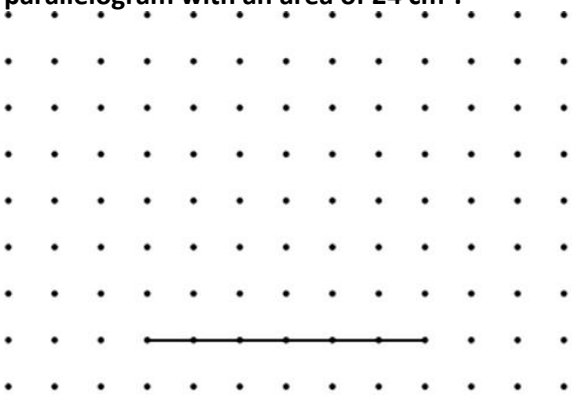
Draw three more lines to complete the parallelogram with an area of 24 cm^2.

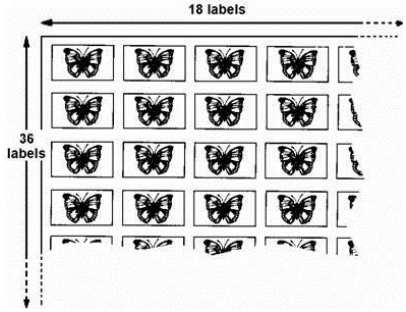


Carol counts the matches in 10 boxes.
She works out that the mean number of matches in a box is 51
Here are her results for 9 boxes.

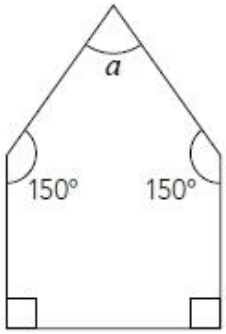
1st January						
48	49	50	51	52	53	54
	✓ ✓ ✓	✓ ✓	✓	✓		✓ ✓

Calculate how many matches are in the 10th box.

A shop sells sheets of sticky labels.
On each sheet there are 36 rows and 18 columns of labels.



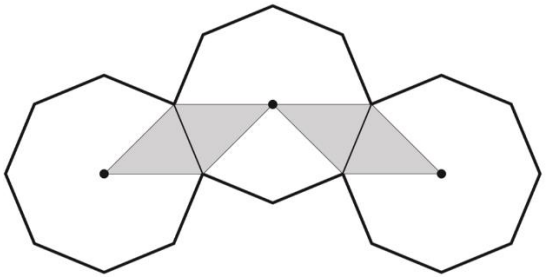
How many labels are there altogether on 45 sheets?



The diagram shows a pentagon.
Each side of the pentagon is the same length.
Is the shape
a regular pentagon?
Explain your answer.

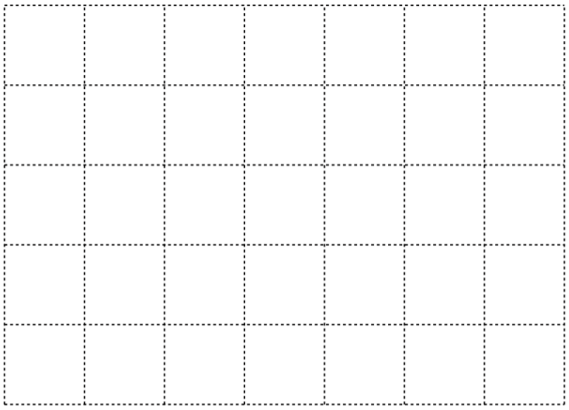
Work out the size of angle a.

The diagram shows three regular octagons joined together.
There is a dot at the centre of each octagon.



What fraction of the diagram is shaded?

On the centimetre square grid, draw a triangle that has an area of 5 cm^2.



Liam makes a sequence of numbers starting with 300
He subtracts 125 each time.
Write the next two numbers in Liam's sequence.

300 175 50 ☐ ☐

5 miles is approximately equal to 8 km.
Complete the sentences below:

1 mile is approximately equal to _____km

1 km is approximately equal to _____miles

There are 25 children in the lunch queue, including Nik.
Nik says, 'There are twice as many children in front of me as there are behind me'.
How many children are in front of Nik?

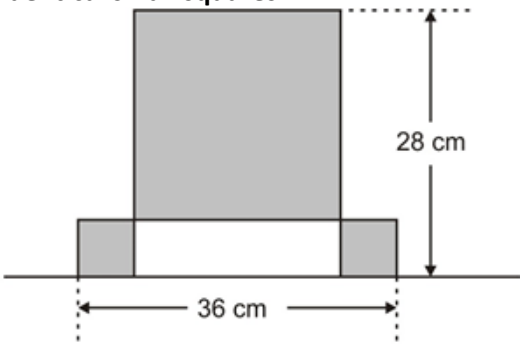
What number is exactly halfway between $2\frac{3}{4}$ and $3\frac{1}{2}$?

Mr Jones looks at the prices of 5 mansions.
He wants to look at mansions costing between £990,000 and £1,110,000.

Mansion For Sale		
	Name	**Price**
A	Avery House	£989,990
B	Beano Hall	£1,050,000
C	Chive Castle	£1,200,900
D	Denby House	£1,105,000
E	Eve Court	£991,500

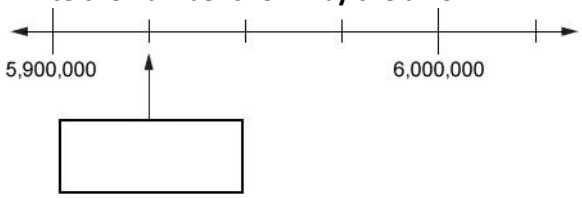
Write the letters of the mansions that he looks at.

This design has one large square and two identical small squares.

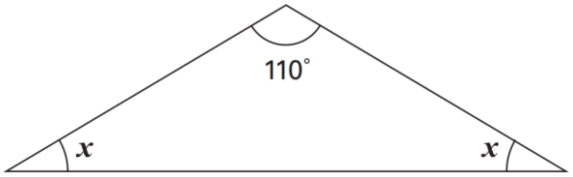


The design measures 36 centimetres by 28 centimetres. Calculate the length of a side of the large square.

Here is part of a number line.
Write the number shown by the arrow.

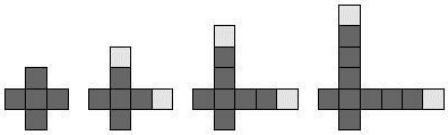


Here is an isosceles triangle.



Calculate the size of angle x.

Here is a sequence of shapes made from squares.

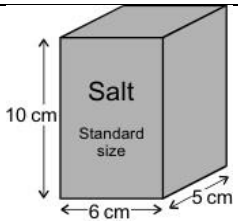


shape number (n)	1	2	3	4
number of squares (s)	5	7	9	11

There is a formula which connects the number of squares (s) used in a shape, with the shape number (n). Tick the correct formula.

s = 3n + 2 **s = 3n + 1** **s = 2n + 3**

s = 5n – 3 **s = 2n + 5**

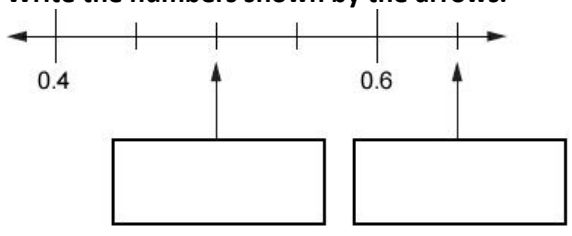


What is the volume of this standard size box of salt?

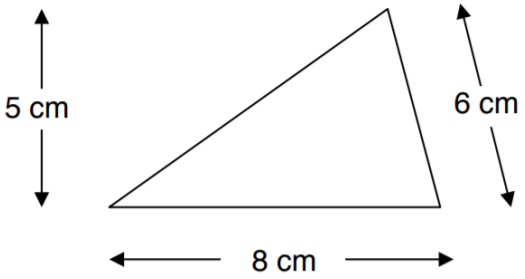
What is the volume of this special offer box of salt, which is 20% bigger?

The standard size box contains enough salt to fill up 10 salt pots. How many salt pots may be filled up from the special offer box of salt?

Here is part of a number line.
Write the numbers shown by the arrows.



Calculate the area of the triangle.

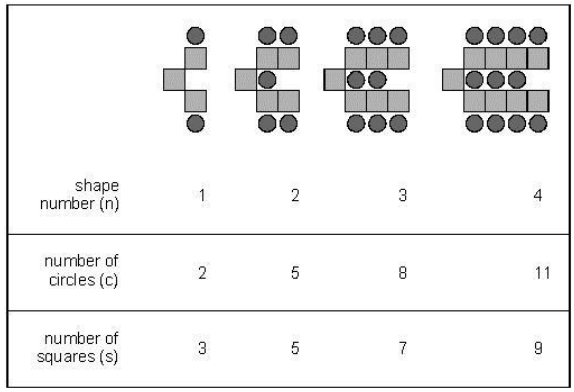


The rule to get each number in a sequence is
subtract the previous number from 100,
then divide the answer by 2
Here is part of the sequence. Write the two missing numbers.

[ ] 40 30 35 32.5 33.75 [ ]

In Class 6, 80% of the children like crisps.
75% of the children who like crisps also like chocolate.
In Class 6, what percentage of the children like both crisps and chocolate?

Here is a sequence of shapes made from squares and circles.



shape number (n)	1	2	3	4
number of circles (c)	2	5	8	11
number of squares (s)	3	5	7	9

The sequence continues in the same way. The formula for the number of circles (c) in relation to the shape number (n) is

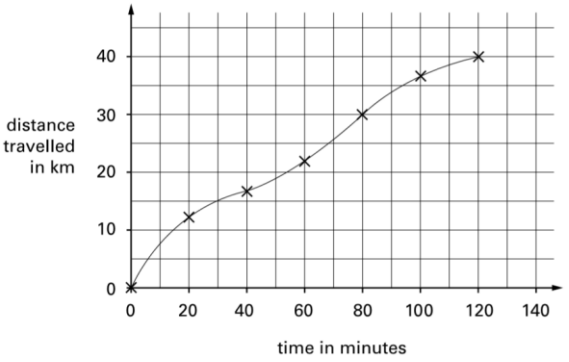
$c = 3n - 1$

Use the formula to work out the shape number which has 104 circles.

Write the formula for the number of squares (s) in shape number (n).

S = _____

Carol went on a 40-kilometre cycle ride.
This is a graph of how far she had gone at different times.



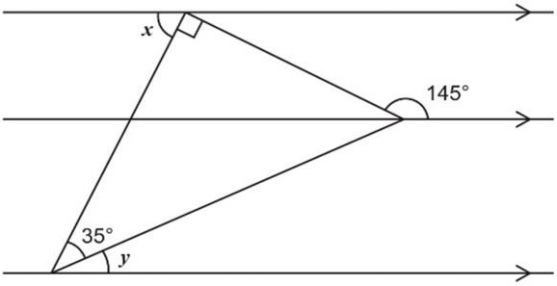
How many minutes did Carol take to travel the last 10 kilometres of the ride?

Use the graph to estimate the distance travelled in the first 20 minutes of the ride.

Carol says, 'I travelled further in the first hour than in the second hour.' Explain how the graph shows this.

Children were asked to choose between a safari park and a zoo for the school trip.
They had a vote.
The result was a ratio of 10:3 in favour of going to a safari park.
130 children voted in favour of going to a safari park.
How many children voted in favour of going to the zoo?

The diagram shows a right-angled triangle and three parallel lines.



Calculate the size of angle *x* and angle *y*.

The numbers in this sequence increase by equal amounts each time.
Write in the missing numbers.

$2\frac{1}{2}$ ☐ $13\frac{1}{2}$ ☐ $24\frac{1}{2}$ ☐

2x + y = 20

when x = 6, y = _____

when y = 2, x = _____

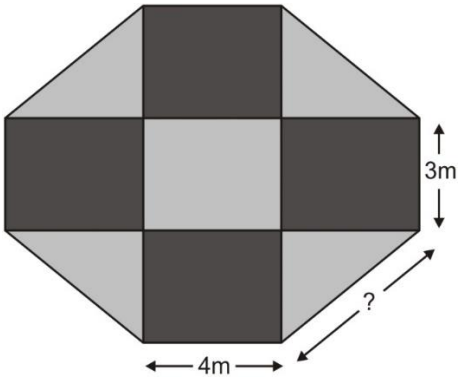
96 pupils and teachers go by minibus to the sports tournament.
How many 15-seater minibuses will be required?

In a class the ratio of boys to girls is 7:4
There are 9 more boys than girls.
How many children are in the class?

Write in figures the number three million.

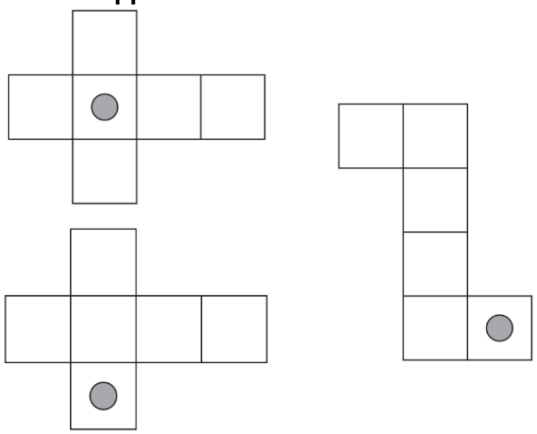
Write a <u>fraction</u> which is greater than 0.7 and less than 0.71

This plan of a garden is made of rectangles and triangles. The perimeter of the garden is 34 metres.



What is the length of the longest side of each triangle?

Here are three nets of a cube. On each net draw one more dot so that each cube will have dots on opposite faces.

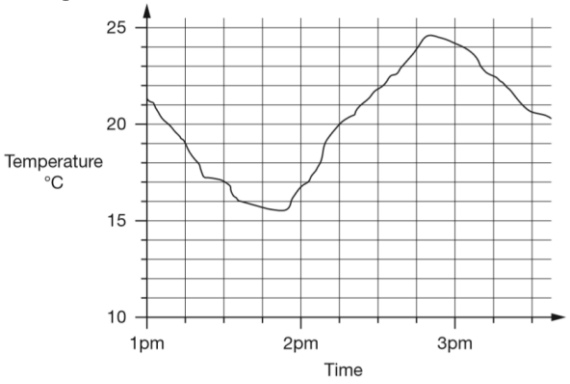


bag of 6 green apples for 75p
bag of 10 red apples for 90p

Jason bought some bags of green apples and some bags of red apples. He spent £4.20
How many bags of each type of apple did he buy?

Nika and Hassan bought some bags of apples.
Nika says, 'I bought more apples than Hassan, but I spent less money.'
Explain how this is possible.

This graph shows how the temperature changed in Liam's room one afternoon.



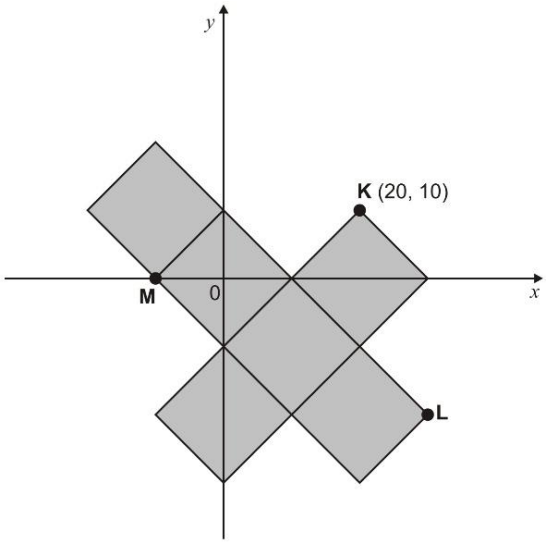
Estimate the temperature at 3:15pm.

Estimate the time when the temperature was highest.

How much did the temperature change from 2pm to 2:30pm? Give your answer to the nearest degree.

Liam did a survey of 55 people to see how many were left-handed.
Liam says, 'The results show that exactly 10% of the people in the survey are left-handed.'
Explain why Liam cannot be correct.

The diagram shows 6 shaded squares.



K is the point (20, 10).
What are the coordinates of L and M?

You can make only four different cuboids with 16 cubes.

	Dimensions		
Cuboid **A** 	1	1	16
Cuboid **B** 	1	2	8
Cuboid **C** 	1	4	4
Cuboid **D** 	2	2	4

Which cuboid has the largest volume?
Tick the correct answer below.

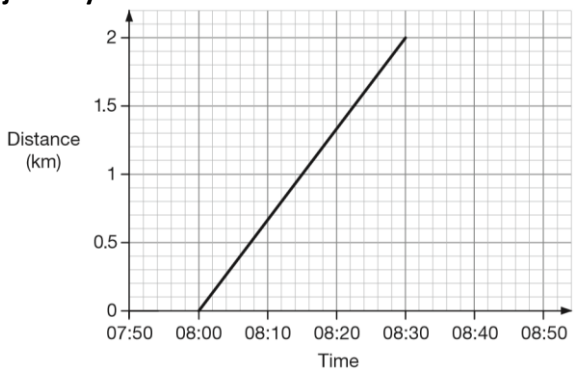
Cuboid A Cuboid B Cuboid C

Cuboid D All the same

Explain how you know.

How many of cuboid D make a cube of dimensions 4 × 4 × 4?

Alfie and his brother walked from home to their school.
Their school is 2 kilometres from home.
The graph shows information about Alfie's journey.



How does the graph show that Alfie walked at a constant speed for all of his journey?

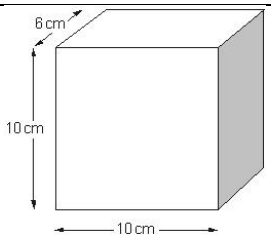
Alfie's brother left home 10 minutes before Alfie. He arrived at school 20 minutes after Alfie. He walked at a constant speed for all of his journey. At what time did Alfie overtake his brother?

Write the correct sign < = or > in each box to make these sentences correct.

$\frac{3}{10}$ ☐ $\frac{10}{3}$

$\frac{6}{5}$ ☐ $\frac{8}{7}$

$\frac{39}{27}$ ☐ $\frac{26}{18}$

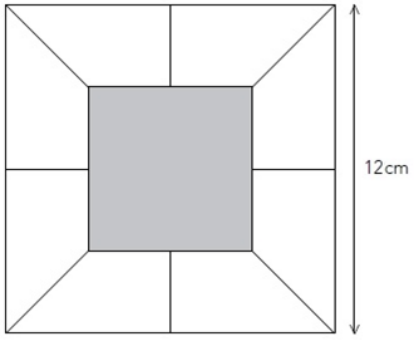


a) The diagram shows a cuboid. What is the volume of this cuboid?

b) The volume of a different cuboid is half the volume of the cuboid in part a. What could the dimensions of this different cuboid be?

If you know 40% of a number, explain how you could work out the original number.

The diagram shows a square of side length 12 cm.
Inside the square are 8 congruent trapeziums and a shaded square.
The side length of the shaded square is 6 cm.

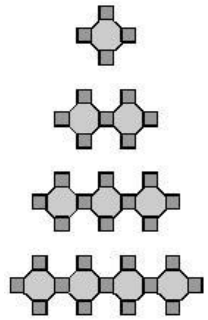


What is the area of one of the trapeziums?

The sum of two numbers is 5
The difference between the numbers is 0.5
What are the numbers?

There are 60g of rice in one portion. How many portions are there in a 3 kg bag of rice?

Here is a sequence of patterns made from octagons and squares.

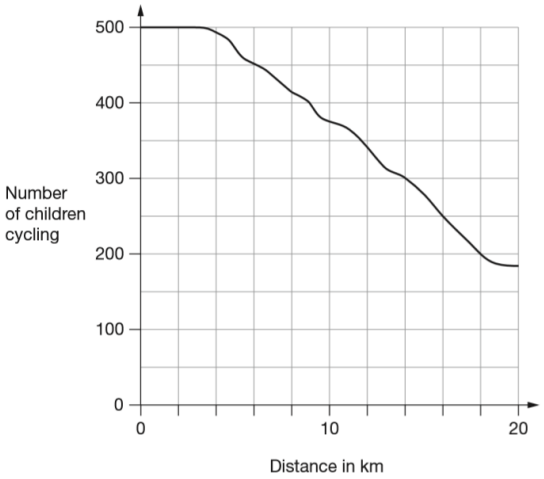


number of octagons (**n**)	number of squares (**q**)
1	4
2	7
3	10
4	13

The sequence continues.
How many squares will there be in the pattern that has 40 octagons?

q represents the number of squares.
n represents the number of octagons.
What is the rule connecting q and n?

500 children started a 20 kilometre sponsored cycle ride. This graph shows how far they cycled.



At what distance were exactly half of the children still cycling?

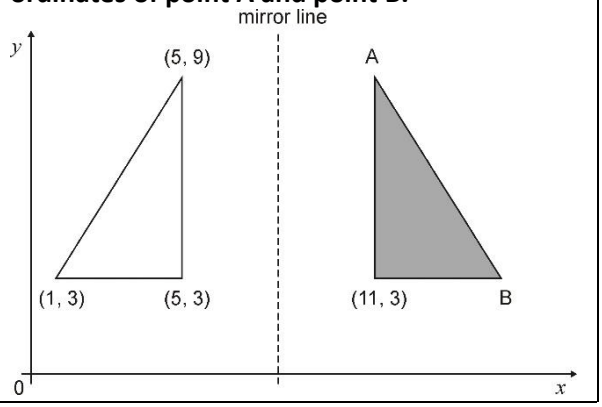
Estimate how many children completed the 20 kilometre cycle ride.

***x* is a whole number.**
$40 < x < 45$
***x* could be 41, 42, 43 or 44**

***k* is a whole number.**
$29 < 2k < 35$
***k* could be _____**

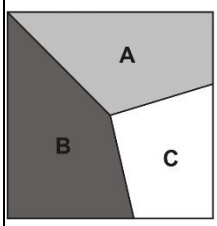
***w* is a whole number.**
$18 < 3w + 1 < 24$
***w* could be _____**

The shaded triangle is a reflection of the white triangle in the mirror line. Write the co-ordinates of point A and point B.



Alfie has some photographs printed.
The cost is £2.50 for postage and 12 pence for each print.
Alfie uses this formula for the total cost (C) in pence.
$C = 250 + 12n$
***n* stands for the number of photographs.**
The total cost for Alfie is £6.70
How many photographs does he have printed?

This square is divided into three parts.



Part A is $\frac{1}{3}$ of the area of the square.

Part B is $\frac{2}{5}$ of the area of the square.

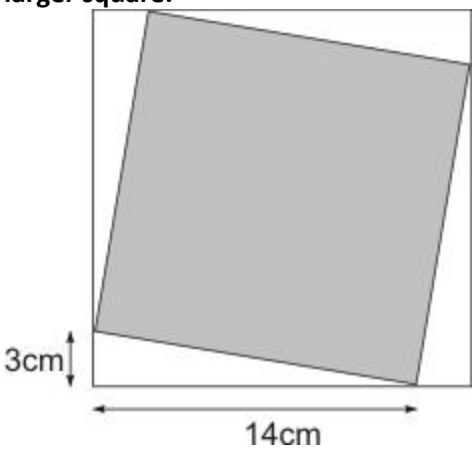
What fraction of the area of the square is part C?

272 children and 26 adults from Hill School go on a coach trip.
How many 42-seat coaches does the school need to hire?

Here are five number cards. Write the missing number so that the mean is 2

1	4	1	1	

The diagram shows a shaded square inside a larger square.

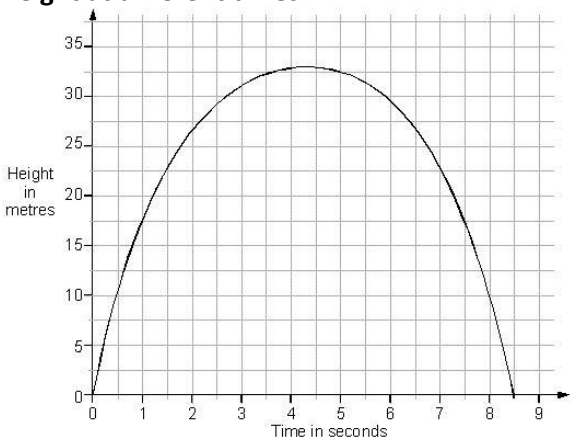


Calculate the area of:

a) the larger square

b) the shaded square

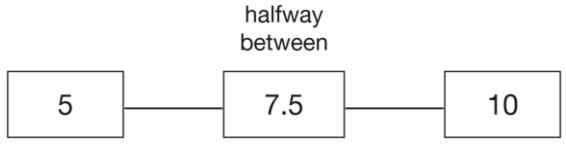
This is a graph of a firework rocket, showing its height at different times.



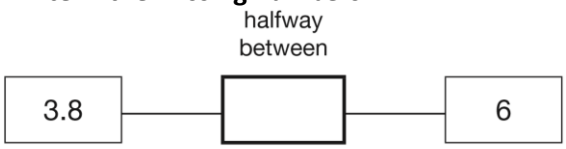
Estimate from the graph for how many seconds the rocket is more than 20 metres above the ground.

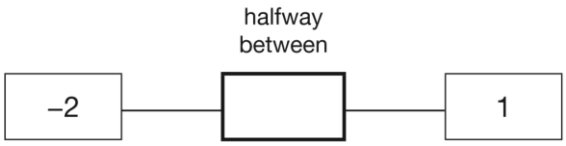
Estimate from the graph how many metres the rocket falls in the last second of its flight.

The number 7.5 is halfway between 5 and 10

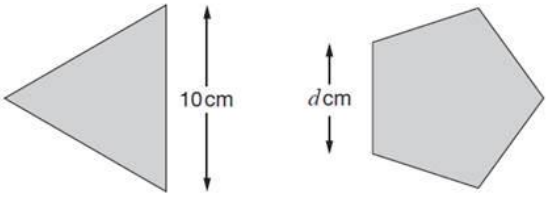


Write in the missing numbers.





Here are an equilateral triangle and a regular pentagon.



Each side of the triangle is 10 cm.
Each side of the pentagon is d cm.
The perimeter of the pentagon is 4 centimetres more than the perimeter of the triangle.
What number does d represent?

Two families go to the cinema.
The Smith family buy tickets for one adult and four children and pay £19
The Jones family buy tickets for two adults and two children and pay £17
What is the cost of one child's ticket?

In a survey, the ratio of the number of people who preferred milk chocolate to those who preferred plain chocolate was 5 : 3
46 more people preferred milk chocolate, to plain chocolate.
How many people were in the survey?

Write the missing fractions.

$1\frac{3}{5} + \frac{3}{10} + \square = 2\frac{7}{10}$

$2\frac{3}{4} + \square - \frac{1}{5} = 3$

Write in the missing numbers.

30% of 60 is ☐

30% of ☐ is 60

Write the number four million, forty-four thousand, and forty-four in figures.

John had £5
He gave 25% of it to charity.
How much did he give?

Recipe

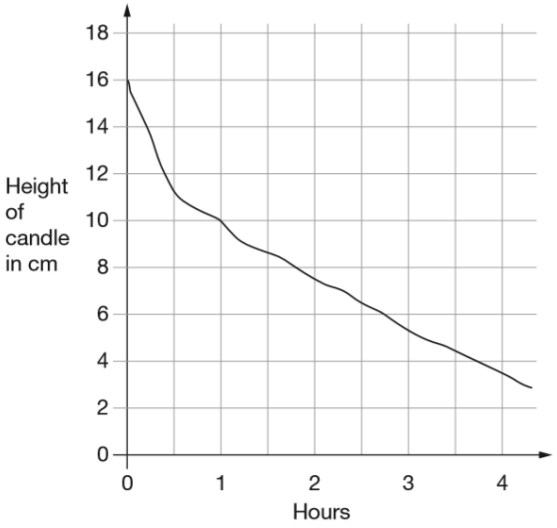
10 strawberries
$\frac{1}{2}$ litre of orange juice
250ml yogurt
1 banana

Makes two smoothies

Here is a recipe for fruit smoothies.
Stefan uses the recipe to make smoothies. He uses 1 litre of yogurt.
How many strawberries does he use?

Amir wants to make 5 smoothies.
He has 1 litre of orange juice.
How many more millilitres of orange juice does he need?

This graph shows the height of a candle as it burns.



What is the height of the candle after 2 hours?

How long does the candle take to burn down from 16cm to 4cm?

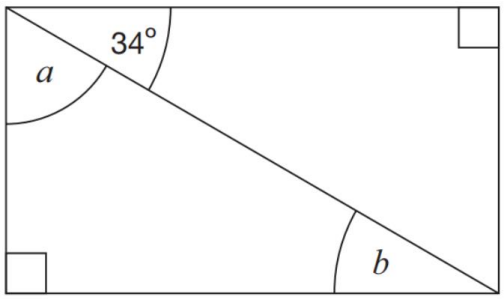
Write numbers in the boxes to make this fraction calculation correct.

$$\frac{1}{\square} + \frac{\square}{5} = \frac{7}{10}$$

Now write two <u>different</u> numbers to make the calculation correct.

$$\frac{1}{\square} + \frac{\square}{5} = \frac{7}{10}$$

Here is a rectangle.



Calculate the size of angles a and b.

A dragon lived in a cave.
The dragon doubled in size every day.
After 20 days the dragon filled the cave.
After how many days did the dragon half-fill the cave?

The numbers in this sequence increase by equal amounts each time.
Write in the three missing numbers.

1				7

m **stands for a whole number greater than 10 and less than 20**
n **stands for a whole number greater than 2 and less than 10**
What is the smallest number that *m* × *n* could be?

What is the largest number that *m* – *n* could be?

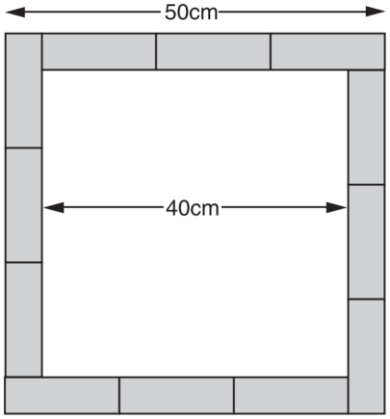
Anna has four different triangles.
Complete the table to show the size of the angles in each triangle.

Type of triangle	Angle 1	Angle 2	Angle 3
Isosceles	90°		
Right-angled	80°		
Isosceles	70°		
Isosceles	70°		

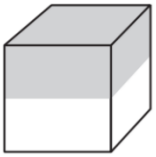
Ellie had a piece of ribbon that was ¾m long.
She cut it and gave half to Grace.
What fraction of a metre did she give to Grace?

Jon has 20 centimetre cubes.
He wants to make a cube with edges that are 3 cm long.
How many more centimetre cubes does he need?

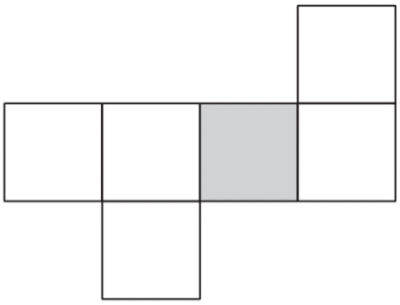
Twelve rectangles, all the same size, are arranged to make a square, as shown in the diagram.



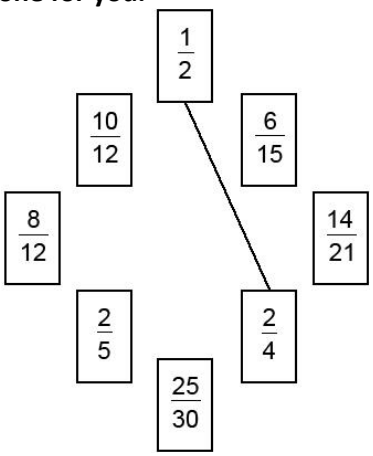
Calculate the area of one of the rectangles.



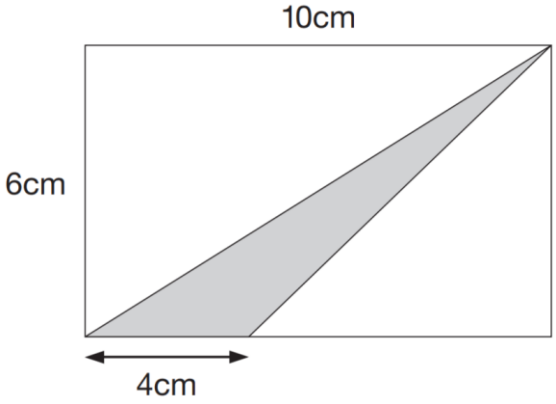
Here is a cube. The cube is shaded all the way round so that the top half is grey and the bottom half is white.
Here is the net of the cube.
Complete the shading.



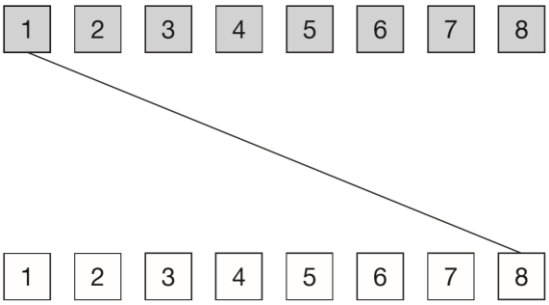
Join pairs of equivalent fractions.
One is done for you.



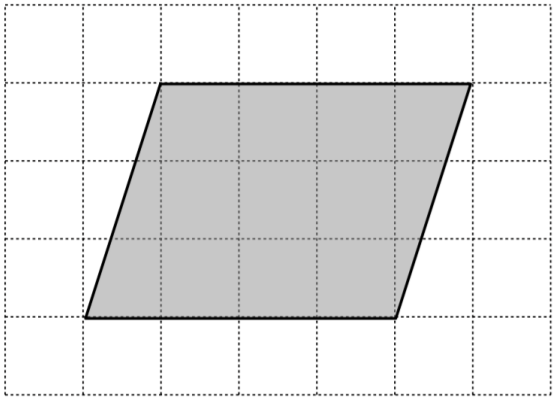
The diagram shows a shaded triangle inside a rectangle.
What is the area of the shaded triangle?



g **stands for a number on a grey card.**
w **stands for a number on a white card.**
Join all pairs of numbers that match this rule:
$2g + w = 10$
One is done for you.



Here is a parallelogram on a 1 cm square grid.



What is the area of the parallelogram?

Jack is rounding to the nearest hundred thousand.
Write the smallest whole number that he can round to 3,400,000

Grace is rounding to the nearest hundred thousand.
Write the largest whole number that she can round to 3,400,000

Cost to hire a boat: £4.50 per boat and then £3.50 per hour
Four friends hire a boat for five hours.
They share the cost equally.
How much does each person pay?

Chen's family hires a boat and pays a total of £15
How many hours did they have the boat for?

Write the missing numbers in the sequence.

_____ 6,742,000 6,842,000 6,942,000 _____

What is 10% of a half?

What percentage of 20 is 19?

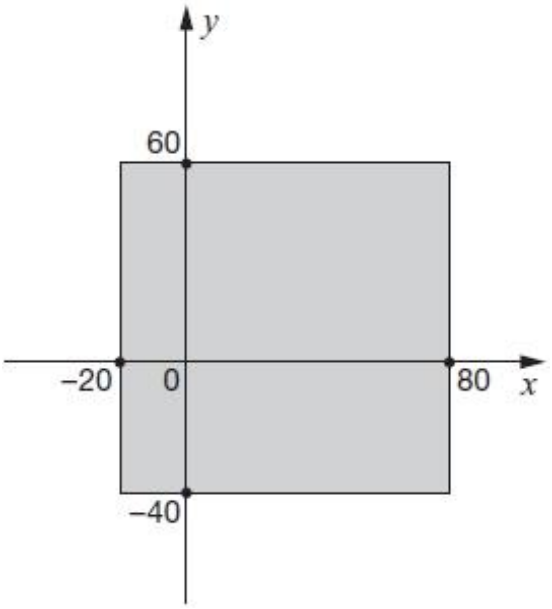
This sequence of numbers goes up by 40 each time.

40 80 120 160 200 ...

This sequence continues.

Will the number 2140 be in the sequence?

Explain how you know.



For each of these points, put a tick to show if it is inside the square.

(50, 70) (60, -30) (-10, 50) (-30, -30)

***k* stands for a number.**

Complete the number sentences below.

One has been done for you.

5 more than k is $k + 5$

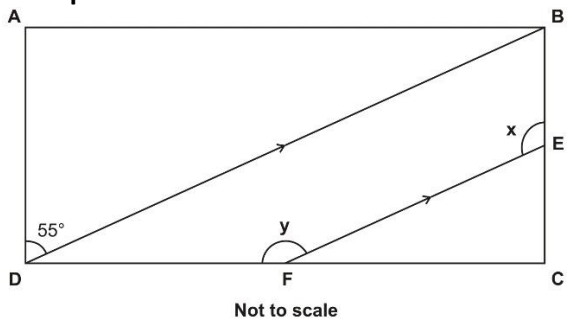
2 less than k is _____

3 more than twice k is _____

6 more than half of k is _____

The shape ABCD is a rectangle.

BD is parallel to EF.



Not to scale

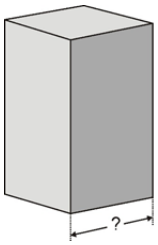
Calculate the sizes of the angles x and y.

A sequence starts at 500 and 80 is subtracted each time.

500 420 340 ...

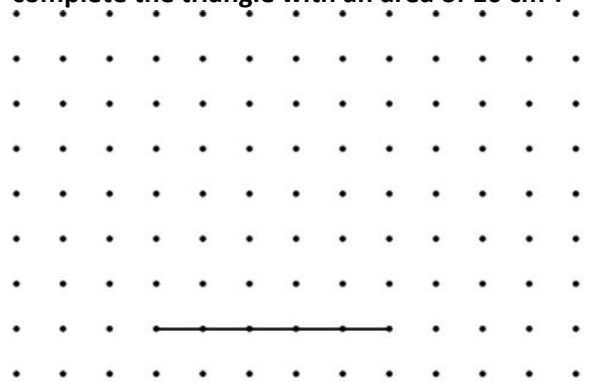
The sequence continues in the same way.

Write the first two numbers in the sequence which are less than zero.

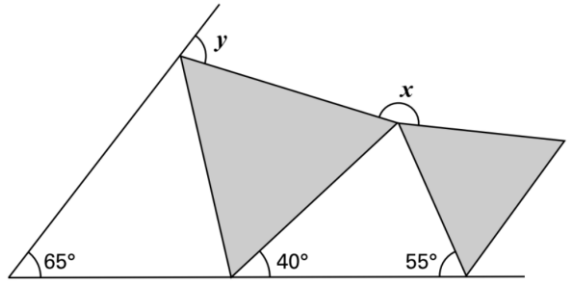


A cuboid has a square base.
It is twice as tall as it is wide.
Its volume is 250 cubic centimetres.
Calculate the width of the cuboid.

Draw two more lines on the cm grid to complete the triangle with an area of 10 cm².

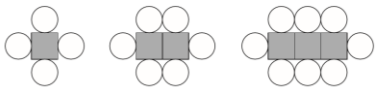


The diagram shows two shaded equilateral triangles.



Calculate the size of angle x and angle y.

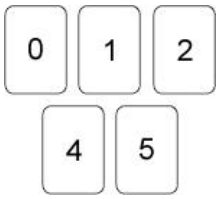
Here is a sequence of shapes.
Each time a square is added to a shape, two more circles are added.



number of squares, **s**	1	2	3
number of circles, **c**	4	6	8

The sequence of shapes continues.
The formula for the sequence is c = 2s + 2
Calculate the number of circles when the number of squares in a shape is 150

How many squares are there in a shape that has 100 circles?



Here are five digit cards.

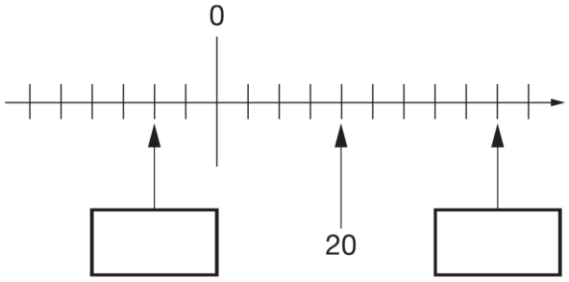
Use each card once to make these calculations correct.

$0.04 \times \square\square = 0.48$

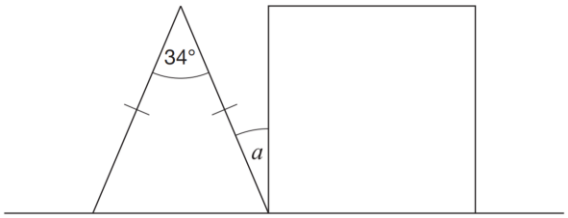
$0.7 \times \square\square = 28$

$0.0\square \times 4 = 0.2$

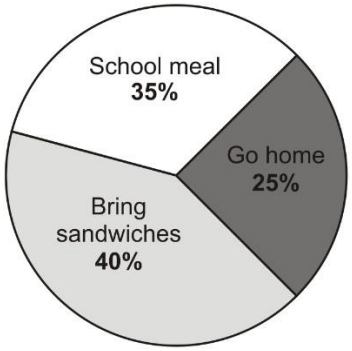
Here is part of a number line.
Write the missing numbers in the boxes.



The diagram shows an isosceles triangle and a square on a straight line. Calculate angle a.

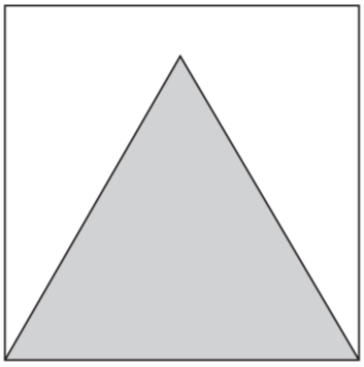


This pie chart shows the lunch choices of year 6 children at a school.



28 children in year 6 have a school meal.
How many go home for lunch?

Here is an equilateral triangle inside a square.
The perimeter of the triangle is 48 centimetres.



Calculate the perimeter of the square.

Look at this number.

3, 1 6 7, 8 1 0

What is the value of the digit 6 in the number?
Circle the correct answer.

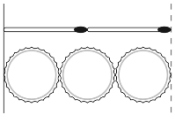
six thousand six million sixty thousand

six hundred six hundred thousand

Three apples have a mean (average) mass of 100 grams.
The largest apple is removed.
The mean mass of the remaining two apples is 70 grams.
What is the mass of the largest apple?

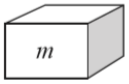
A builder needs 7600 bricks to build a wall.
There are 500 bricks in a load.
How many loads must the builder buy?

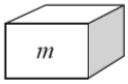
The price of one load of 500 bricks is £230
What is the cost in pence of one brick?



Two matchsticks have the same length as three bottle tops. How many bottle tops will have the same length as 50 matchsticks?

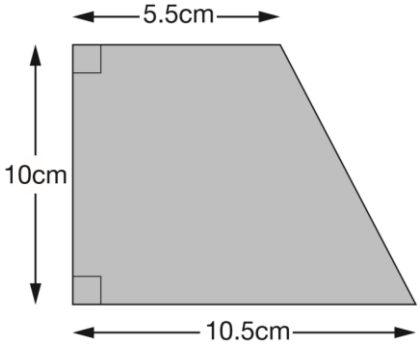
There are *n* counters in Alfie's bag.
Alfie puts 3 more counters in the bag.
Write an expression for the number of counters that are in the bag now.





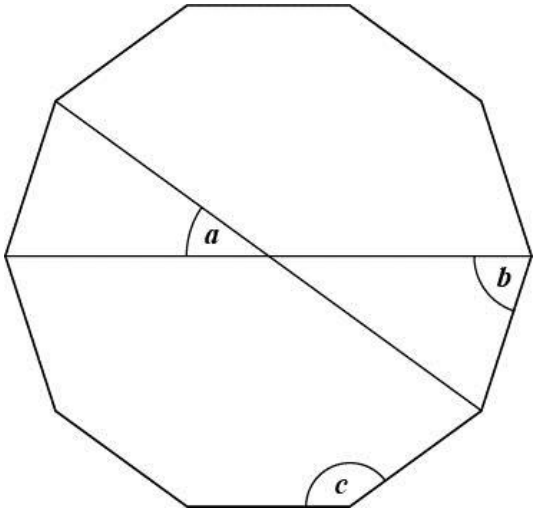
Megan has two boxes. There are *m* counters in each box.
She puts all her counters together in a pile, then removes 5 of them.
Write an expression for the number of counters
that are in the pile now.

Here is a trapezium with a height of 10 centimetres.
The parallel sides are 5.5cm long and 10.5cm long.



Find the area of the trapezium.

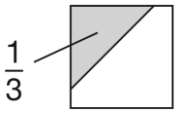
Here is a regular decagon, with two diagonals drawn in.



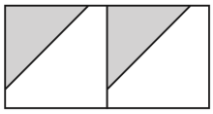
Calculate the sizes of angles a, b and c

$a =$ ☐ $b =$ ☐ $c =$ ☐

$\frac{1}{3}$ of this square is shaded.



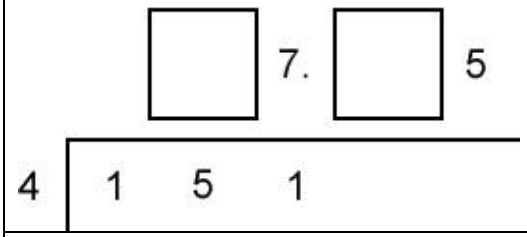
The same square is used in the diagrams below.



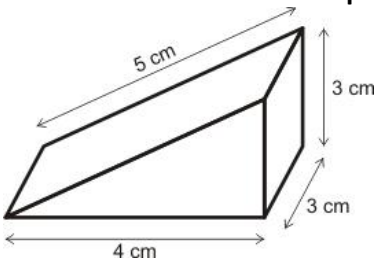
What fraction of this diagram is shaded?

What fraction of this diagram is shaded?

Write the missing digits to make the calculation correct.



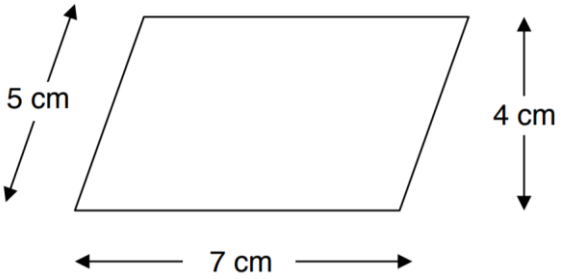
Calculate the volume of the prism.



These are the prices of fruit in a shop.
Oranges 5 for 90p
Cherries 80p for 100 grams
Emma buys 15 oranges. How much does she pay?

Reshma buys some cherries. They cost £1.20
How many grams of cherries does she buy?

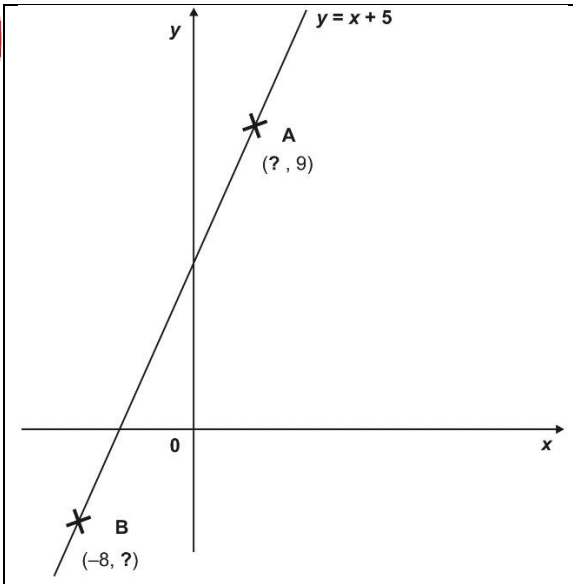
Calculate the area of the parallelogram.



Jon makes a sequence of numbers. His rule is to add the same amount each time. Write in the missing numbers.

−1	☐	☐	☐	19

p and q each stand for whole numbers.
p + q = 1000
p is 150 greater than q.
Calculate the numbers p and q.



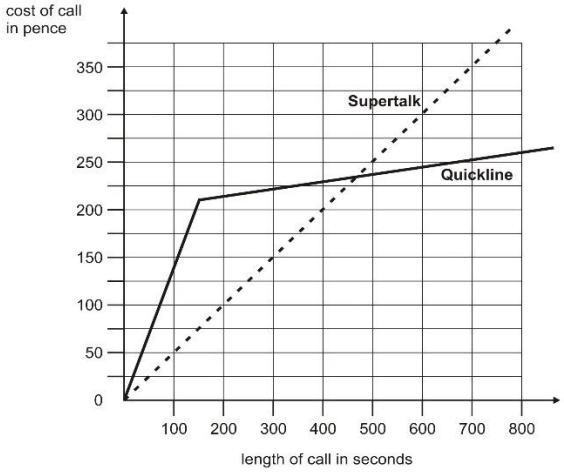
A and B are two points on the graph of y = *x* + 5

Write the missing co-ordinates of A and B.

A (☐ , 9) **B** (–8, ☐)

Write the co-ordinates of the point where the graph of y = x + 5 crosses the x-axis.

Two telephone companies, Supertalk and Quickline, have different charges for long distance calls. This graph shows the charges for different lengths of calls.

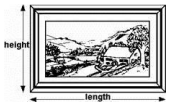


Estimate from the graph how many seconds longer a £2 call lasts with Supertalk compared to Quickline.

Estimate from the graph the length of a call when Quickline becomes cheaper to use than Supertalk. Give your answer to the nearest 10 seconds.

Here are some picture frame sizes.

height in cm	10	12	14	16
length in cm	16	20	24	28



For each frame, the length is twice the height, subtract 4

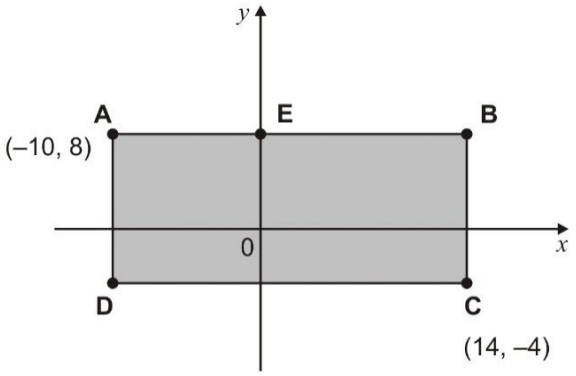
What is the length of a frame which has a height of 36 cm?

For each frame, the length (L) is twice the height (H), subtract 4

Write this in symbols.

ABCD is a rectangle drawn on coordinate axes. The sides of the rectangle are parallel to the axes.

What are the coordinates of D and E?



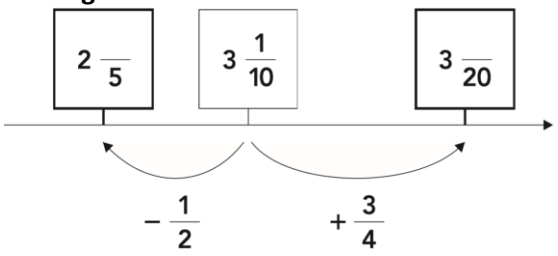
Write the missing numbers.

8,000,000	is a **thousand** more than →	☐
☐	is **ten thousand** less than →	8,000,000

Here is a number line.

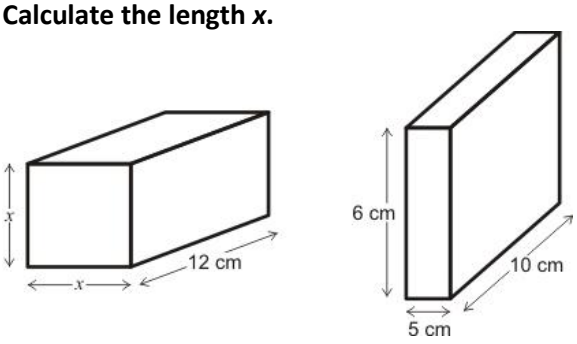
Draw an arrow to show the position of $\frac{13}{32}$

The diagram shows part of a number line. Two of the fractions are not complete. Write the missing numerator in each box.



The two cuboids have the same volume.

Calculate the length *x*.

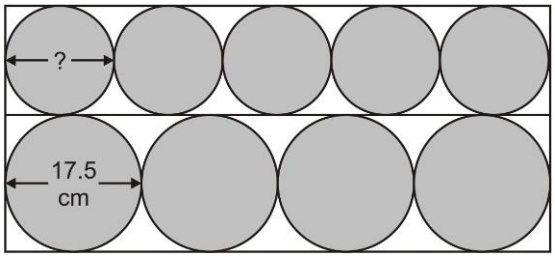


Alfie did a survey to find which soup was most popular.
The choices were:

- tomato
- chicken
- mushroom

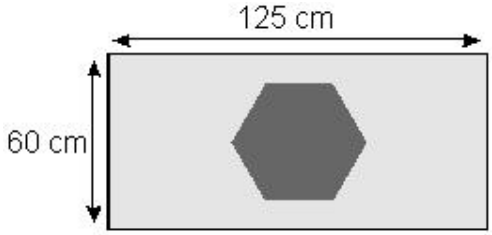
A quarter of the children chose chicken soup.
Four times as many children chose tomato soup as mushroom soup.
What fraction of the children chose tomato soup?

Four large circles and five small circles fit exactly inside this rectangle.
The diameter of a large circle is 17.5 centimetres.



Calculate the diameter of a small circle.

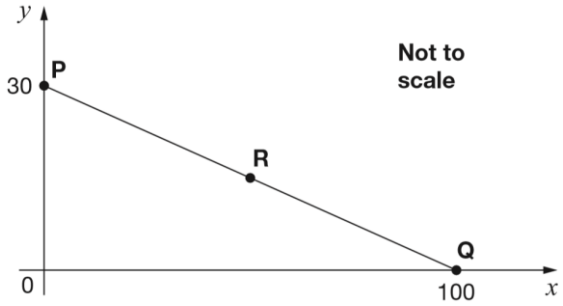
Here is a flag.



What is the area of this flag?

20% of the flag is a hexagon. What area of the flag is a hexagon?

In this diagram R is an equal distance from P and Q.



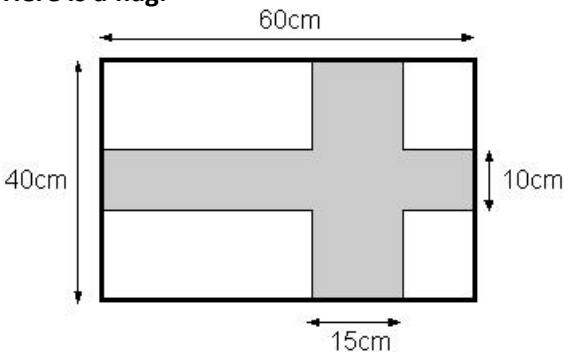
What are the coordinates of R?

In this pattern white hexagons surround shaded hexagons.

How many white hexagons are needed to surround a line of 100 shaded hexagons?

W represents the number of white hexagons.
S represents the number of shaded hexagons.
What is the rule connecting W and S?

Here is a flag.



Calculate the area of the shaded cross.

Two numbers are in the ratio 4 : 5
One of the numbers is 60
There are two possible values for the other number. What are the two possible values?

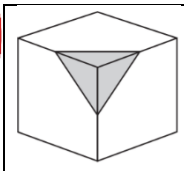
The distance from Calais to Paris is 320 kilometres.
5 miles is approximately 8 kilometres.
Calculate the approximate distance in miles from Calais to Paris.

Annie swims on average 0.87 km in 30 minutes.
If she continues at the same speed, how far will she swim in 2 hours, rounded to one decimal place?
Circle your answer.

3.2 km 3.3 km 3.4 km 3.5 km 3.6 km

Cheddar cheese costs £7.50 for 1kg.
Marie buys 200 grams of cheddar cheese.
How much does she pay?

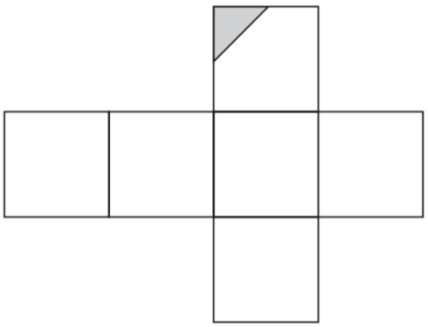
Cream cheese costs £3.60 for 1kg.
Robbie buys a pot of cream cheese for 90p.
How many grams of cream cheese does he buy?



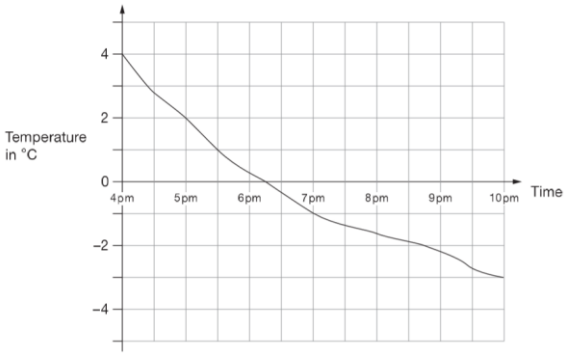
A cube has shaded triangles on three of its faces.

Here is the net of the cube.

Draw in the two missing shaded triangles.



This graph shows the outside temperature from 4pm to 10pm on a day in winter.



At what time was the temperature -2°C?

How many degrees did the temperature drop from 5pm to 7pm?

A newspaper reported, '6 million people (to the nearest million) watched a football match on television.'
What is the smallest number of people that could have watched the football match on television?

250 000 people visited a theme park in one year.
15% of the people visited in April and 40% of the people visited in August. How many people visited the park in the rest of the year?

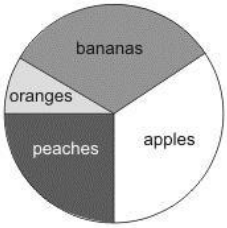
Amy thought of a number.
She added 0.5 to her number and then doubled the result.
Then she subtracted 0.5 and doubled the new result.
Her final answer was 61
What number did Amy start with?

Write the missing numbers so that 2a + 5b = 30
One is done for you.
2a + 5b = 30 when a = 0 and b = _6_

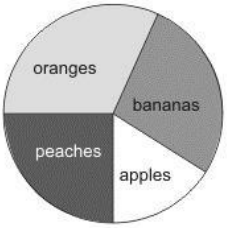
2a + 5b = 30 when a = 5 and b = ___

2a + 5b = 30 when a = 15 and b = ___

Some children work out how much money two shopkeepers get from selling fruit. They use pie charts to show this.



Mrs Binns

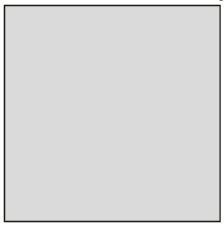


Mr Adams

Mrs Binns gets £350 selling bananas. Estimate how much she gets selling oranges.

Mrs Binns gets a total of £1000 and
Mr Adams gets a total of £800
Estimate how much more Mrs Binns gets than Mr Adams for selling peaches.

The area of this square is 36 cm^2.



The square is cut into quarters to create 4 identical rectangles.

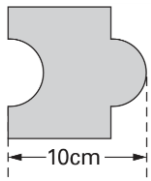
What is the perimeter of one of the small rectangles?

Write in the missing number.

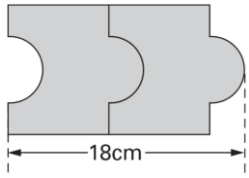
50 ÷ ☐ = 2.5

20% of Megan's number is 64
What is 50% of Megan's number?

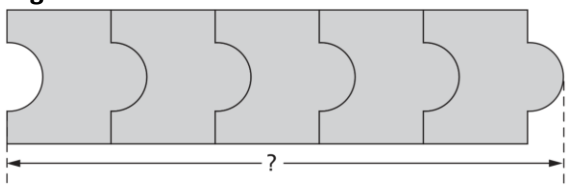
Josh has some tiles.
Each tile is 10 cm long.



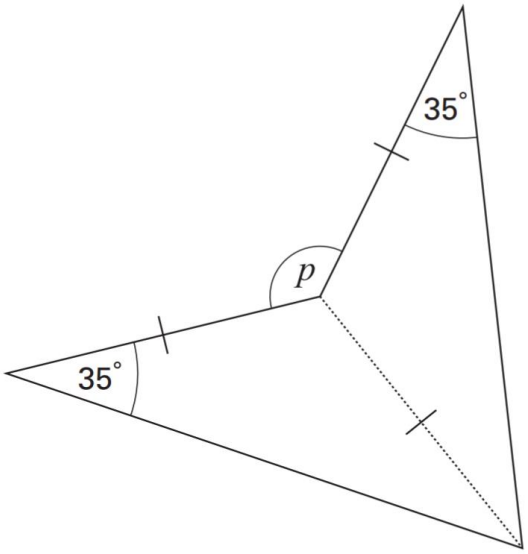
Two tiles fitted together are 18 cm long.



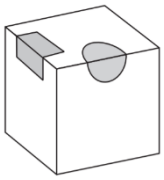
Calculate the length of five tiles fitted together.



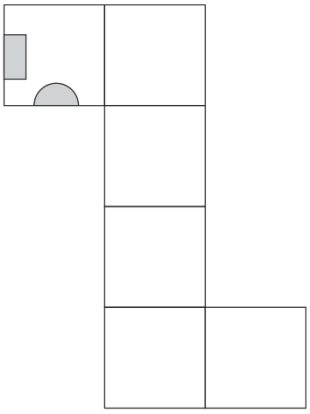
This shape has been made from two isosceles triangles.



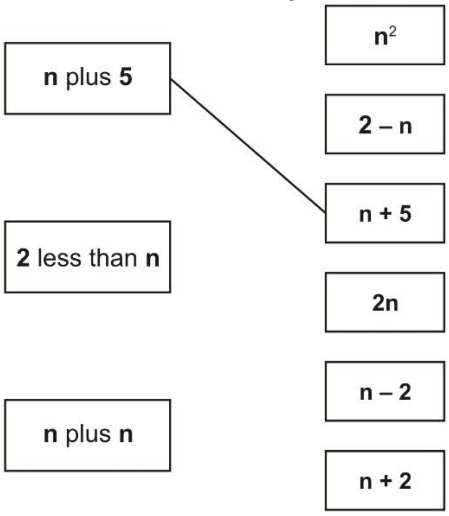
What is the size of angle p?



A cube has shaded shapes on three of its faces.
Here is a net of the cube. Draw in the two missing shaded shapes.



n stands for number.
Match the equivalent expressions.
One has been done for you.



I'm thinking of a number.
I multiply it by 10 and add 25.
My answer is 100.
What is the number?

***k*, *m* and *n* each stand for a whole number.**
They add together to make 1500
***k* + *m* + *n* = 1500**
***m* is three times as big as *n*.**
***k* is twice as big as *n*.**
Calculate the numbers *k*, *m* and *n*.

Emily makes 250 grams of a snack mixture.
15% of the weight is raisins, 25% is banana chips and the rest is peanuts.
How many grams of peanuts does she use?

Here is an equation.
$m - 2n = 10$
When *n* = 20 what is the value of *m*?

When *m* = 20 what is the value of *n*?

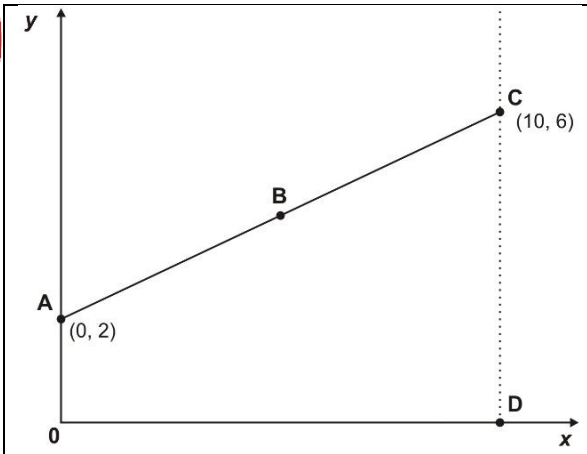
Circle the largest number.

4,944,444 4,444,944 4,994,449

444,444 4,949,444

Circle the fraction that is bigger than $\frac{7}{5}$

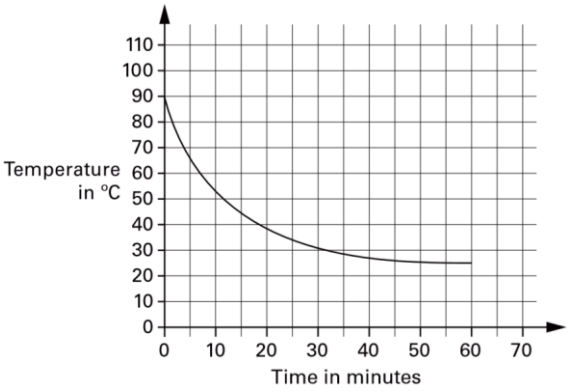
$\frac{5}{7}$ $\frac{11}{6}$ $\frac{7}{10}$ $\frac{4}{3}$



The points A, B and C are equally spaced.
What are the co-ordinates of point B?

Point D is directly below point C. What are the co-ordinates of the point D?

A hot liquid is left to cool in a science experiment. This graph shows how the temperature of the liquid changes as it cools.



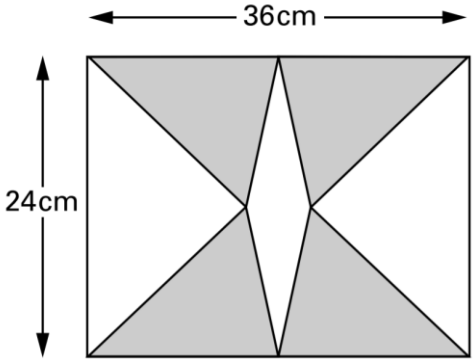
Read from the graph how many minutes it takes for the temperature to reach 40°C

Read from the graph how many minutes the temperature is above 60°C

On Monday all the children at Grange School each play one sport.
They choose either hockey or rounders.
There are 103 children altogether in the school.
27 girls choose hockey.
Write all this information in the table.
Then complete the table.

	hockey	rounders	Total
boys	22		
girls			53
Total			

The diagram shows 4 identical shaded triangles in a rectangle.
The rectangle measures 36 centimetres by 24 centimetres.



Calculate the area of one shaded triangle.

Write the missing fractions.

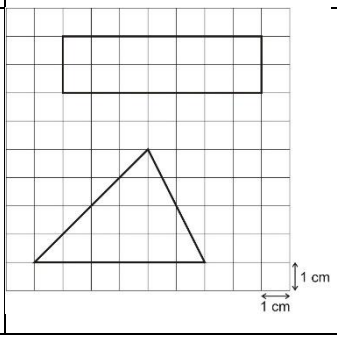
$\frac{3}{4} \times \square = \frac{9}{20}$

$\frac{3}{4} \times \square = \frac{1}{4}$

Two of the ingredients of chocolate are cocoa and sugar.
In milk chocolate,
20% of the mass is cocoa, 55% is sugar.
A bar of milk chocolate contains 50 grams of cocoa.
How many grams of sugar does it contain?

1 kilogram of grapes costs £5.80
Megan buys 700 grams of grapes.
How much does she pay?

1 kilogram of cheese costs £13.50
Megan buys a piece of cheese costing £2.49
What is the mass of the cheese to the nearest 100 grams?

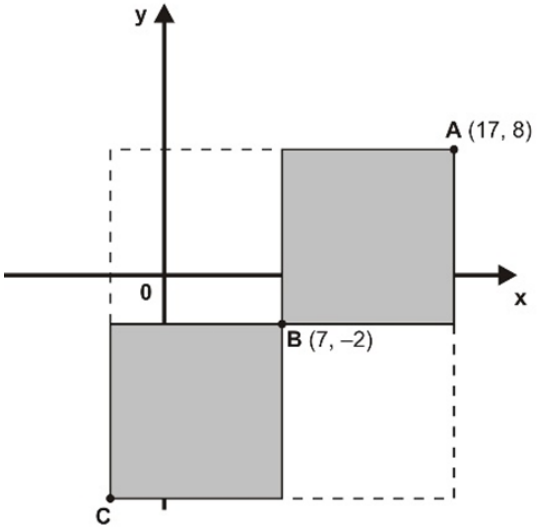


Work out the area of each shape.

Rectangle:

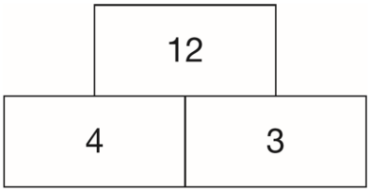
Triangle:

The two shaded squares below are the same size.

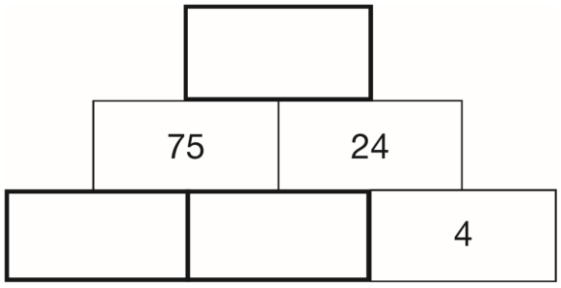


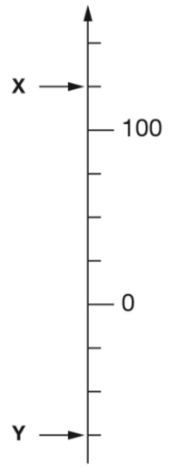
A is the point (17, 8). B is the point (7, –2).
What are the co-ordinates of the point C?

In this tower, two numbers are multiplied to give the number above.



Write the missing numbers in the tower below to make it correct.



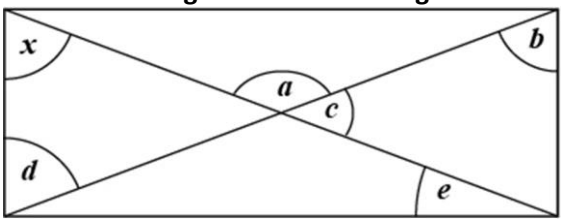


Here is part of a number line.

What is the value of X?

What is the value of Y?

This is a rectangle with its two diagonals.



Angle $x = 58°$
Circle the two angles that are the same size as angle *x*

a ***b*** ***c*** ***d*** ***e***

Write the missing numbers.

3,005,400 = ☐ + 5,000 + 400

980,600 = 900,000 + ☐ + 600

Megan makes a sequence of numbers starting with 100
She subtracts 45 each time.
Write the next two numbers in the sequence.

100 55 10 ☐ ☐

What is $\frac{5}{8}$ as a decimal?

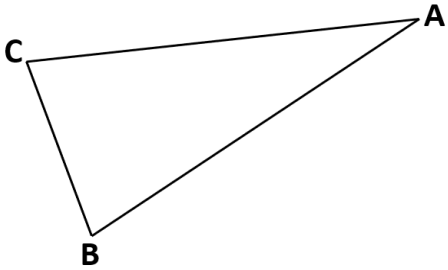
Peanuts cost 60p for 100 grams.
What is the cost of 350 grams of peanuts?

Print charges:
3p per page
75p for the cover
Jon pays £4.35 for his book, including the cover.
How many pages are in his book?

Write a formula for the total cost of printing a book with cover.
t stands for the total cost in pence.
Use n for the number of pages.

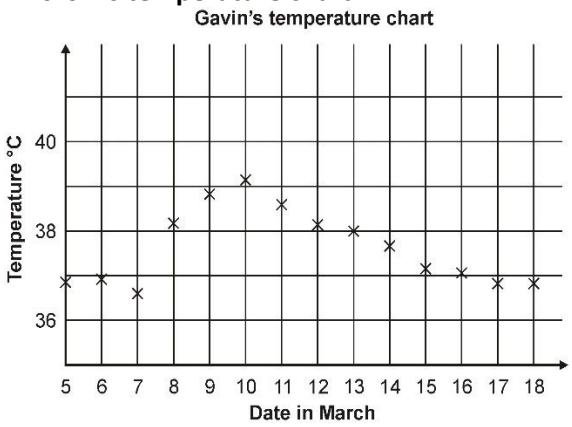
t = _____

Triangle ABC is isosceles and has a perimeter of 20 centimetres.
Sides AB and AC are each twice as long as BC.



Calculate the length of the side BC.

Gavin was ill in March.
This is his temperature chart.



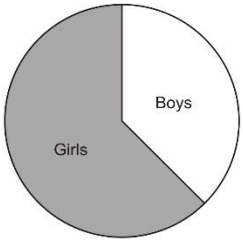
For how many days was his temperature marked as more than 37°C?

Which date showed the largest change in temperature from the day before?

Estimate Gavin's highest temperature shown on the graph. Give your answer to 1 decimal place.

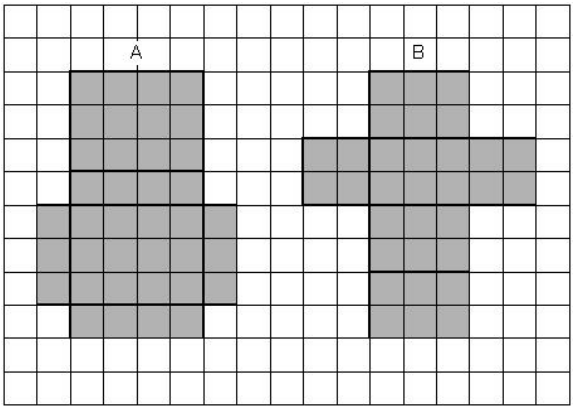
Sarah makes a pie chart to show the proportion of boys and girls in her class.

	Number in class	Size of angle on pie chart
Boys	14	144°
Girls	21	216°



The next day another boy joins Sarah's class.
She makes a new pie chart.
Calculate the angle for boys on the new pie chart.

The squared paper shows the nets of cuboid A and cuboid B.



Do the cuboids have the same volume?
Show calculations to explain how you know.

There are 90 children in Year 6 at Woodland Junior School. They are split into three classes.

Class	Number in class
6M	27
6P	33
6T	30

Each child chose football or netball or hockey.

- **In 6M, 13 children chose hockey. The rest of the class were split equally between football and netball.**
- **In 6P, 9 children chose netball. Twice as many children chose football as chose hockey.**
- **In 6T, the ratio of children who chose football to netball to hockey was 1:2:3**

Complete this table.

Class	Number in class	Football	Netball	Hockey
6M	27			13
6P	33		9	
6T	30			

Write the missing numbers.

$48 \div (19 - \square) = 4$

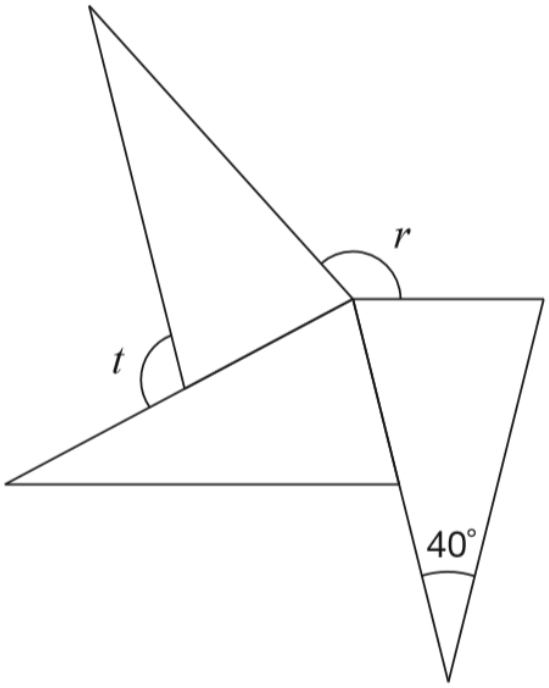
$\square + 6 \times 8 = 56$

In a survey of children's favourite fruit juices, these were the results.

Juice	Apple	Orange	Grape	Mango
Percentage of children	25%	14%	30%	31%

20 more children chose grape than chose apple.
How many children took part in the survey?

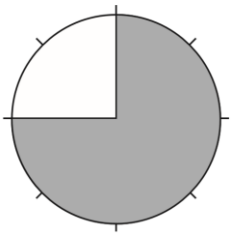
The diagram shows three identical isosceles triangles.



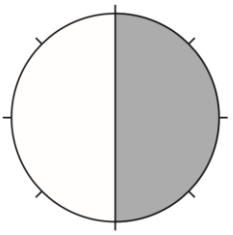
What are the sizes of angles *r* and *t*?

Look at the information in these two pie charts.

Pupils in class 6K

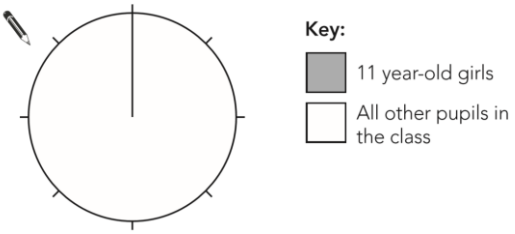


Girls in class 6K

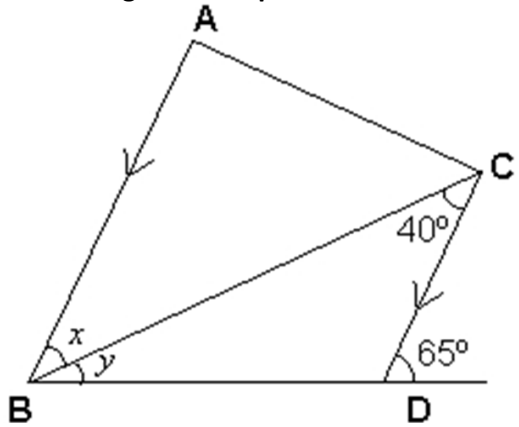


Use the information in the two pie charts to complete the pie chart below.

Pupils in class 6K



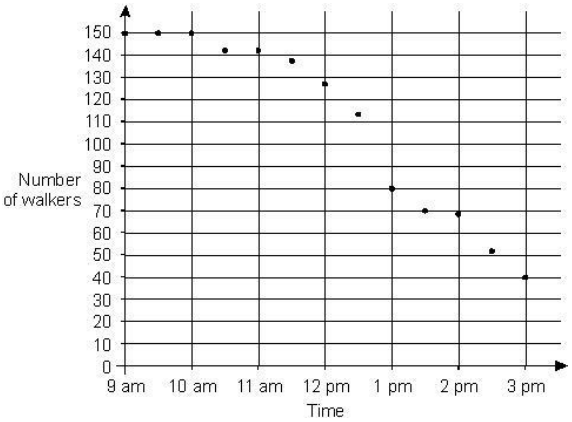
In this diagram AB is parallel to CD.



Work out the value of angle *x*.

Calculate the value of angle *y*.

150 people take part in a walk. This chart shows the number of people still walking at different times.



Use the chart to estimate the time when two-thirds of the people are still on the walk.

Here is information about pupils in a class.

- **The total number of pupils is 30**
- **26 of the pupils do not wear glasses.**
- **A quarter of the pupils who do wear glasses are boys.**
- **There are 2 more boys than girls.**

Use the information to fill in the missing numbers in the table below.

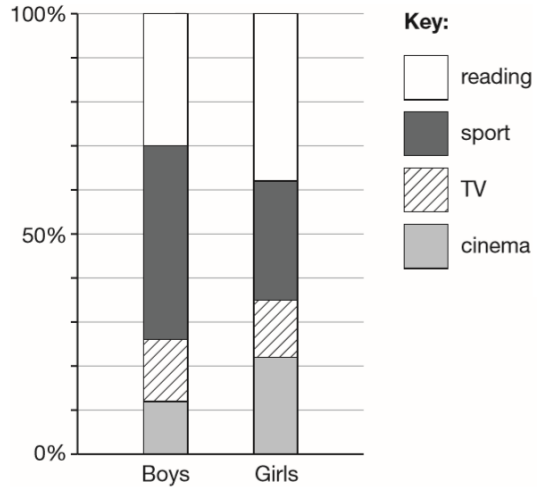
	Number who do wear glasses	Number who do not wear glasses	Total
Number of boys			
Number of girls			
Total			30

Write the missing numbers.

$$\frac{\square}{160} = 0.1$$

$$\frac{160}{\square} = 0.2$$

Alfie asks some boys and girls about their favourite hobby.
He shows the results on a graph.



The graph shows that 44% of boys chose sport.
Estimate the percentage of girls who chose sport.

120 boys chose reading.
Estimate the number of boys who chose cinema.

Megan goes on a walking holiday for five days.
The table shows how far she walked on the first four days.

Monday	Tuesday	Wednesday	Thursday
14km	23km	13km	13km

Megan says, 'My average for the first four days is more than 15km.'
Explain why Megan is correct.

Friday is her last day. She wants to increase her average to 17km
How many kilometres must she walk on Friday?

Complete the number sentences.

$\frac{3}{4} \div \square = \frac{3}{12}$

$\square \div 5 = \frac{2}{13}$

Look at these equations.

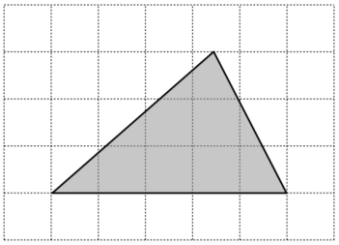
a = 2b
b = 3c

Which equation below is also true?
Put a ring round the correct one.

b = 2a a = 2b + 3c a = 5c
a = 6c a + b = 5

A shop makes 100 sandwiches.
All the sandwiches are either cheese or tuna.
Some of the sandwiches also have salad with the cheese or tuna.
30 sandwiches have cheese with salad.
15 sandwiches have tuna without salad.
75 sandwiches have salad.
How many sandwiches have cheese without salad?

Here is a triangle on a 1 cm square grid.



What is the area of the triangle?

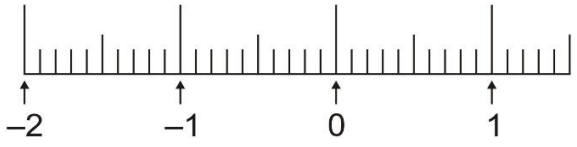
Put brackets into this expression to make it correct.

$10^2 \div 10 \div 10 \div 10 \div 10 = 100$

Circle the biggest fraction.

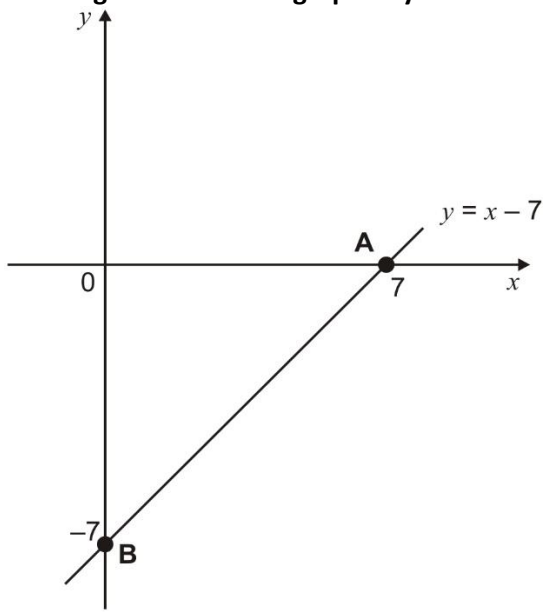
$\frac{13}{6}$ $\frac{11}{5}$ $\frac{7}{4}$ $\frac{5}{3}$

Mark with arrows the points –1.5 and 0.45 on the number line.



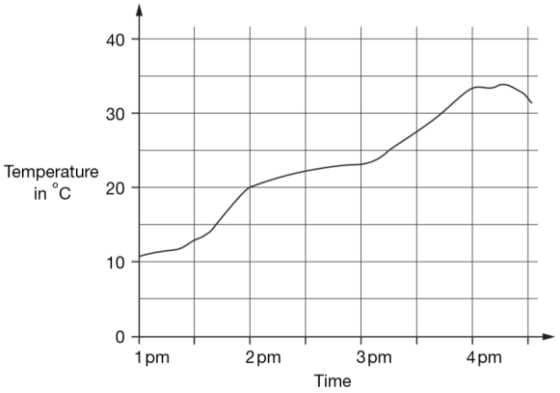
***n* stands for a whole number.**
***2n* is greater than 30**
***5n* is less than 100**
Write all the numbers that *n* stands for.

The diagram shows the graph of y = x – 7



Write the coordinates of one point on the line between A and B.

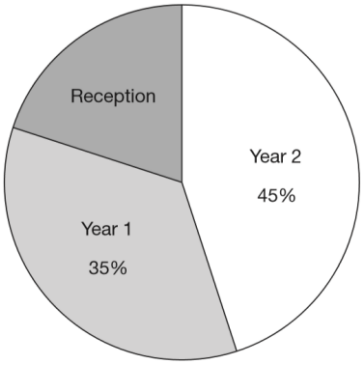
This graph shows the temperature in a greenhouse.



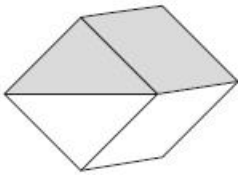
Use the graph to find the time when the temperature was 25°C.

Use the graph to find the difference between the temperature at 2pm and the temperature at 4pm.

The pie chart shows the Year groups of children at Woodland Infant School.

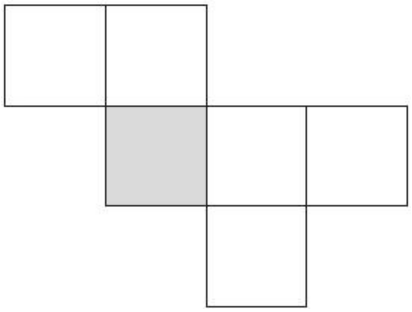


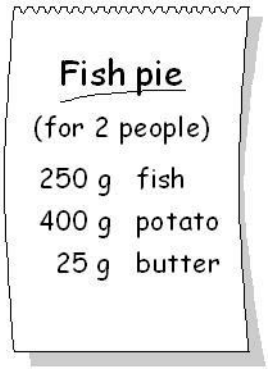
There are 56 children in Year 1
How many children are there in Reception?



Here is a cube. The top half of the cube has been shaded all the way round.

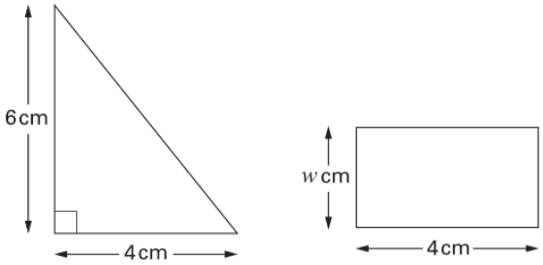
Here is a net for the cube. One square has been shaded for you. Shade more of the net so that it could fold to make the cube above.





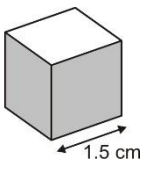
Here are the ingredients for fish pie for two people.
Omar makes fish pie for 3 people.
How many grams of fish should he use?

The triangle and rectangle below have the same area.



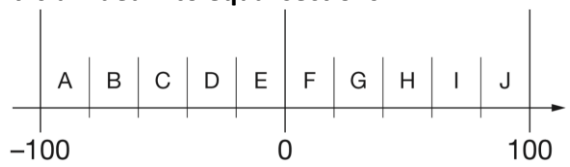
Work out the value of w.

Lili and Julian each start with the same number.
Lili works out half of the number.
Julian works out three-quarters of the number.
The sum of their answers is 275
What was the number they started with?



Amit has some small cubes.
The edge of each cube is 1.5 centimetres.
He makes a larger cube out of the small cubes.
The volume of this larger cube is 216 cm^3.
How many small cubes does he use?

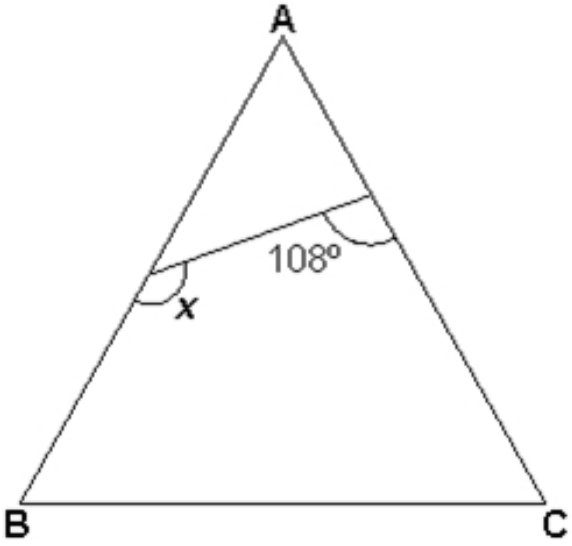
Here is part of a number line.
It is divided into equal sections.



Write the letter of the section where each of these numbers belongs.
The number 99 has been done for you.

number	section
99	J
29	
–83	
–15	
44	

Triangle ABC is equilateral.



Calculate the size of angle x.

200 children went on holiday.
10% of the children went to Wales.
25% of the children went to Scotland.
How many more children went to Scotland than went to Wales?

A 5p coin has a diameter of 1.8 centimetres.
Holly makes a straight line of 5p coins worth £10
How long is Holly's line? Give your answer in metres.

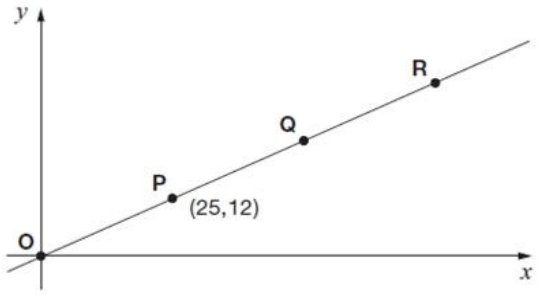
In a survey of how children travel to school, these were the results.

Transport	Walk	Cycle	Bus	Car
Percentage of children	25%	10%	45%	20%

Abby wants to make a pie chart to show the results.
Complete the table to show the angles of each section of the pie chart.

Transport	Walk	Cycle	Bus	Car
Percentage of children	25%	10%	45%	20%
Angle on pie chart	90°			

Here is a line on coordinate axes.



Points O, P, Q and R are equally spaced.
The coordinates of P are (25,12).
What are the coordinates of R?

Linda buys a pair of trainers.
She says, 'I bought this pair of trainers when there was 20% off the normal price. I paid £18 for them.'
What was the normal price of the trainers?

Here is an equation.
$k = 100 - 4n$
Find the value of k when $n = 60$

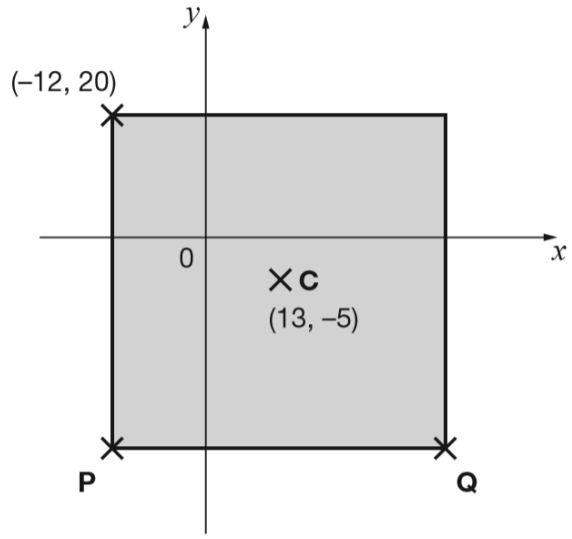
Find the value of n when $k = 99$

Paulo makes a sequence of numbers. He chooses a starting number and then subtracts equal amounts each time.
The third number in his sequence is 45
The tenth number is –32
What is the first number in the sequence?

		45							–32

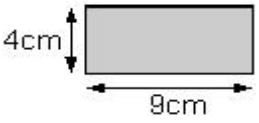
This photograph shows three Russian dolls.
The real-life height of the largest Russian doll is 13.5cm
What is the real-life height of the smallest Russian doll?

Here is a square on coordinate axes.

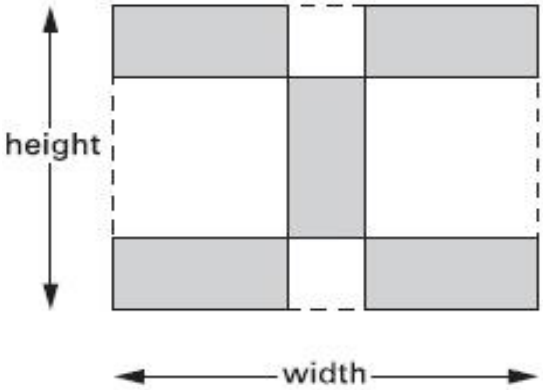


C is the centre of the square.
Find the coordinates of P and Q.

Kate has some rectangles.
Each one is 4 centimetres by 9 centimetres.

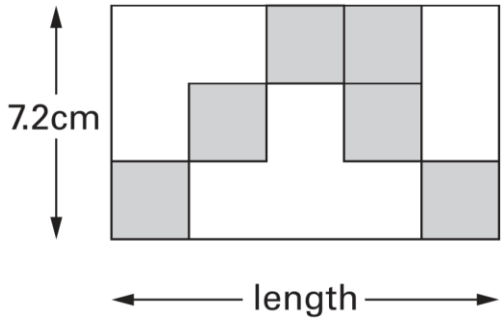


She makes a design with them.



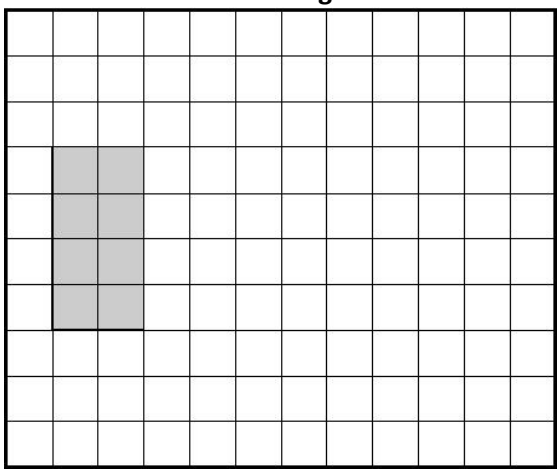
Calculate the width and height of her design.

Here is a rectangle with six identical shaded squares inside it.
The width of the rectangle is 7.2 centimetres.



Calculate the length of the rectangle.

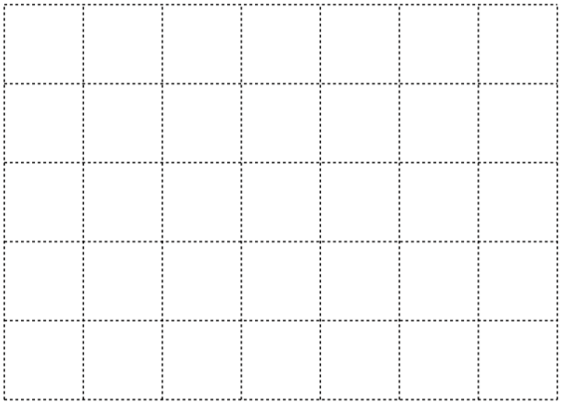
On the grid draw a triangle with the same area as the shaded rectangle.



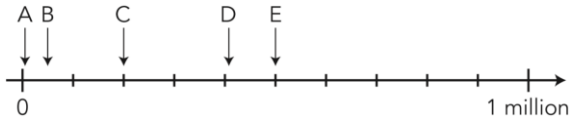
Anna says $\frac{4}{7}$ is greater than $\frac{5}{9}$

Explain why Anna is correct.

On the centimetre square grid, draw a parallelogram that has an area of 8 cm^2 .



Write the letter of the arrow that points to the number 50 000

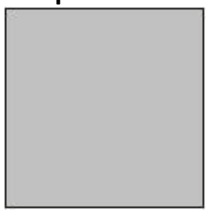


k stands for a whole number.
k + 7 is greater than 100
k – 7 is less than 90
Find all the numbers that *k* could be.

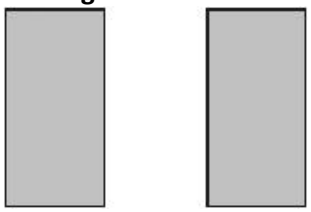
Raisins cost 80p for 100 grams.
Jack pays £2 for a bag of raisins.
How many grams of raisins does he get?

A cuboid is made from centimetre cubes.
It has a volume of 30 cubic centimetres.
What could the length, height and width be?

The perimeter of a square is 72 centimetres.

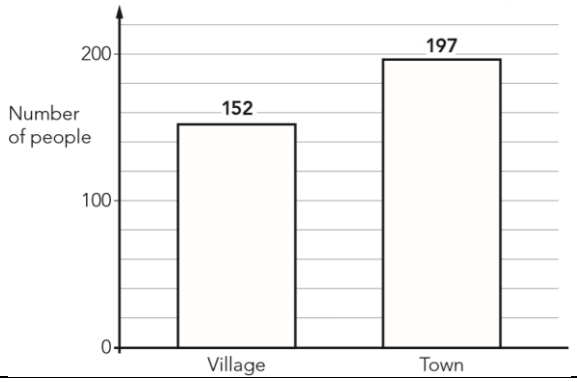


The square is cut in half to make two identical rectangles.

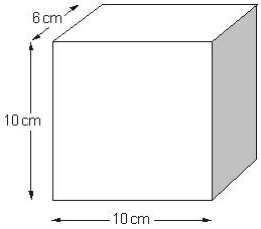


What is the perimeter of one rectangle?

People in a village were asked if they shop in the village, or in the town, or in both. The bar chart shows the results.
Altogether 246 people took part in the survey.
How many people shop in both the village and the town?



Chloe and Denise each bought identical T-shirts from the same shop.
Chloe bought hers on Monday when there was 15% off the original price.
Denise bought hers on Friday when there was 20% off the original price.
Chloe paid 35p more than Denise.
What was the original price of the T-shirt?



The diagram shows a cuboid.
What is the volume of this cuboid?

The volume of a different cuboid is half the volume of the cuboid above. What could the dimensions of this different cuboid be?

Write the missing number to make this calculation correct.

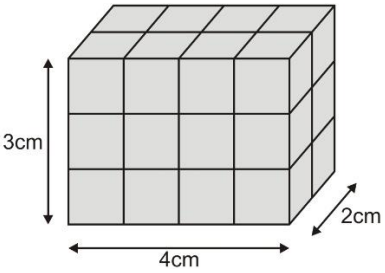
$$(18 + \square) \times 32 = 777.6$$

Vicki puts 10 books on a shelf.
The 10 books take up 28 centimetres.
What is the mean (average) thickness of her books?

Tom was born in 1988
Ben was born in 2000
Tom and Ben have the same birthday. The ratio of Tom's age to Ben's age on their birthday in 2001 was 13 : 1
What was the ratio of Tom's age to Ben's age on their birthday in 2003? Write the ratio in its simplest form.

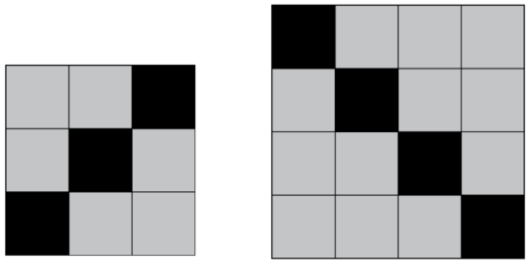
In what year was the ratio of Tom's age to Ben's age 3 : 1?

This cuboid is made from centimetre cubes.
It is 4 centimetres by 3 centimetres by 2 centimetres.



What is the volume of the cuboid?

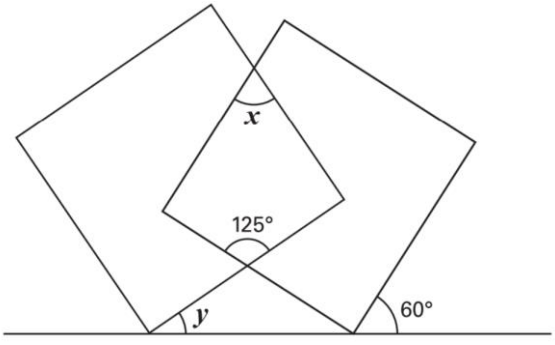
These patterns are drawn on square grids.



Pattern A Pattern B

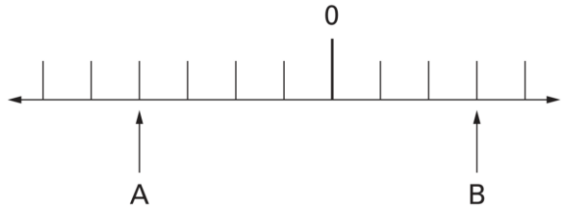
In pattern A, the ratio of black squares to grey squares is 1 : 2
What is the ratio of black squares to grey squares in pattern B?

The diagram shows two overlapping squares and a straight line.



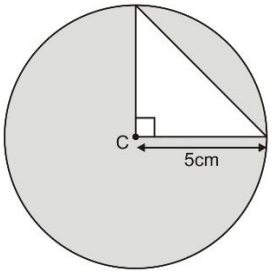
Calculate the value of angles x and y.

A and B are two numbers on the number line below.



The difference between A and B is 140
Write the values of A and B.

The diagram shows a right-angled triangle inside a circle.
The circle has a radius of 5 centimetres.

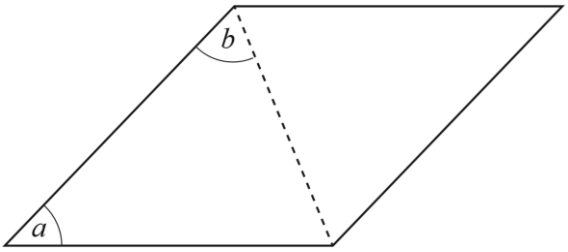


Calculate the area of the triangle.

n **stands for a number.**
Complete this table of values.

n	$5n - 2$
20	
	38

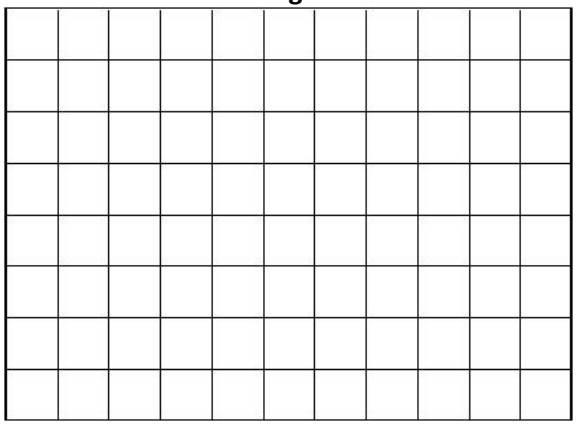
The dotted line is a diagonal of this rhombus.



If angle a = 80°, what is angle b?

If angle b = 80°, what is angle a?

This is a centimetre grid. On the grid draw a triangle which has an area of 7.5 cm² and which has an obtuse angle.

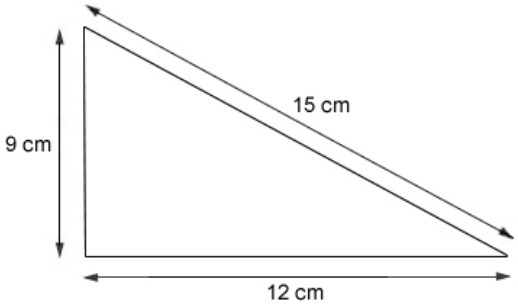


You can make only six different cuboids with 24 cubes. Complete the table to show the dimensions. Two have been done for you.

	Dimensions		
Cuboid E	1	1	24
Cuboid F	1	2	12
Cuboid G			
Cuboid H			
Cuboid I			
Cuboid J			

20% of the children in a sports club play tennis.
25% of the children who play tennis also play rounders.
There are 8 children in the club who play both tennis and rounders.
How many children are there in the sports club altogether?

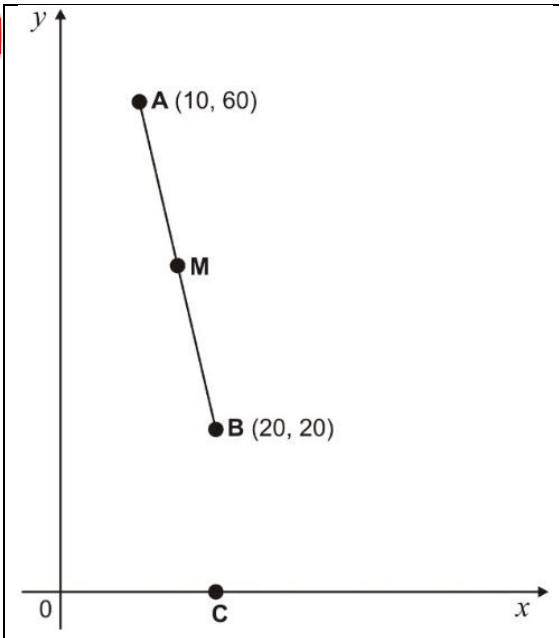
Calculate the area of this triangle.



Write the two missing values to make these equivalent fractions correct.

$$\frac{\square}{30} = \frac{10}{12} = \frac{30}{\square}$$

In a zoo, the adult polar bear weighs three times more than the baby elephant. Together they weigh 700 kilograms.
How much does the polar bear weigh?



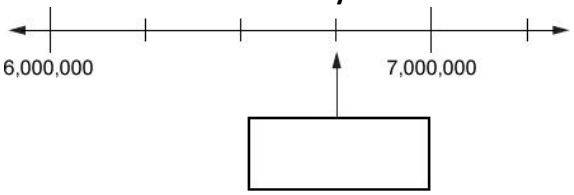
A is the point (10, 60). B is the point (20, 20). M is the midpoint of line AB. Write the coordinates of M.

C is on the *x*-axis, directly below B. Write the coordinates of C.

Is $\frac{4}{9}$ greater than $\frac{1}{3}$? Show how you know.

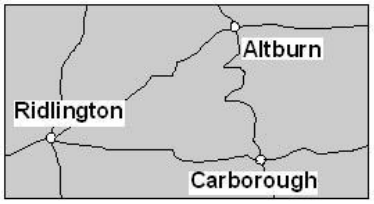
Is $\frac{4}{9}$ half of $\frac{8}{18}$? Show how you know.

Here is part of a number line. Write the number shown by the arrow.



j and k stand for two numbers. Double j equals half of k. Write numbers to complete the sentence below.

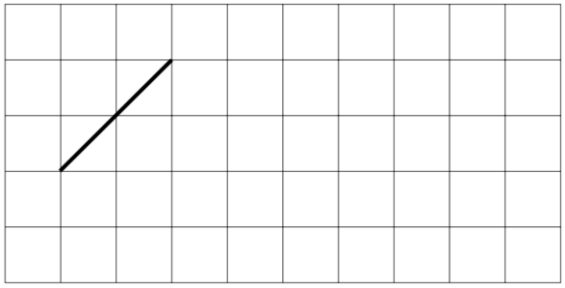
When j is ☐ then k is ☐



This map has a scale of 1 centimetre to 6 kilometres.

The road from Ridlington to Carborough measured on the map is 6.6 cm long. What is the length of the road in kilometres?

This is a centimetre grid. Draw 3 more lines to make a parallelogram with an area of 10cm².



Carol has a rule for a sequence of numbers. Her rule is: 'The next number is the sum of the two previous numbers.' Use Carol's rule to write in the three missing numbers.

☐, ☐, ☐, 0, 1, 1, 2, 3, 5, 8, ...

This is the cost to visit the waxworks.

Adults £8.50 Children £4.50

On Friday morning 12 adults and 20 children visit the waxworks. How much do they pay altogether?

What fraction is exactly half-way between $\frac{3}{5}$ and $\frac{5}{7}$?

Write the missing number.

12.5 ÷ ☐ = 7.5 ÷ 1.5

The table shows Tom's test results for different subjects.

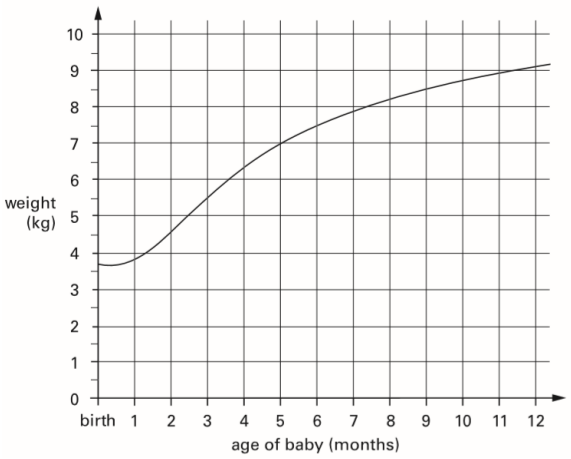
Subject	Mark
Arithmetic	$\frac{34}{40}$
Reasoning	$\frac{63}{70}$
Reading	85%
Grammar and Punctuation	80%
Spelling	$\frac{12}{20}$

In what subject did Tom get the highest mark?

In what subject did Tom get the lowest mark?

In which two subjects did he get the same marks?

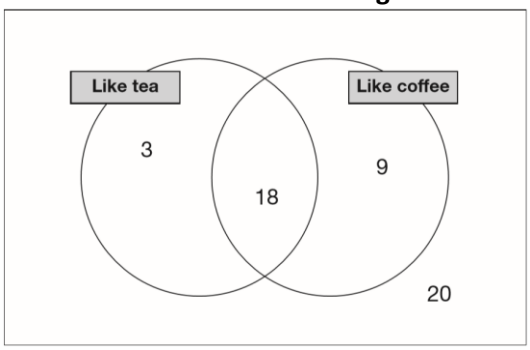
This graph shows how the weight of a baby changed over twelve months.



From the graph, what was the weight of the baby at 10 months?

How much more did the baby weigh at 5 months than at birth?

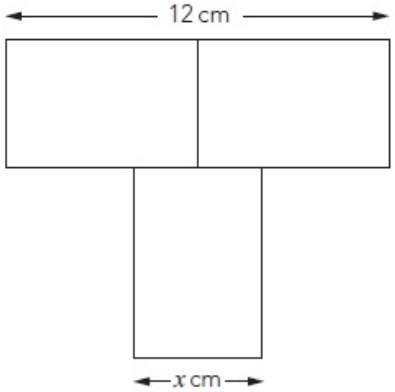
In a survey people were asked if they like tea and coffee.
The results are in this Venn diagram.



What percentage of people in the survey like both tea and coffee?

What percentage of people in the survey do not like coffee?

Here is a T-shape made from 3 identical rectangles. The area of the T-shape is 90 cm².



Work out the value of x.

Look at these numbers.

¾ of a million 2,099,999 2,101,999

80,000 2,109,000

What is the largest number?

What is the smallest number?

Grace, Ellie and Alfie bought 5 pizzas to share.

Grace ate $1\frac{1}{2}$ pizzas.

Ellie ate $1\frac{2}{3}$ pizzas.

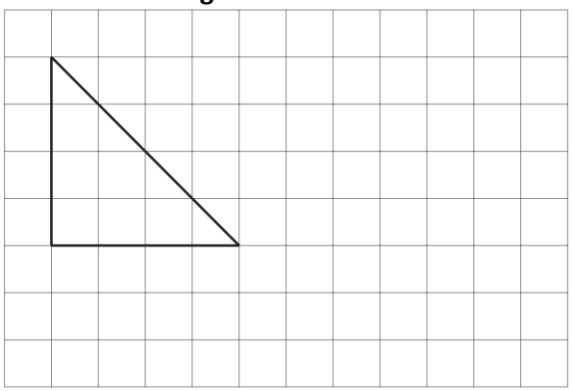
And Alfie ate the rest.
How many pizzas did Alfie eat?

Annie ate ¼ of a cake.
Four other children shared the remainder equally.
What fraction of the cake did each of the other children get?

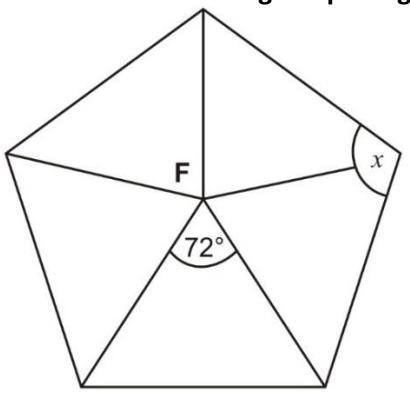
In this sequence each number is double the previous number.
Write in the missing numbers.

☐ ☐ 3 6 12 24 48 ☐

Here is a triangle drawn on a square grid.
Draw a rectangle on the grid with the same area as the triangle.

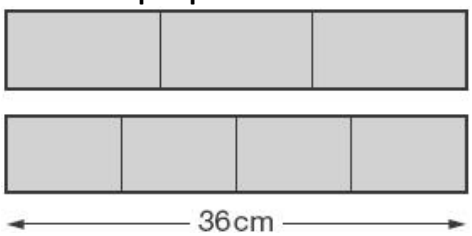


F is the centre of a regular pentagon.

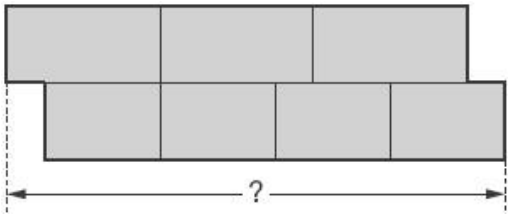


Work out the value of angle *x*.

Joe has two strips of card. Each strip is 36 centimetres long. One strip is divided into three equal parts. The other strip is divided into four equal parts.

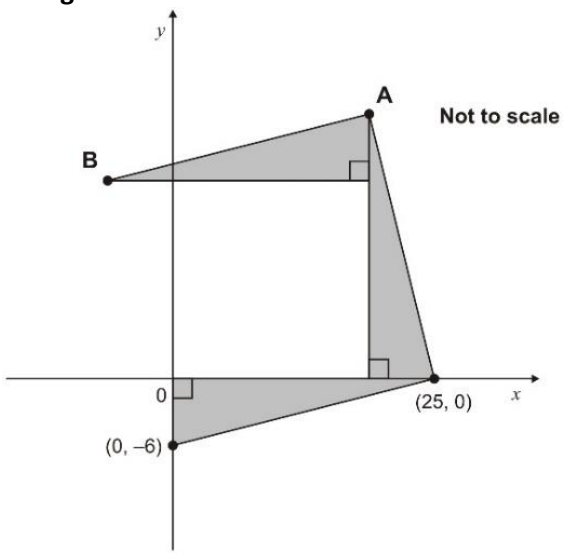


Joe uses the two strips to make this shape.



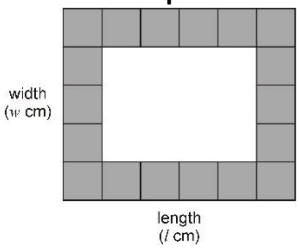
What is the total length of Joe's shape?

The diagram shows three identical shaded triangles on co-ordinate axes.



What are the co-ordinates of A and B?

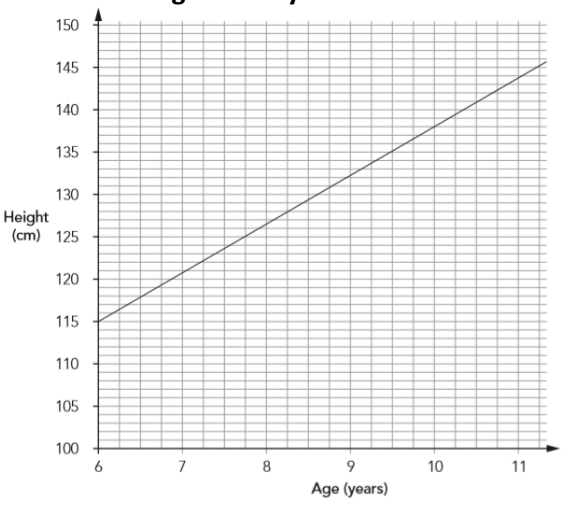
Javed makes rectangular frames with grey centimetre squares.



n stands for the number of grey centimetre squares in a frame.
Javed has a formula for working out n.
n = 2 (l + w) – 4
Javed makes a frame with l = 28 and w = 15
Use the formula to work out how many grey squares he uses.

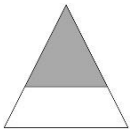
Javed makes a square frame with 84 grey squares.
Use the formula to find how many grey squares are in each side of the square frame.

The graph shows the average heights of girls in the UK from age 6 – 11 years.



Emily is 1.38m tall. She is the average height for her age. How old is she?

Zoe is 9½ years old. She is also 1.38m tall.
How much taller than average is she?
Give your answer in centimetres.



The diagram shows a shaded triangle inside a larger triangle.
The area of the shaded triangle is 52 cm².

The area of the shaded triangle is $\frac{4}{9}$ of the area of the larger triangle.
Calculate the area of the larger triangle.

***n* stands for a number between 50 and 60**
Complete these statements.
One has been done for you.

n + 10 stands for a number between 60 and 70 .

10 × n stands for a number between ___ and ___

n – 5 stands for a number between ___ and ___

A packet contains 1.5 kilograms of guinea pig food.
Remi feeds her guinea pig 30 grams of food each day.
How many days does the packet of food last?

Here are three equations.

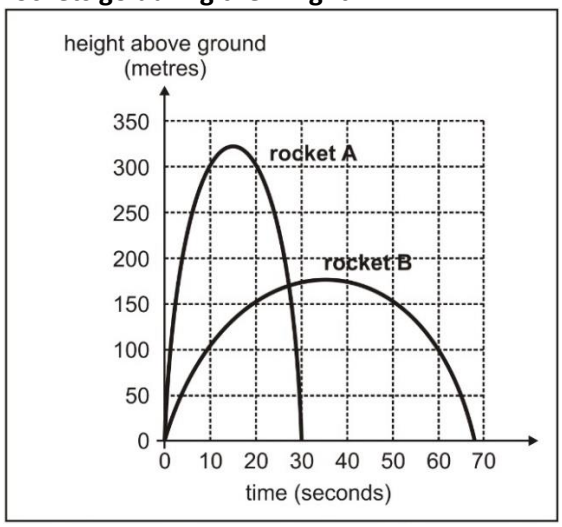
a + b + c = 30
a + b = 24
b + c = 14

What are the values of a, b and c?

Shenaz buys a pack of 24 cans of cola for £6.00
What is the cost of each can?

What is the value of 4x + 7 when x = 5?

Jim draws a graph to show how high two rockets go during their flight.

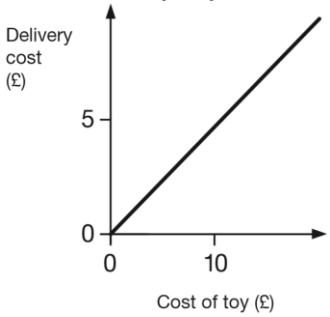


Estimate how much higher rocket A reaches than rocket B.

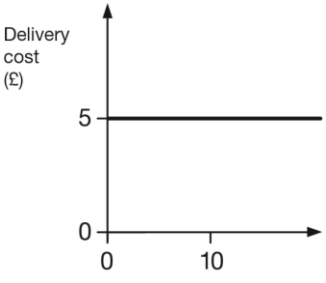
Estimate the time after the start when the two rockets are at the same height.

Jim says, 'The graph shows that rocket A was more than 200 m above the ground for about 23 seconds.'
Explain how the graph shows this.

Two companies sell toys online. They charge to deliver. Describe the delivery cost of the second company.
The first company is done for you.



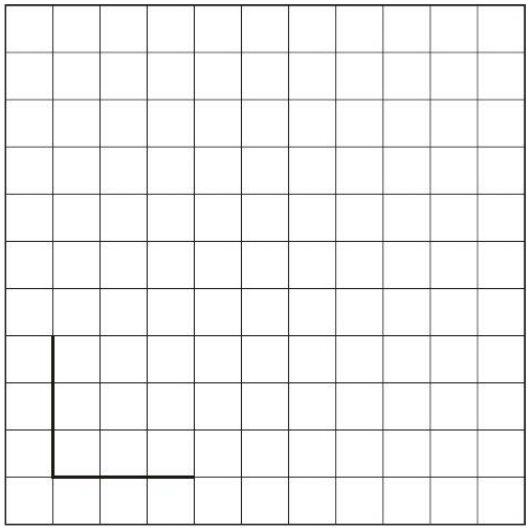
The more a toy costs, the more the delivery costs.



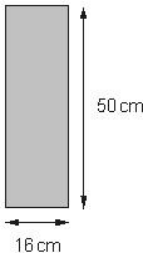
Write the same number in each box to make this correct.

☐ + ☐ + ☐ = 10.5

Write two fractions, each greater than 0 and less than 1, which have a difference of ¾



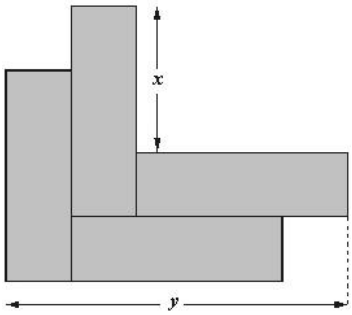
Here is a centimetre grid.
Draw two more lines to make a quadrilateral with an area of 18 cm².



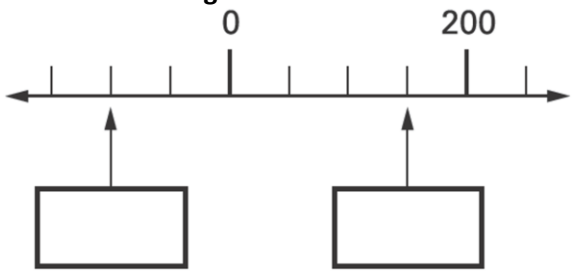
Kate has some rectangles. They each measure 16 centimetres by 50 centimetres.

She makes this design with four of the rectangles.

Work out the lengths *x* and *y*.

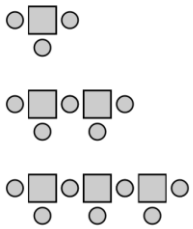


Here is part of a number line.
Write the missing numbers in the boxes.



Shortcrust pastry is made using flour, margarine and lard.
The flour, margarine and lard are mixed in the ratio
8 : 3 : 2 by weight.
How many grams of margarine and lard are needed to mix with 200 grams of flour?

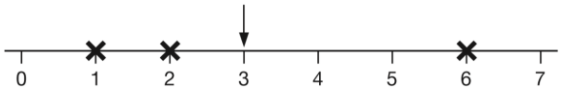
Here is a sequence of patterns made from squares and circles.



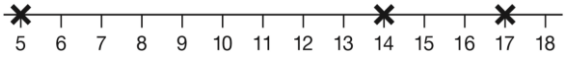
number of squares	number of circles
1	3
2	5
3	7

The sequence continues in the same way.
Calculate how many squares there will be in the pattern which has 25 circles.

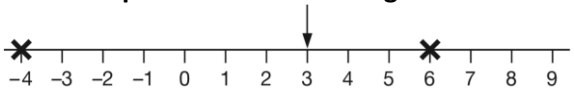
The arrow below points to the mean of the three numbers shown by crosses.



Draw an arrow that points to the mean of the three numbers shown below.



The arrow below points to the mean of three numbers.
One of the numbers is missing. Draw a cross to show the position of the missing number.



427 children visit a castle.
They go in groups of 15
One group has less than 15
Every group of children has one adult with them.
How many adults will need to go?

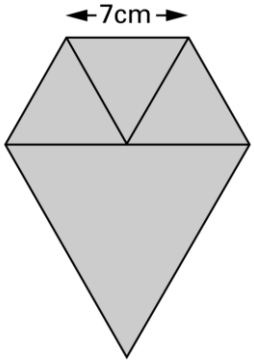
This is Kirsty's recipe for breakfast cereal.
50 grams of oats
30 grams of raisins
40 grams of nuts
If she uses 125 grams of oats, how many grams of raisins does she need?

1 gallon is approximately 4.5 litres.
Mrs Smith buys 8 gallons of petrol.
How many litres of petrol does she buy?

n stands for a number.
n + 7 = 13
What is the value of n + 10?

Alfie says, 'When you multiply two numbers together, the answer is always greater than either of the numbers you started with.'
Is Alfie correct? Explain how you know.

Lauren has three small equilateral triangles and one large equilateral triangle. The small triangles have sides of 7 centimetres.
Lauren makes this shape.



Calculate the perimeter of the shape.

Which is larger, $\frac{1}{3}$ or $\frac{2}{5}$?

Explain how you know.

a and b each represent a whole number between 1 and 10
2a + b = 8
Write the three possible combinations of a and b
One is done for you.

when a = 1 b = 6

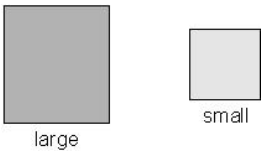
when a = ☐ b = ☐

when a = ☐ b = ☐

Archery is an Olympic sport.
In 2008, two archers called Park and Zhang were in the women's final.
Both archers shot 12 arrows. Zhang won the final by 1 point.
Complete the table for Zhang below.

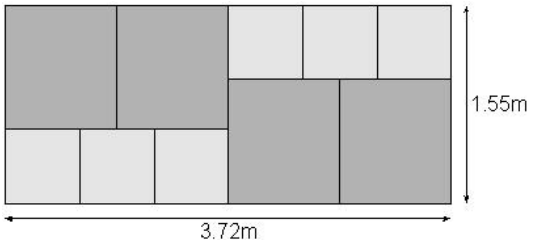
Name of archer: **Park**	
What she scored with her **12 arrows**	
Number of points	Frequency
7	0
8	4
9	3
10	5

Name of archer: **Zhang**	
What she scored with her **12 arrows**	
Number of points	Frequency
7	1
8	0
9	
10	



Mr Jones has two sizes of square paving stones.

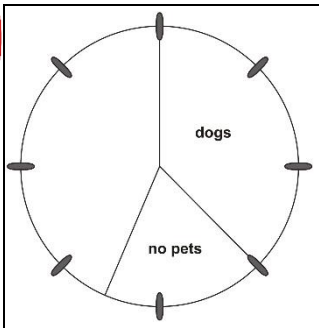
He uses them to make a path. The path measures 1.55 metres by 3.72 metres.



Calculate the width of a small paving stone.

A sequence of numbers starts at 11 and follows the rule
'double the last number and then subtract 3'
11 19 35 67 131...
The sequence continues.
The number 4099 is in the sequence.
Calculate the number which comes immediately before 4099 in the sequence.

Small peaches – 15p each
Large peaches – 25p each
Emily has £5 to spend on peaches.
She decides to buy only small peaches or only large peaches. How many more small peaches than large peaches can she buy for £5?



80 people were asked if they owned a pet.
30 had dogs
25 had cats
10 had other pets
15 had no pets
Complete the pie chart to show this information.

Use these measurements to complete the sentences below.

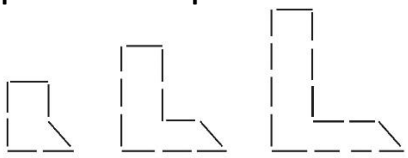
8 cm	25 cm	4 cm

The radius of a circle is _____ cm;

its diameter is _____ cm and

its circumference is approximately _____ cm.

Ann makes a pattern of L shapes with sticks.



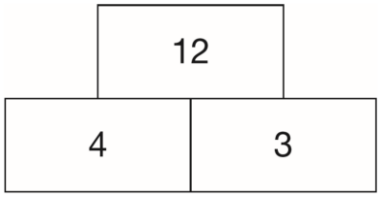
Shape–number:	1	2	3
Number of sticks:	7	11	15

Ann says, 'I find the number of sticks for a shape by first multiplying the shape–number by 4, then adding 3.'
Work out the number of sticks for the shape that has shape-number 10

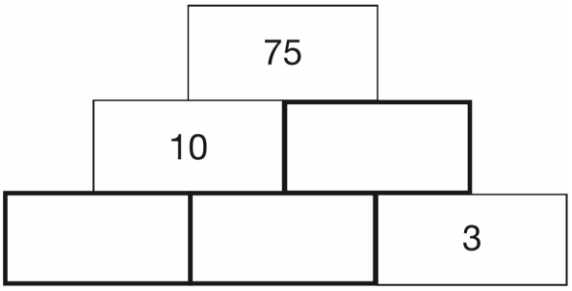
Ann uses 59 sticks to make another L shape in this pattern. What is its shape-number?

Write a formula to work out the number of sticks for any L shape. Use S for the number of sticks and N for the shape-number.

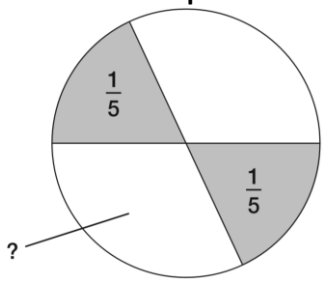
In this tower, two numbers are multiplied to give the number above.



Write the missing numbers in the tower below to make it correct.



In this circle, each shaded part is $\frac{1}{5}$ of the area of the circle.
The two white parts have equal areas.



What fraction of the circle is one of the white areas?

Here is a recipe for raspberry ice cream.
Raspberry ice cream for 8 people:
½ litre of cream
1kg raspberries
250g sugar
This recipe is for 8 people. Josie makes enough raspberry ice cream for 12 people. How much cream does she use?

Fred makes raspberry ice cream in the same way. He uses 2½ kg of raspberries.
How much sugar does he use?

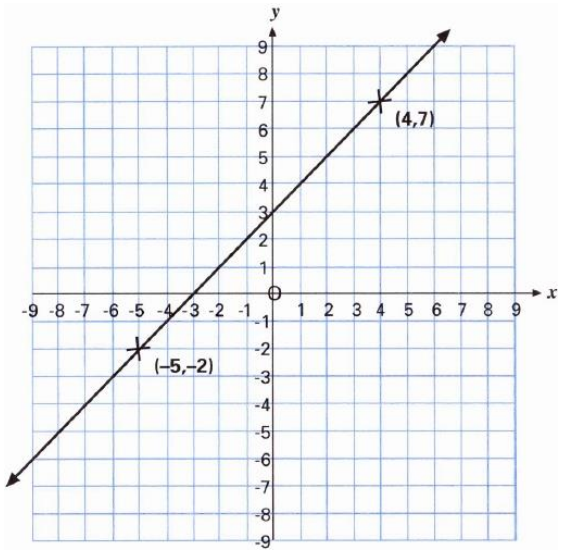
Cheddar cheese: 82p for 100 grams
Edam cheese: 66p for 100 grams
Cottage cheese: 45p for 100 grams
Mina buys 200g of Cheddar cheese and 150g of Edam cheese.
How much does she pay altogether?

Seb buys some Cottage cheese for £1.35
How many grams of cottage cheese does he get?

Look at this expression.
$10y + 2$
When $y = 0.4$, the value of $10y + 2$ is an even number because $10 \times 0.4 + 2 = 6$
Write a value for y so that $10y + 2$ is a prime number.

Now write a value for y so that $10y + 2$ is a square number.

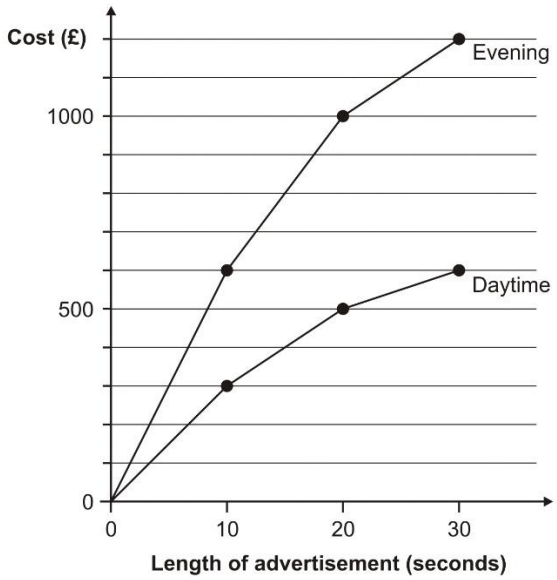
The points (−5, −2) and (4, 7) lie on the same line.



If the line were extended, would it pass through point (−100, −103)?
Explain how you know.

Use x and y to write the equation of the line.

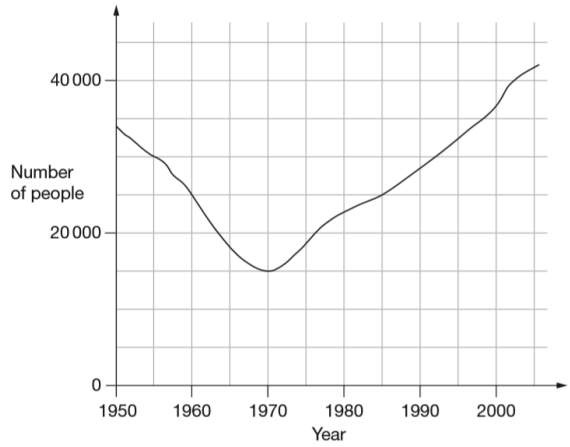
This chart gives the cost of showing advertisements on television at different times.



An advertisement lasts 25 seconds.
Use the graph to estimate how much cheaper it is to show it in the daytime compared with the evening.

An advertisement was shown in the daytime and again in the evening. The total cost was £1200
How long was the advertisement in seconds?

This graph shows the number of people living in a town.



How many people lived in the town in 1985?

In which year was the number of people the same as in 1950?

Find the year when the number of people first went below 20 000

The numbers in this sequence increase by 7 each time.

1 8 15 22 29 ....

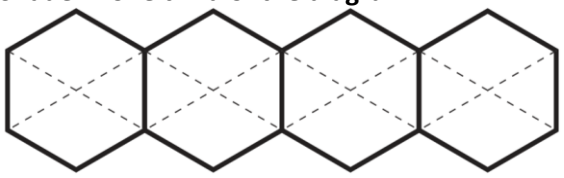
The sequence continues in the same way.
Will the number 777 be in the sequence?
Explain how you know.

Write three decimals, each greater than zero, which add together to make a total of 0.01

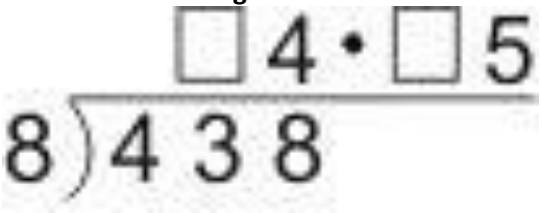
☐ + ☐ + ☐ = 0.01

How many boxes of 40 matches can be filled from 2,688 matches?

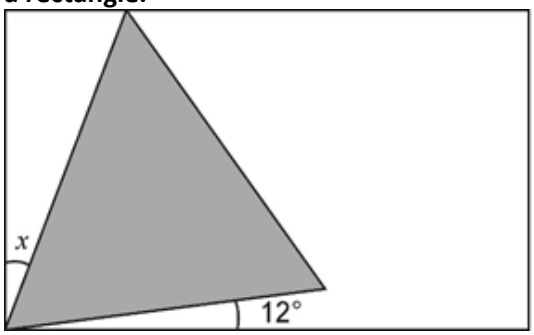
This diagram shows four regular hexagons.
Shade in one third of the diagram.



Write in the missing numbers.



Here is an equilateral triangle inside a rectangle.

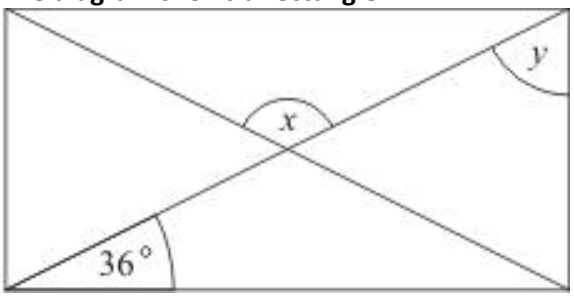


Calculate the value of angle x.

Rectangle ABCD has a perimeter of 24 centimetres.
Sides AB and DC are twice as long as sides AD and BC.

Calculate the length of side AD.

The diagram shows a rectangle.



Calculate angles *x* and *y*.

Circle the largest number.

5,055,555

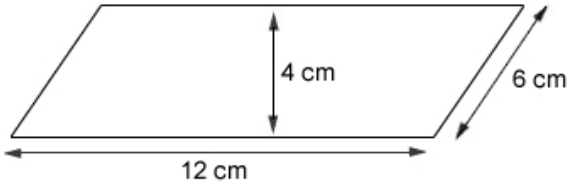
5,555,055

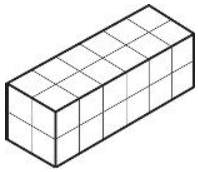
555,555

5,055,055

Every 100g of brown bread contains 6g of fibre.
A loaf of bread weighs 800g and has 20 equal slices.
How much fibre is there in one slice?

Calculate the area of this parallelogram.



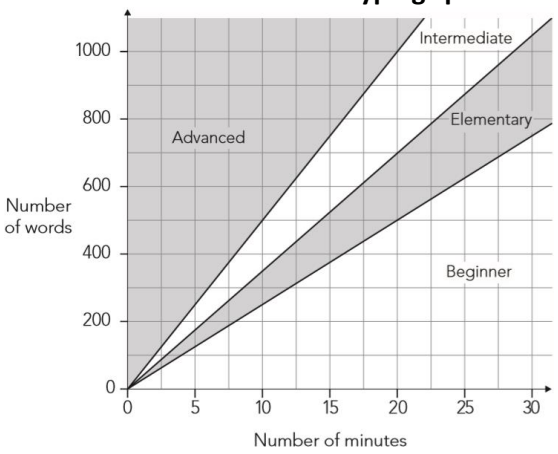


Cleo has 24 centimetre cubes.
She uses all 24 cubes to make a cuboid with dimensions 6 cm, 2 cm and 2 cm.
Write the dimensions of a different cuboid she can make using all 24 cubes.

A shop sells rolls of wire.
Two rolls, A and B, each have 45 metres of wire on them.
The wire on roll A is cut into 1.25 m lengths.
The wire on roll B is cut into 2.25 m lengths.
How many more lengths of wire are cut from roll A than roll B?

A circle has a diameter of 22 cm.
What is the length of its radius?

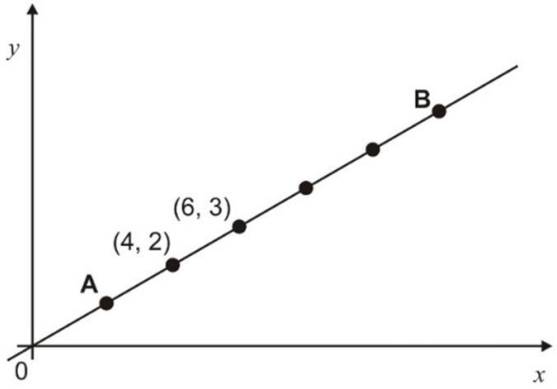
How fast you can type accurately is called your typing speed. The regions of the graph show information about different typing speeds.



Darren's level of typing is elementary. In 20 minutes he should be able to type between 500 and 700 words.
Jo's level of typing is intermediate.
How many words should she be able to type in 20 minutes?
Between _____ and _____

Kath's typing speed is 30 words per minute.
What level is Kath's typing?
Explain how you know.

The dots (on the line are equally spaced.



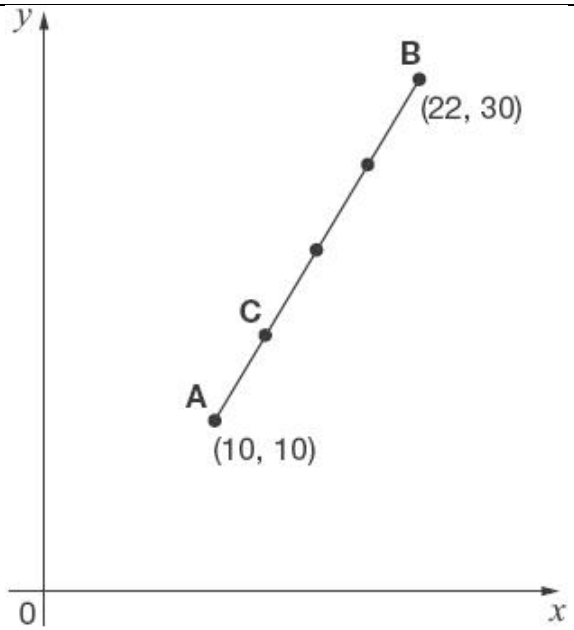
What are the coordinates of the point A?

Megan says, *'The point B has coordinates (11,5).'* Use the graph to explain why she cannot be correct.

The rule for this sequence of numbers is 'add 3 each time'.

1 4 7 10 13 16 …

The sequence continues in the same way.
Mary says, 'No matter how far you go there will never be a multiple of 3 in the sequence.'
Is she correct? Explain how you know.



A and B are joined by a straight line on coordinate axes.
The dots on the line are equally spaced.
What are the coordinates of C?