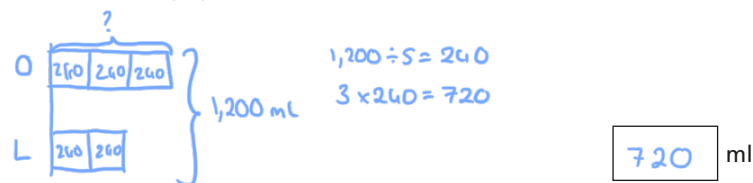
6 Two shops sell the same cereal but in different-sized boxes.

Shop A	Shop B
500 g of cornflakes	750 g of cornflakes
£2.10	£3.30

Which shop is better value for money? Shop ___A___

A
$\div 2 \Big(\begin{array}{l} 500g \\ 250g \end{array} \quad \begin{array}{l} £2.10 \\ £1.05 \end{array} \Big) \div 2$

B
$\div 3 \Big(\begin{array}{l} 750g \\ 250g \end{array} \quad \begin{array}{l} £3.30 \\ £1.10 \end{array} \Big) \div 3$

Explain why.

7 Dora draws two similar rectangles.

My larger rectangle is 4 times the size of the smaller one.
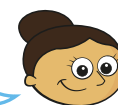
The perimeter of the larger rectangle is 48 cm.

The length and width of both rectangles are even numbers.

What is the largest possible area for the small rectangle?

Perimeter (larger)   48 cm $\Big) \div 4$
Perimeter (smaller) 12 cm

2cm [4 cm]

8 cm²

8 Aisha has two boxes of sweets.

- In the first box, the ratio of red sweets to green sweets is 3:1
- In the second box, for every 2 orange sweets there are 3 yellow sweets.
- There is the same number of sweets in each box.
- There are 12 yellow sweets in the second box.

How many sweets are in the first box?

1st box
R [ ][ ][ ] ?
G [ ]

2nd box
O | 4 | 4   20
Y | 4 | 4 | 4
12

$12 \div 3 = 4$
$5 \times 4 = 20$

20

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