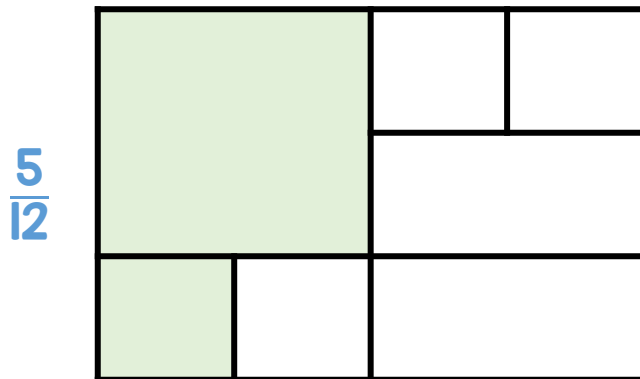
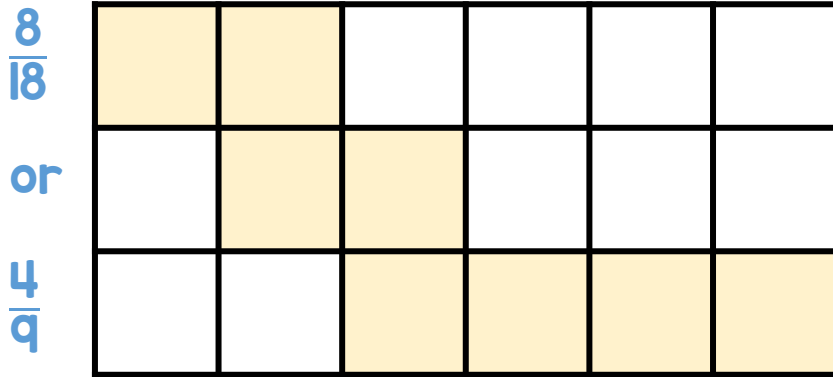


- 1 What fraction of each rectangle is shaded?



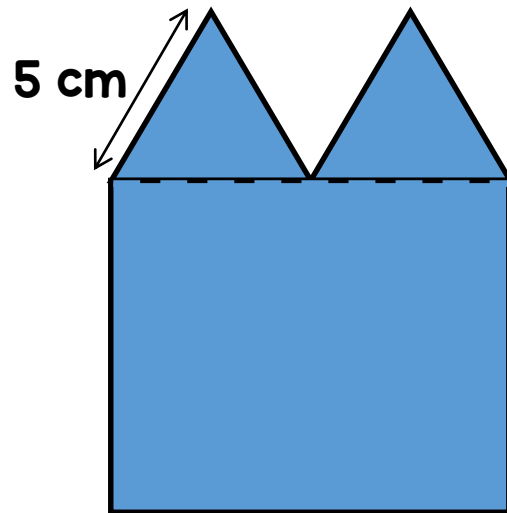
- 2 Work out the following fraction calculations.

(a) $\frac{3}{6} + \frac{1}{2} = 1$

(b) $\frac{2}{5} + \frac{7}{15} + \frac{3}{5} + \frac{8}{15} = 2$

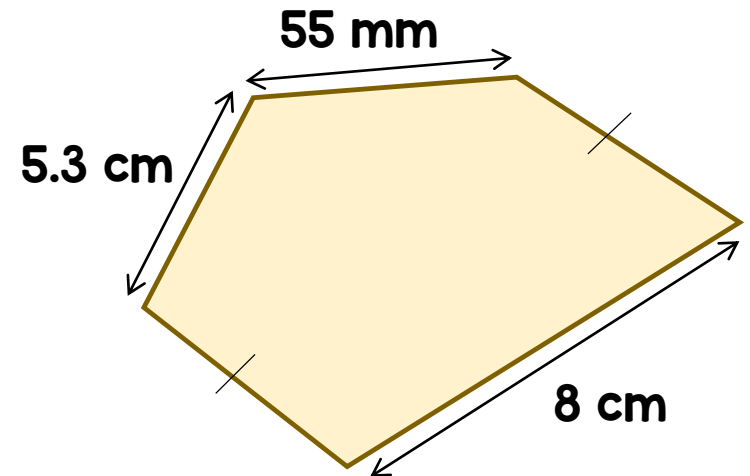
(c) $1 - \frac{1}{5} - \frac{3}{10} = \frac{1}{2}$

- 1 A shape is made up of two equilateral triangles and a square.



What is the perimeter of the shape?
The perimeter of the shape is 50 cm.

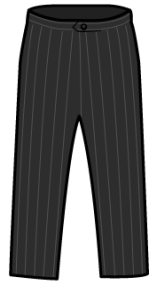
- 2 The perimeter of the pentagon is 25 cm.



Find the missing lengths.
Each of the missing lengths are 31 mm or 3.1 cm.

1 Helen has £400

She spends $\frac{1}{10}$ of the money on a new toaster.



She spends $\frac{1}{8}$ of the amount left on a pair of trousers.

Which item costs the most?

The trousers cost the most They cost £45 and the toaster only costs £40

2 $\frac{3}{8}$ of people watching a play are adults.

The rest of the people watching are children.

There are 32 more children than adults watching the play.

How many people are watching the play in total?

128 people are watching the play in total.

- 1 Usman saves 10p and 50p coins in his money box.



He has saved £12.70

32 of the coins in the money box are 10p coins.

How many 50p coins are in the box?

There are 19 50p coins in the box.

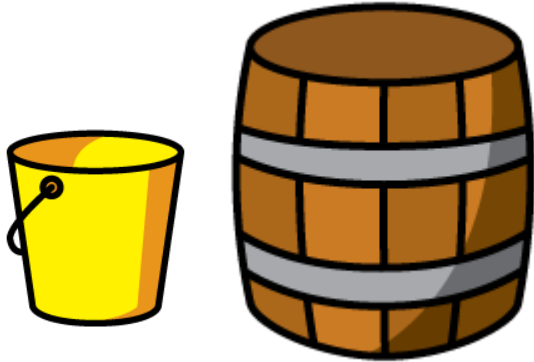
- 2 The table shows the number of loaves of bread sold in a shop each week in February.

Week	Number of loaves sold
1st Week	480
2nd Week	400
3rd Week	70
4th Week	250

Which week did the shop sell $\frac{1}{3}$ of the total number of loaves of bread sold in February?

2nd week.

1 A bucket holds 5 litres of water.



Yasmin uses 7 and a quarter buckets to fill the barrel with water.

How much water does the barrel hold?

The barrel holds 36 and a quarter litres of water.

2 Leah has a piece of ribbon 4.8 metres long.



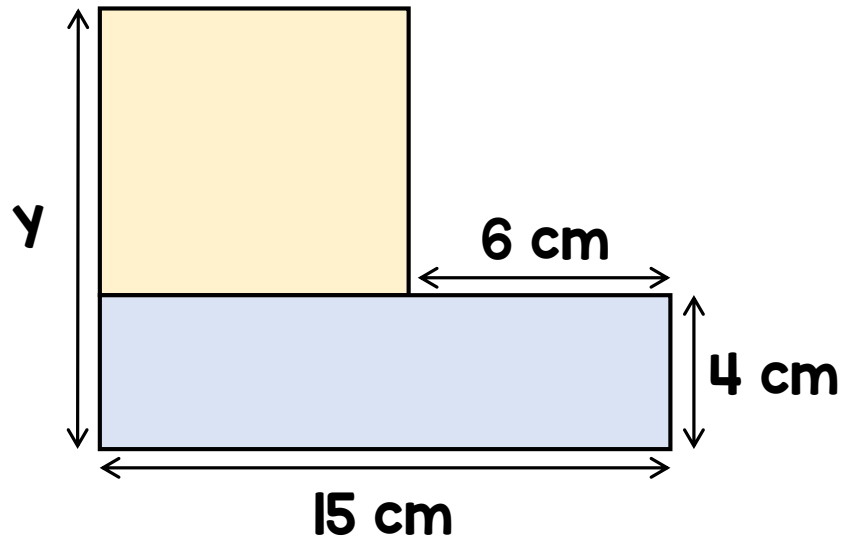
She cuts a 1.2 m piece of ribbon off from the end.

She cuts the remaining ribbon into 2 pieces of equal length.

How long are the pieces of ribbon?

The pieces of ribbon are 1.8 m long.

- 1** The shape is made up of a square and a rectangle.



Find the length of the side y

$$y = 13 \text{ cm}$$

- 2** Work out the missing numbers.

$$(a) \quad 5 \times \frac{2}{3} = \boxed{10} \times \frac{1}{3}$$

$$(b) \quad 10 \times \frac{3}{8} = \boxed{6} \times \frac{5}{8}$$

$$(c) \quad 5 \times \frac{1}{4} = \boxed{10} \times \frac{1}{8}$$

1 A school makes 50 sandwiches each day.

The table shows the number of sandwiches sold each day last week.

Day	Number of sandwiches sold
Monday	20
Tuesday	32
Wednesday	47
Thursday	18
Friday	39

How many sandwiches in total were not sold last week?

94 sandwiches were not sold last week.

2 Tony earns £600 a week.



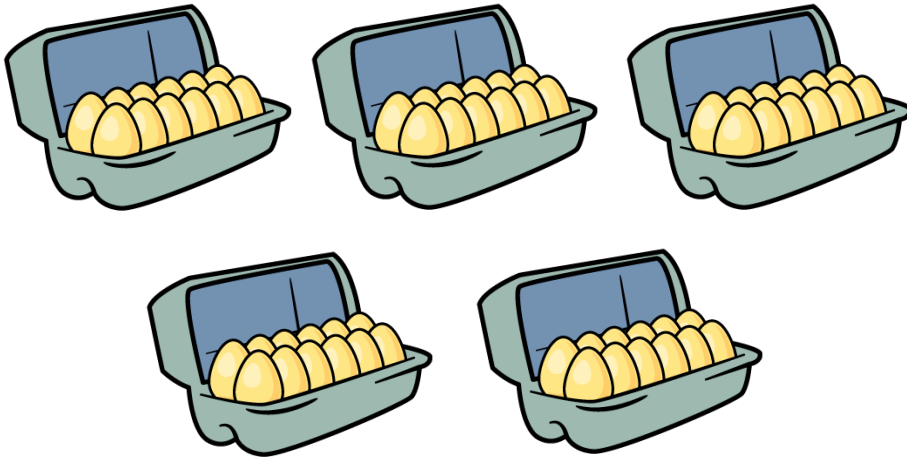
I spend $\frac{3}{10}$ of what I earn on rent for my house.

He spends 20% of the amount remaining on a new coat.

How much money does the coat cost?

The coat costs £84

1 Maisie buys 5 boxes of eggs.



Each box contains 12 eggs.

She uses 18 of the eggs.

What fraction of the eggs does she have left?

$$\frac{42}{60} = \frac{7}{10}$$

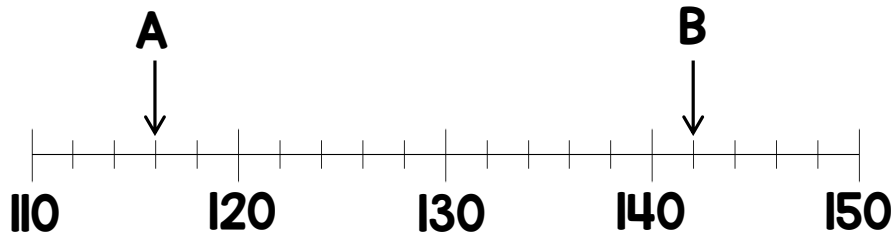
2 Max has some bags of apples and some bags of oranges.

- There are twice as many oranges as apples in a bag.
- Max has 4 bags of apples and 3 bags of oranges.
- Max has 70 apples and oranges in total

How many oranges are in one bag?

There are 14 oranges in one bag.

- 1 A number line has 2 numbers marked.



True or False

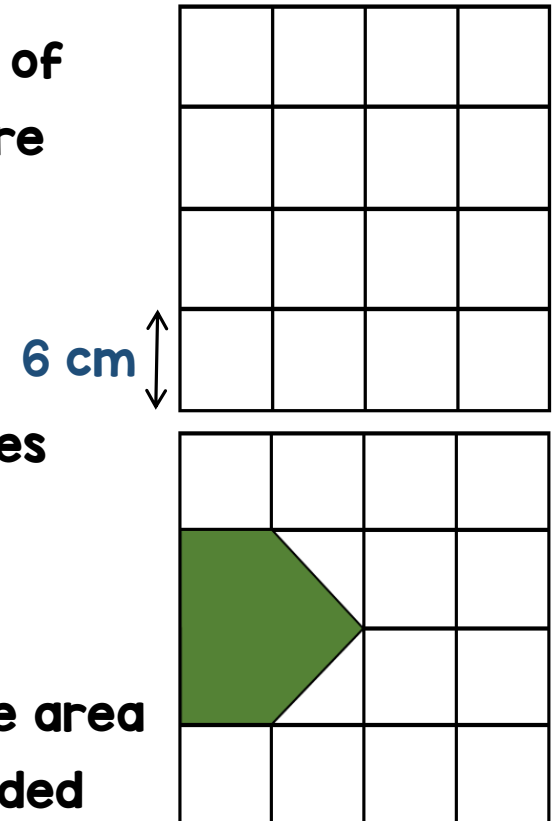
$$A + B > 250$$

Explain your answer.

True. $110 + 140 = 250$, and A is greater than 110 and B is greater than 140 so their total must be greater than 250.

- 2 Dana has a square grid.

The length of each square is 6 cm.



Dana shades in part of the grid.

What is the area of the shaded part of the grid?

$$108 \text{ cm}^2$$

1 Which of the fractions add up to 1?

$$\left(\frac{1}{5}\right) \quad \left(\frac{3}{10}\right) \quad \frac{3}{5} \quad \left(\frac{1}{2}\right)$$

Which two of the fractions below have the greatest difference?

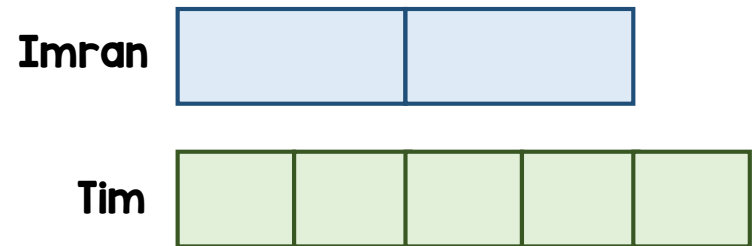
$$\left(\frac{4}{9}\right) \quad \frac{1}{3} \quad \left(\frac{1}{6}\right) \quad \frac{7}{18}$$

2 Imran and Tim each think of a number.

$\frac{1}{2}$ of Imran's number is equal to $\frac{2}{5}$ of Tim's number.

The total of their numbers is 144

What number is Imran thinking of?

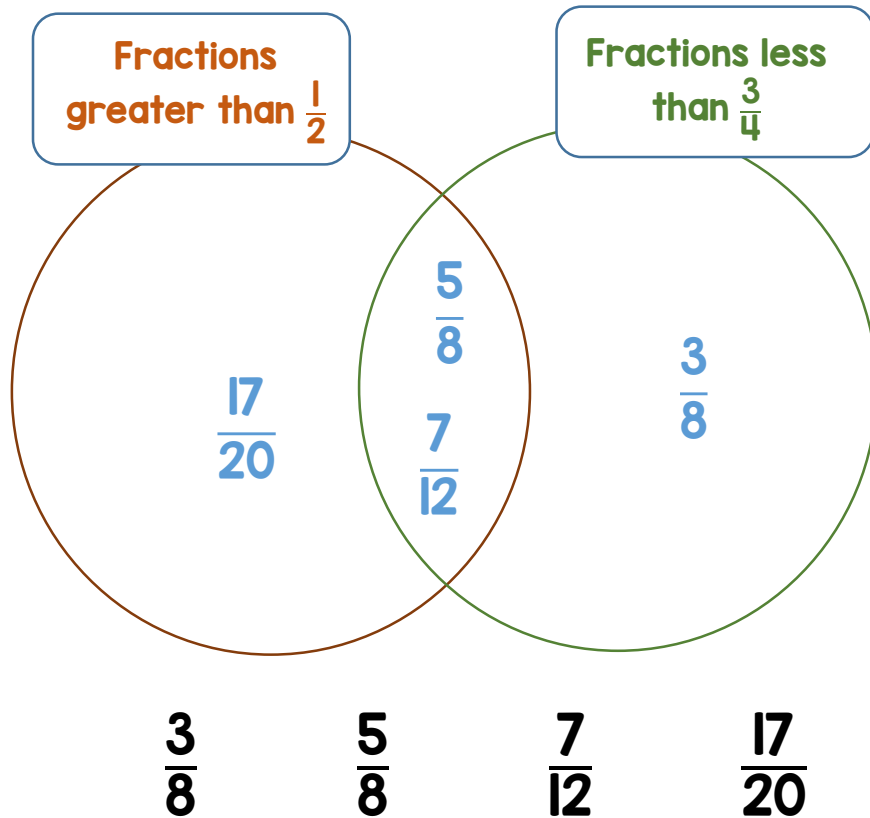


Imran is thinking of 64

Problems of the Day 2019



- 1 Put the fractions into their correct position in the diagram.



- 2 Amy makes a repeating pattern.

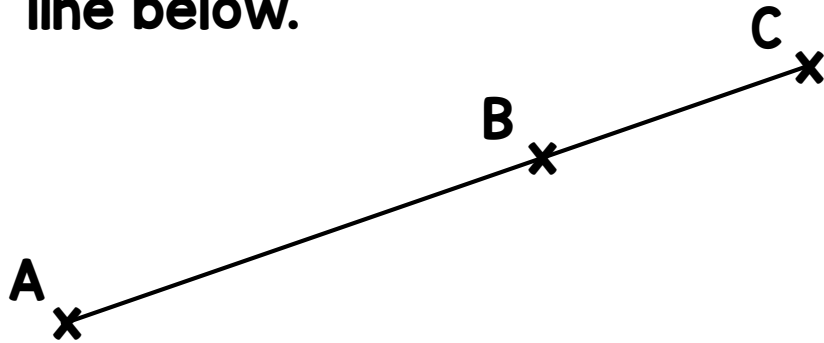


What shape will be in the 50th position?

Explain how you know.

A rectangle will be in the 50th position because the star will be in the 48th as it's a multiple of four, and 2 on from that is the rectangle.

- 1 Three points are marked on the line below.



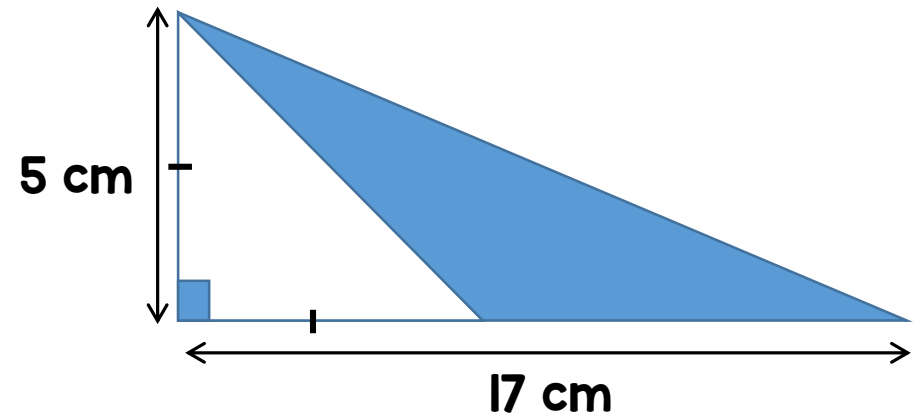
The distance from A to B is twice the distance from B to C.

The distance from A to B is 15 cm.

What is the distance from A to C?

The distance from A to C is 22.5 cm

- 2 What is the area of the shaded triangle?



The area of the shaded triangle is 30 cm^2

1 Trading cards are sold as single cards or in packs of 5 or 10

- A single card costs 50p
- A pack of 5 cards costs £2
- A pack of 10 cards costs £3.50

Max has £10 to spend.

What is the maximum number of trading cards he can buy?

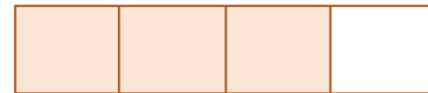
The maximum number of trading cards Max can buy is 27

2

$\frac{2}{5}$ of a number is equal to $\frac{3}{4}$ of a different number.

The smaller of the two numbers is 80

What is the value of the largest number?



The largest number is 150

1 Complete the missing numbers.

$$128 \times 12 = 128 \times 10 + 128 \times \boxed{2}$$

$$128 \times 12 = 127 \times 12 + \boxed{12}$$

$$128 \times 12 = 128 \times 6 \times \boxed{2}$$

2 Mark has £150 and Jan has £120

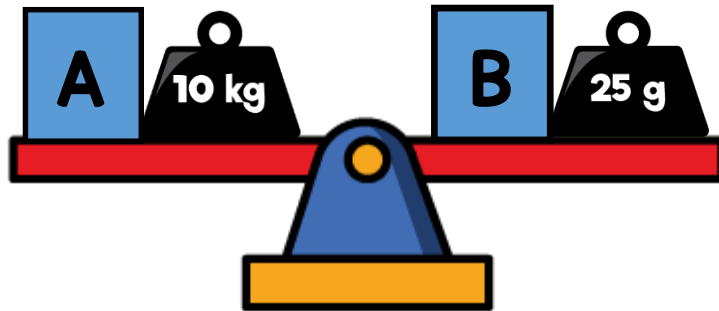
Mark gives Jan some money.

Jan now has twice as much as Mark.

How much money did Mark give Jan?

Mark gave Jan £60

1 Here are some scales.



Which is the heavier box, A or B?

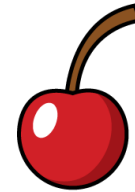
Explain your answer.

Box B must be heavier because 10 kg is heavier than 25g but the scales are balanced.

2 A shop sells these fruits.



Strawberries
£2.20 per $\frac{1}{2}$ kg



Cherries
£3.50 per $\frac{1}{4}$ kg

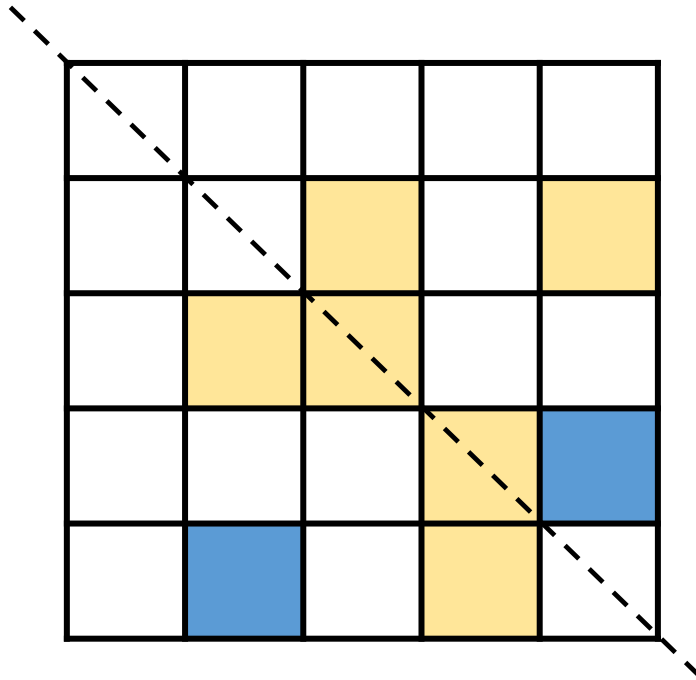
Megan buys

- 2 kg of strawberries and
- 750 grams of cherries

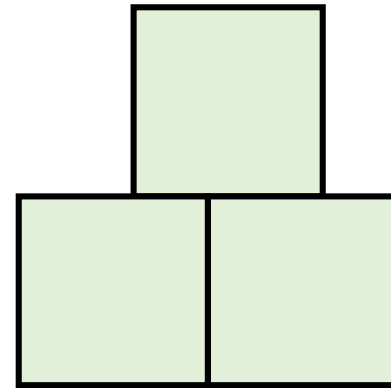
How much does she spend in total?

Megan spends £19.30 in total.

- 1 Shade in 2 more squares so that the dotted line is a line symmetry.



- 2 A shape is made of 3 identical squares.

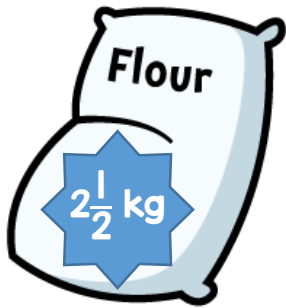


The area of the shape is 75cm^2 .

What is the perimeter of the shape?

The perimeter of the shape is 40 cm.

- 1 A bag contains $2\frac{1}{2}$ kg of flour.



Another bag contains $1\frac{1}{4}$ kg more flour than the first bag.

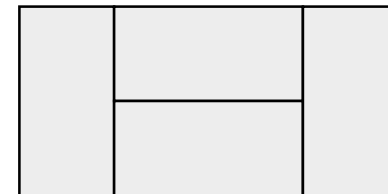
How much flour is there in the two bags in total?

There is $6\frac{1}{4}$ kg of flour in total.

- 2 A rectangle has a perimeter of 84 cm.



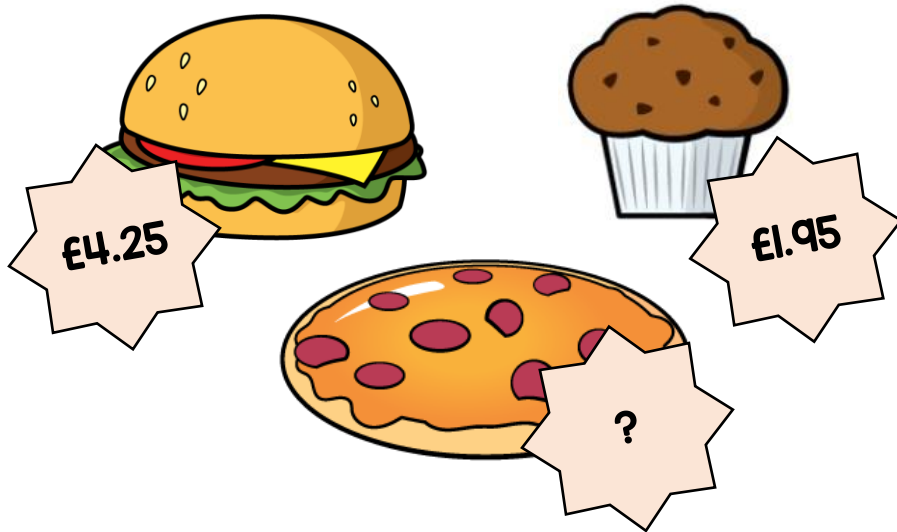
It is divided into 4 identical rectangles.



What is the length of one of the smaller rectangles?

The length of one of the smaller rectangles is 14 cm.

- 1** Leo has £25
He buys the following items.



He has £12.50 left.

How much does the pizza cost?

The pizza costs £6.30

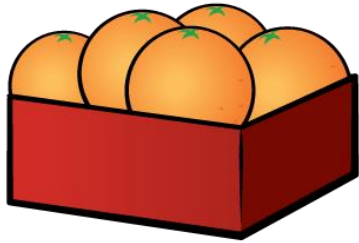
- 2** Alysha and Beth go on a bike ride.

- In the morning Alysha cycles 3 times as many km as Beth.
- In the afternoon Alysha cycles 14 km and Beth cycles 48 km.
- They have now cycled the same distance.

How many km did Alysha cycle in the morning?

She cycled 51 km in the morning.

- 1 A box of 5 oranges cost £1.80



How much do 80 oranges cost?
Show your method.

80 oranges cost £28.80

- 2 Jane reads a book.

- On Monday she reads 26 pages.
- On Tuesday she reads $\frac{2}{5}$ of the remaining pages.
- On Wednesday she reads the final 36 pages.

How many pages are in the book?

There are 86 pages in the book.

1 Tanya bakes some cookies to sell.

- By 1pm she has sold 29 cookies.
- By 3pm she has sold 50% of all the cookies.
- At 3pm she has 72 cookies left.

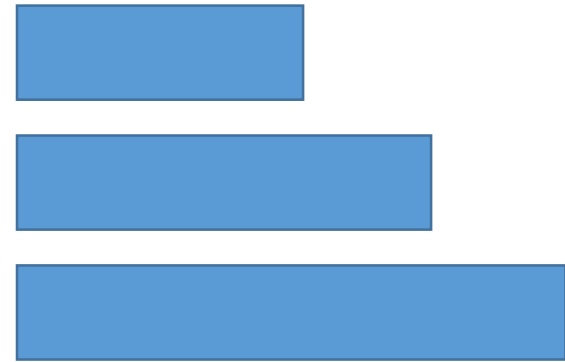
How many cookies does she sell between 1pm and 3pm?

Tanya sells 43 cookies between 1pm and 3pm.

2 David has 3 number cards.

- The sum of A and B is 120
- The sum of B and C is 150
- If you subtract B from C you get 12

What is the value of A?



The value of A is 51