

GCSE Problem Solving Questions

Problem Solving Questions

Information

GCSE

This booklet contains over 50 problem solving questions suitable for KS3 and GCSE classes. These are the questions that we have been putting out each day in the run up to GCSE exams. The answers are also provided with each question.

There are problems that are suitable for foundation and higher and ones that are suitable for higher tier only.

We hope to release more questions like this over the course of next year that you can use on a regular basis with your classes including some open ended problems. Please keep a look out for our work.

In June 2016 we plan to release our new KS3 schemes of work. The schemes build on the work we have been doing within primary. We are keen to work with secondary schools next year who might be interested in implementing this KS3 scheme.

As always we welcome any feedback on the work we are doing and the materials that we are releasing.

Thank you for taking an interest in our work.

The White Rose Maths Hub Team

GCSE Problems of the Day

Foundation & Higher

1 Four points lie on a straight line.
A — B — C — D

The distance AD is 129 metres.
The distance BC is 15 more metres than the distance CD.

2 The diagram shows a five pointed star.
All of the ten sides are the same length.

GCSE Problems of the Day

Foundation & Higher

1 Mr Drake asked his class how many cats and dogs they own.
The results are shown in the two way table.

	Number of dogs	0	1	2	3
Number of cats	0	8	2	2	1
1	3	4	0	0	
2	2	1	1	0	
3	0	1	0	0	

What fraction of the class own more cats than dogs?
Can you write your answer as a percentage?

Higher

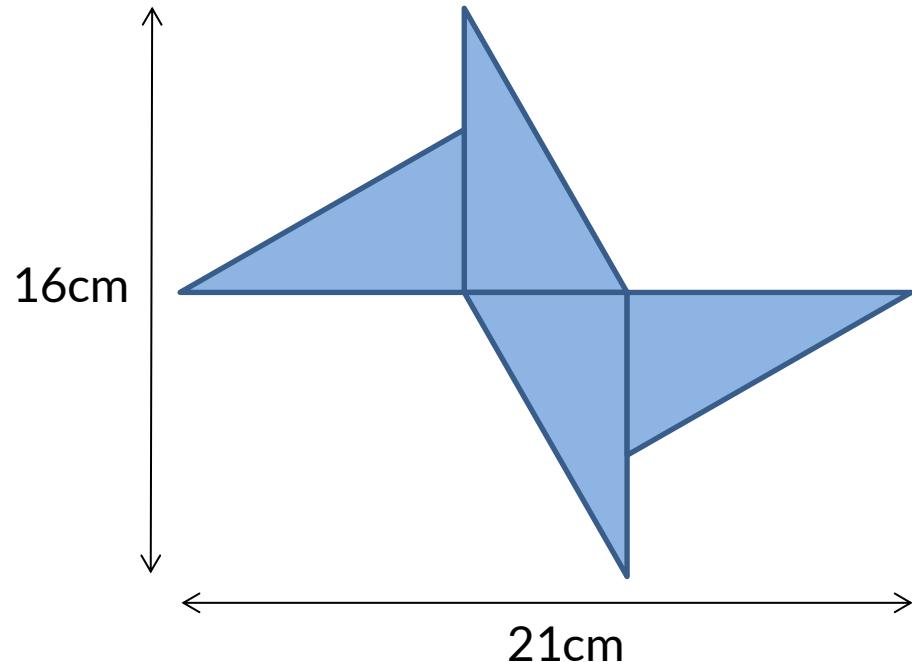
1 Diagrams are not to scale.
The circle below has a radius of 5cm.
O is the centre of the circle.
Angle ABC = 50°

Find the length of AC

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Foundation & Higher

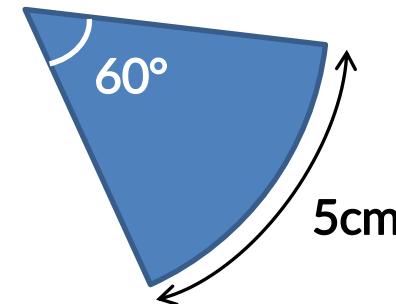
1 A logo is made up of four congruent triangles.



Find the area of one of the triangles.

Higher

2 The arc length of this sector is 5cm.



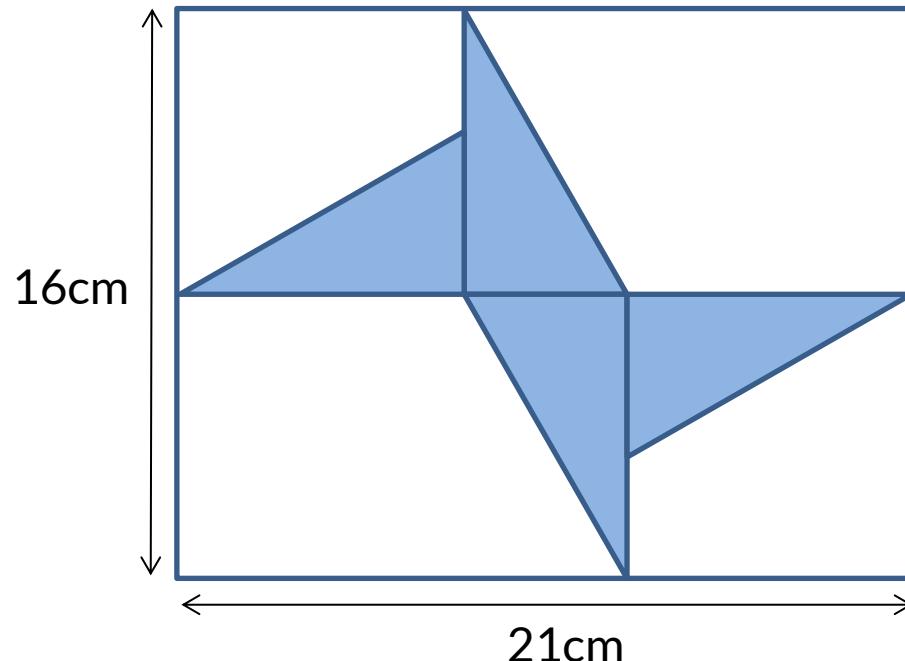
Find the perimeter of the sector.

Give your answer to 3 significant figures.

GCSE Problems of the Day

Foundation & Higher

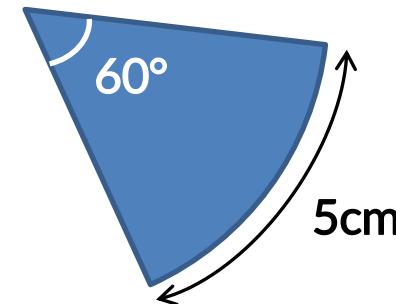
- 1 A logo is drawn inside a rectangle.
It is made up of four congruent triangles.



What fraction of the rectangle is covered by the triangles?

2 Higher

- The arc length of this sector is 5cm.

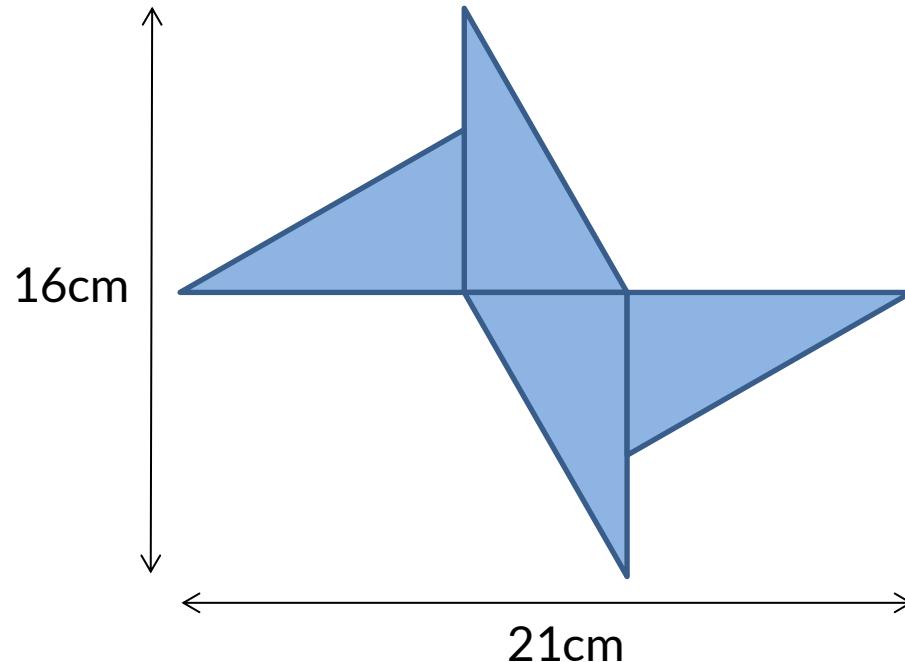


Find the perimeter of the sector.
Give your answer in terms of π

GCSE Problems of the Day

Foundation & Higher

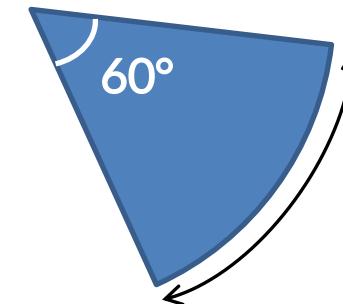
1 A logo is made up of four congruent triangles.



Find the perimeter of the logo.

2 Higher

The area of this sector is 50cm^2 .



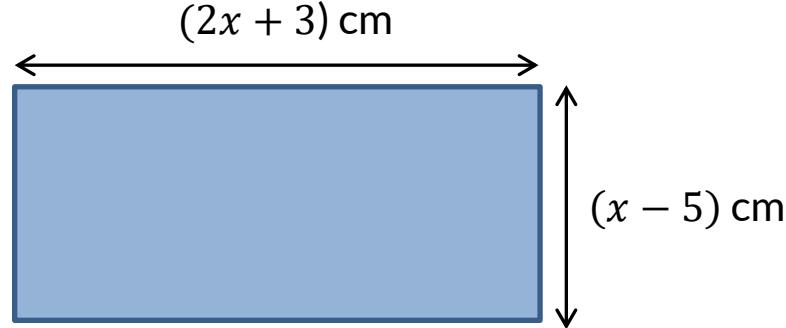
Find the length of the arc.

Give your answer to 3 significant figures.

GCSE Problems of the Day

Foundation & Higher

1



The perimeter of this rectangle is 44cm.

Find the value of x

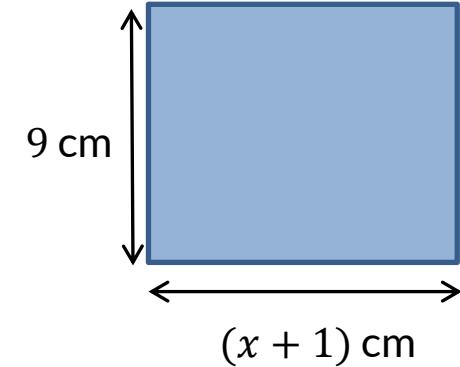
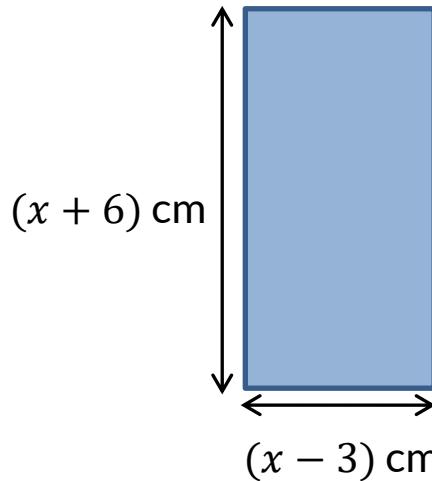
Diagrams are not
to scale.

Tuesday 12th April 2016

Version 1

2

Higher



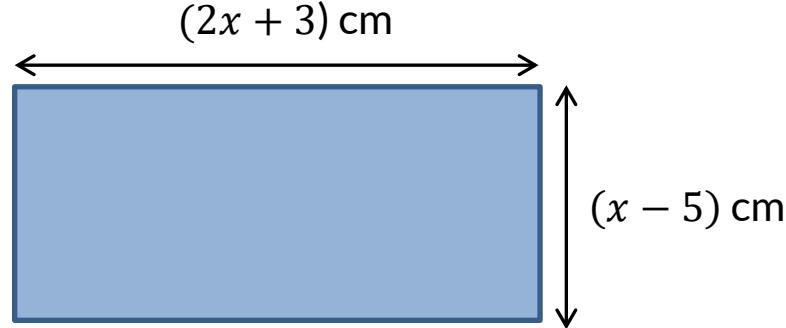
These two rectangles have the same area.

Find the value of x

GCSE Problems of the Day

Foundation & Higher

1



The perimeter of this rectangle is 44cm.

Find the length of the rectangle.

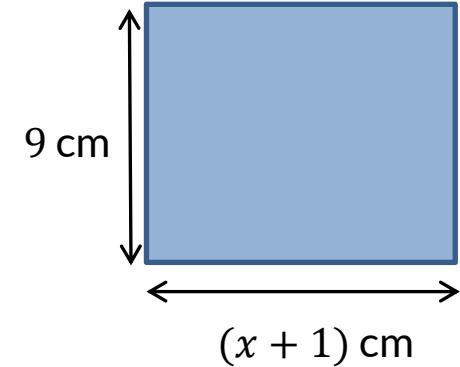
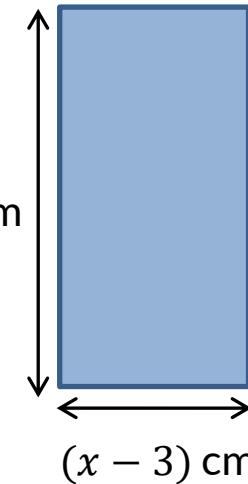
Diagrams are not to scale.

Tuesday 12th April 2016

Version 2

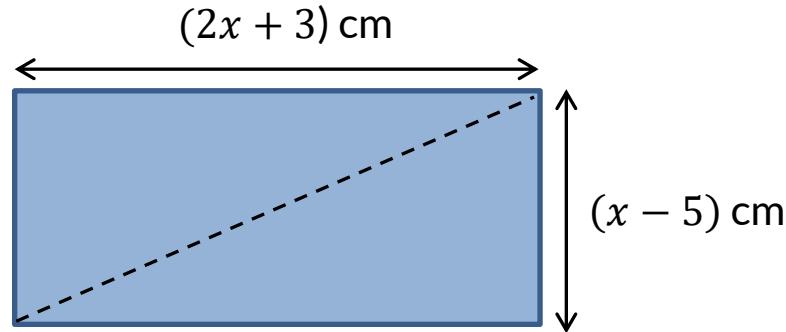
2

Higher



These two rectangles have the same area.

Find the area of each rectangle.

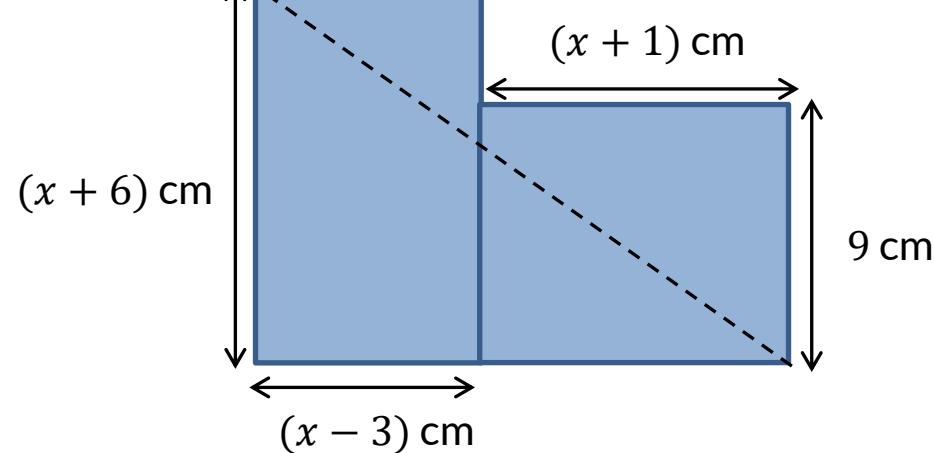


The perimeter of this rectangle is 44cm.

Find the length of the diagonal.

Diagrams are not to scale.

2
Higher



A shape is made of two rectangles.

The two rectangles have the same area.

- Find the perimeter of the shape.
- Find the length of the diagonal line shown.

1 Max is saving to buy a computer game that costs £26

He saves 5p, 10p and 50p coins in a jar.

The ratio of 5p to 10p to 50p coins is 2 : 5 : 1

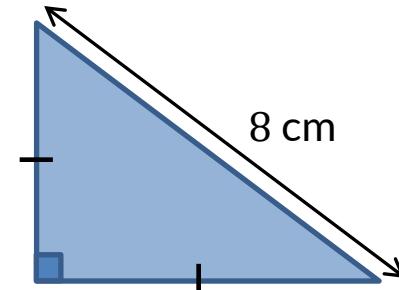
There are 120 coins in the jar.

How much more does he need to save?

2 Higher

Here is an isosceles triangle.

The hypotenuse is 8cm.



Find the area of the triangle.

GCSE Problems of the Day

Wednesday 13th April 2016

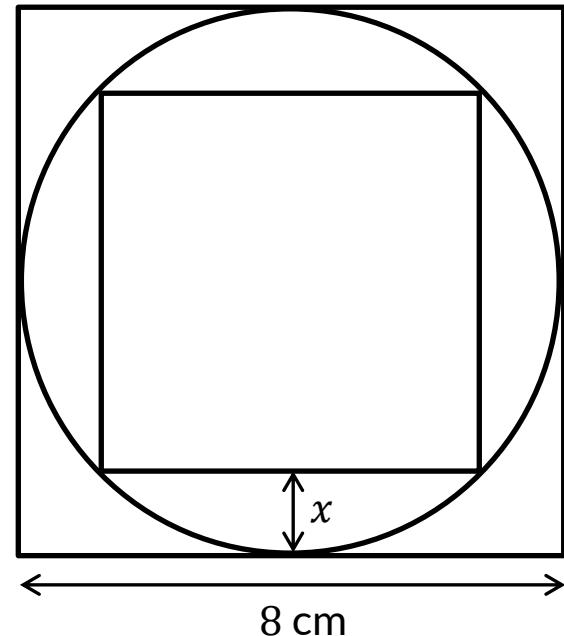
Version 2

Foundation & Higher

- 1 Max is saving some money in a jar.
He saves 5p, 10p and 50p coins.
The ratio of 5p : 10p : 50p coins is 2 : 5 : 1
There are 120 coins in the jar.
He adds the following coins;
- £2.50 in 50p coins
 - £2.50 in 10p coins
 - £2.50 in 5p coins
- What is the new ratio of 5p : 10p : 50p coins?

2 Higher

- The diagram shows a square inside a circle
The circle is inside an outer square.



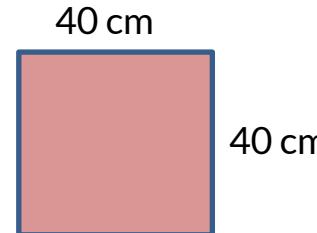
The length of the outer square is 8cm.
Find the distance marked x

GCSE Problems of the Day

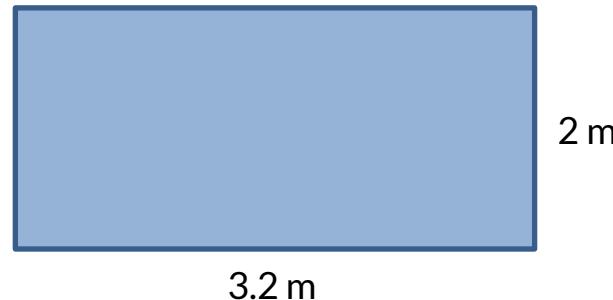
Foundation & Higher

1 A floor is going to be covered in carpet tiles.

The tiles measure 40cm by 40cm



The floor is 3.2 metres by 2 metres.



Tiles are sold in boxes of 12

How many boxes of tiles will be needed to cover the floor?

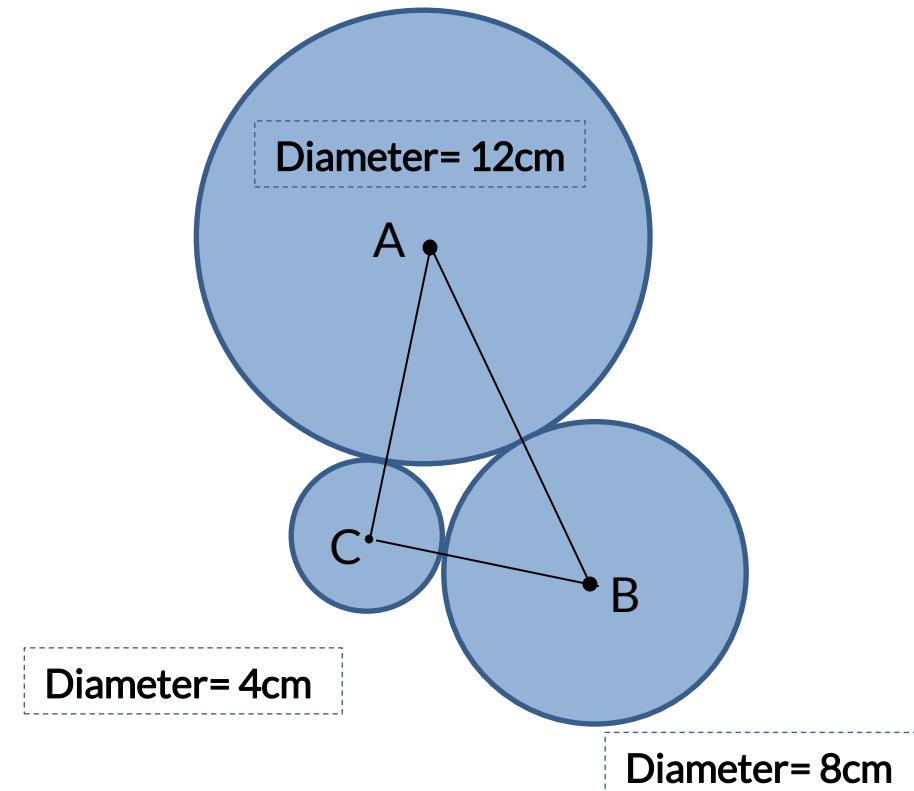
Diagrams are not to scale.

Thursday 14th April 2016

Version 1

2 Higher

Three circles with centres A, B and C are shown.



Show that triangle ABC is right angled.

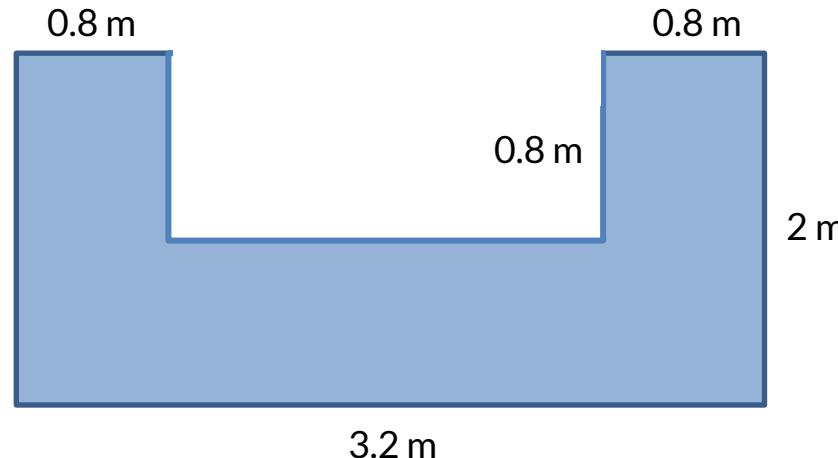
GCSE Problems of the Day

Foundation & Higher

1 A room is going to be covered in carpet tiles.

The tiles measure 40cm by 40cm

A plan of the room is shown below.



A box of 12 tiles costs £35

Single tiles costs £5

What is the cheapest way of covering the floor in carpet tiles?

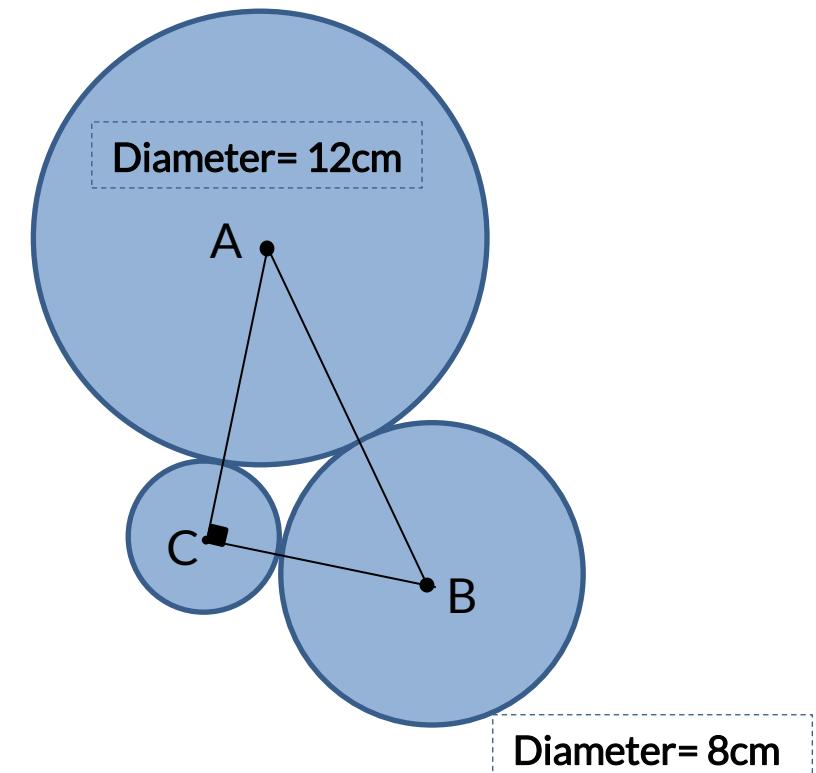
Diagrams are not to scale.

Thursday 14th April 2016

Version 2

2 Higher

Three circles with centres A, B and C are shown.



ABC is a right angled triangle.

Find the radius of the smallest circle.

GCSE Problems of the Day

Foundation & Higher

1 Mr Drake asked his class how many cats and dogs they own.

The results are shown in the two way table.

		Number of dogs			
		0	1	2	3
Number of cats	0	8	2	2	1
	1	3	4	0	0
	2	2	1	1	0
	3	0	1	0	0

What fraction of the class own more cats than dogs?

Can you write your answer as a percentage?

Diagrams are not to scale.

Friday 15th April 2016

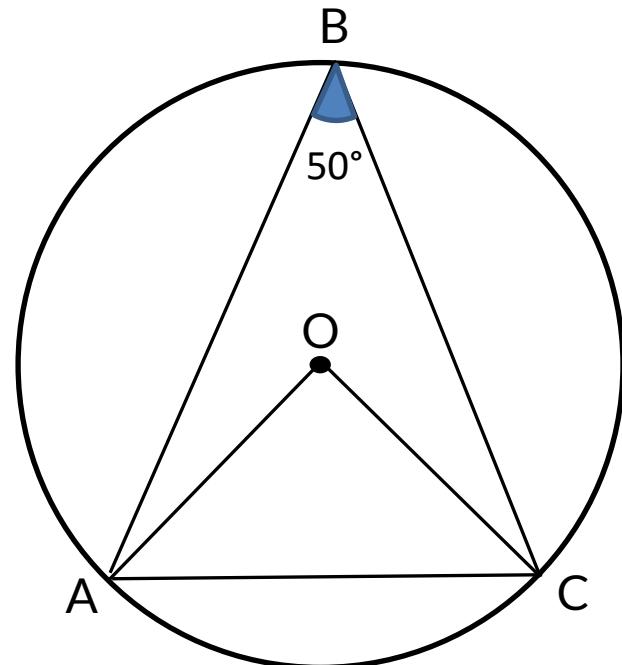
Version 1

2 Higher

The circle below has a radius of 5cm.

O is the centre of the circle.

$$\text{Angle } ABC = 50^\circ$$



Find the length of AC

Mr Drake asked his class how many cats and dogs they own.

The results are shown in the two way table.

		Number of dogs			
		0	1	2	3
Number of cats	0	8	2	2	1
	1	3	4	0	0
	2	2	1	1	0
	3	0	1	0	0

How many dogs do the class own?

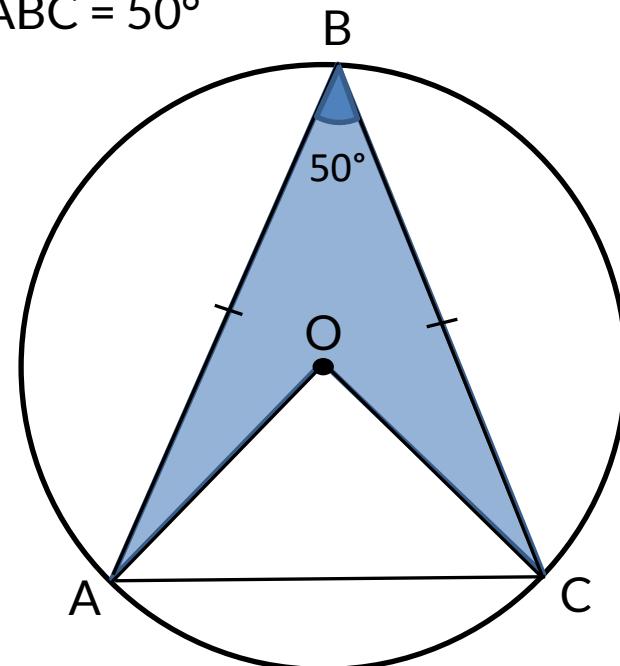
Diagrams are not to scale.

The circle below has a radius of 5cm.

O is the centre of the circle.

$$AB = BC$$

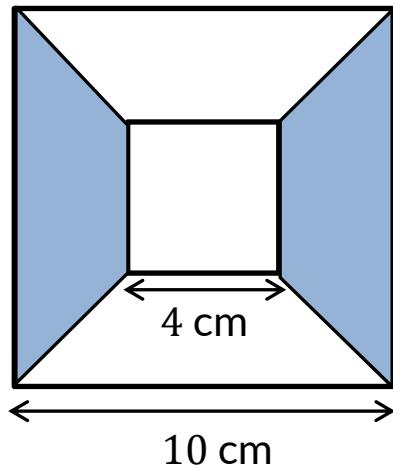
$$\text{Angle } ABC = 50^\circ$$



Find the area of the shaded shape.

GCSE Problems of the Day

1 The diagram shows two squares.



The large square has a length 10cm.

The small square has a length of 4cm.

Find the area of the shaded region.

Diagrams are not to scale.

Monday 18th April 2016

Version 1

2

Higher Here are the contents of three boxes.

Box	Contents
A	All red counters
B	30% red counters and the rest blue
C	Empty

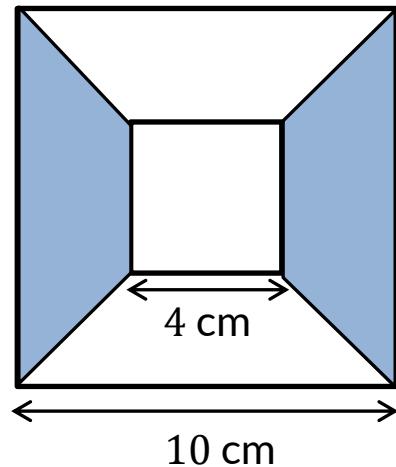
There are the same number of counters in boxes A and B.

The counters from boxes A and B are put together into box C.

There are now 78 red counters in box C

How many blue counters are there?

1 The diagram shows two squares.



The large square has a length 10cm.

The small square has a length of 4cm.

What percentage of the diagram is shaded?

What fraction of the diagram is shaded?

Diagrams are not to scale.

Monday 18th April 2016

Version 2

2

Here are the contents of three boxes.

Box	Contents
A	All red counters
B	30% red counters and the rest blue
C	50% red counters and the rest blue

There are twice as many counters in box A than box B.

There are 4 more counters in box C than box B.

The counters from boxes A and B are put together with the counters in box C.

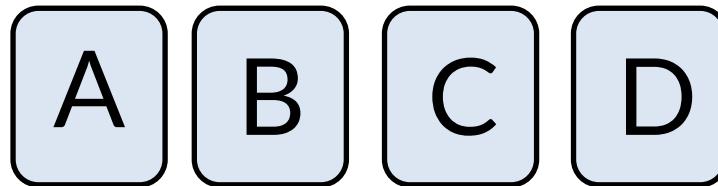
There are now 394 red counters in box C

How many blue counters are there in total?

GCSE Problems of the Day

Foundation & Higher

1 Here are four number cards



The mean of the four cards is 11

A, B and C add together to make 40

A is twice the size of D

The other two cards are the same number.

Find the value of each of the cards.

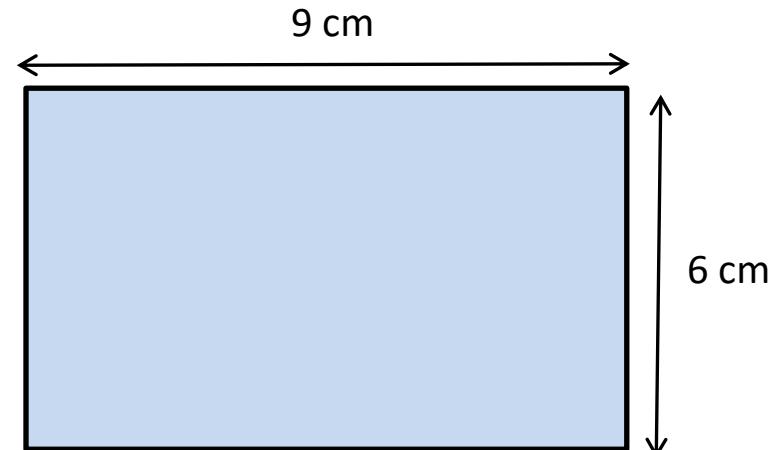
Diagrams are not
to scale.

Tuesday 19th April 2016

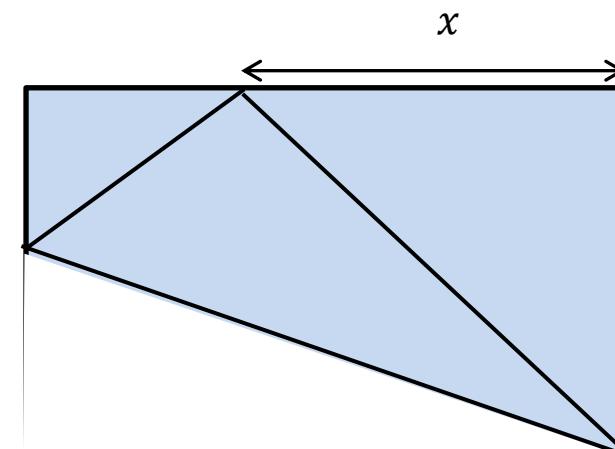
Version 1

2 Higher

Here is a piece of paper.



It is folded over in the following way.

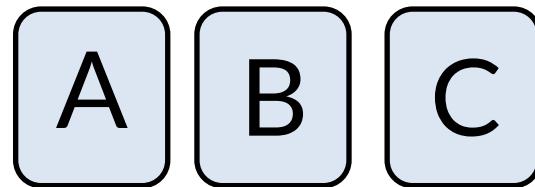


Find the length of x

GCSE Problems of the Day

Foundation & Higher

1 Here are three number cards



The mean of the cards is 0

The sum of A and B is -10

The difference between A and B is 2

Find the range of the cards.

Diagrams are not
to scale.

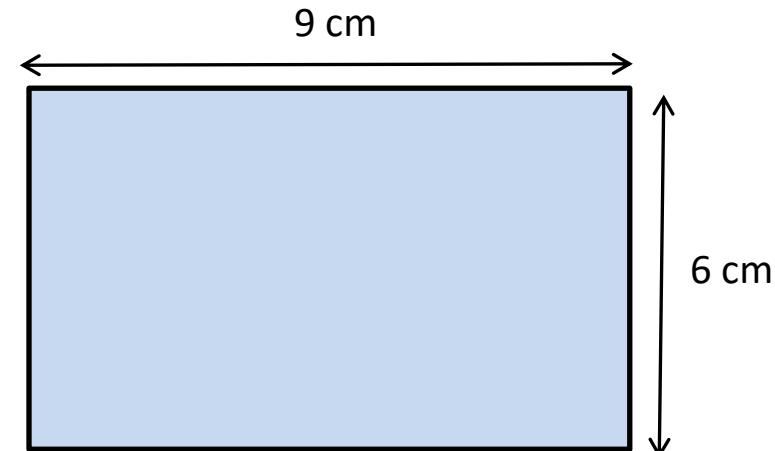
Tuesday 19th April 2016

Version 2

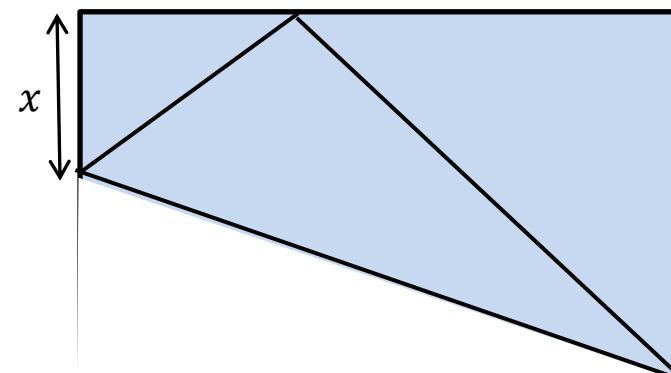
2

Higher

Here is a piece of paper.



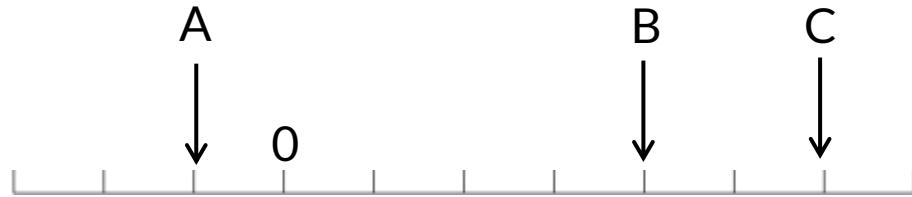
It is folded over in the following way.



Find the length of x

Here is a number line.

Three numbers A, B and C are marked.



The difference between A and C is 28

Draw an arrow on the number line showing where the mean of the numbers A, B and C lies.

Here are three number cards.

$$\sqrt{20}$$

$$\sqrt{45}$$

$$\sqrt{80}$$

Find the mean of these numbers.

Another card is added.

$$\sqrt{a}$$

The mean of all four cards is double the mean of the three cards.

Find the value of a.

GCSE Problems of the Day

Wednesday 20th April 2016

Version 2

Foundation & Higher

1

Here is a number line.

Three numbers A, B and C are marked.



The difference between A and B is 1

Find the value of C

D is the product of A and B.

Draw an arrow on the number line showing where D lies.

Higher
2

Here is some data in a frequency table.

x	frequency
$\sqrt{20}$	6
$\sqrt{45}$	3
$\sqrt{80}$	1

Show that the mean of this data is $\frac{5\sqrt{5}}{2}$

1 40 children take part in a school show.

The ratio of boys to girls in the show is 3 : 5

$\frac{3}{5}$ of the children are dancers.

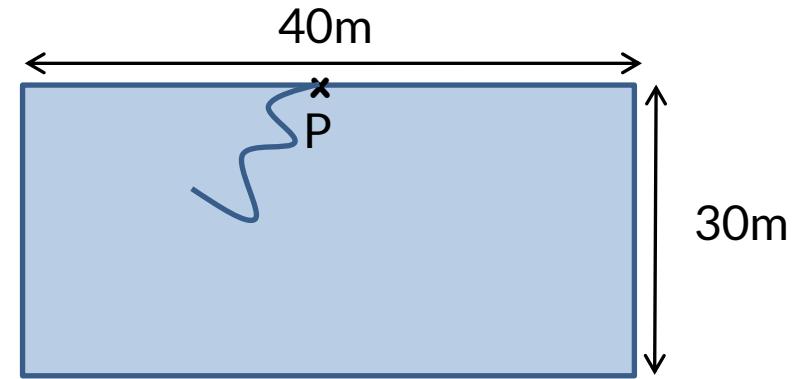
The rest of the children are singers.

There are 3 boys who are dancers in the show.

How many more girls are dancers than singers?

A goat is grazing in a rectangular field.

The length of the field is 40 metres and the width is 30 metres.



The goat is attached to a post, P, which is at the centre of one of the 40 metre sides.

It is attached to the post with an 18 metre long rope.

Find the area of the grass that the goat could graze.

1 40 children take part in a school show.

The ratio of boys to girls in the show is 3 : 5

$\frac{3}{5}$ of the children are dancers.

There are 4 more singers than actors.

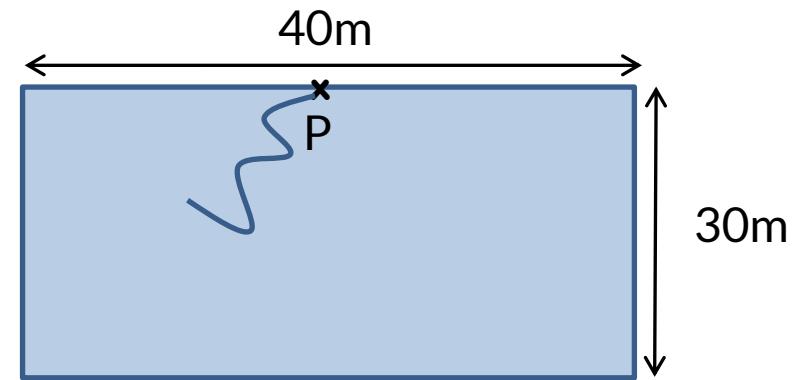
There are twice as many boys who are singers as boys who are actors.

There are 21 girls who are dancers in the show.

How many girls are singers?

A goat is grazing in a rectangular field.

The length of the field is 40 metres and the width is 30 metres.



The goat is attached to a post, P, which is at the centre of one of the 40 metre sides.

It is attached to the post with a 25 metre long rope.

Find the area of the grass that the goat could graze.

GCSE Problems of the Day

Richard is doing a survey.

He asks people to choose their favourite biscuit.

There are four biscuits A, B, C or D.

The percentages for B, C and D are shown.

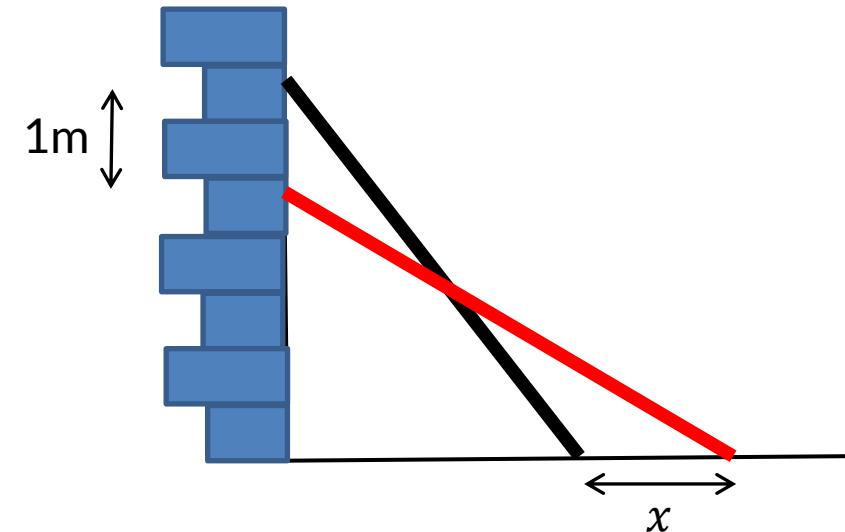
A	B	C	D
	20%	15%	30%

160 people chose B.

How many people chose A?

A 7 metre ladder rests against a wall.

The ladder reaches 5.5 metres up the wall.



The ladder is then moved so that it now reaches 1 metre less than last time.

How much further is the base of the ladder now from the wall? It is the distance marked x in the diagram?

Richard is doing a survey.

He asks people to choose their favourite biscuit.

There are four biscuits A, B, C or D.

The fraction of people who choose B, C and D is shown in the table.

A	B	C	D
	$\frac{1}{5}$	$\frac{3}{10}$	$\frac{7}{20}$

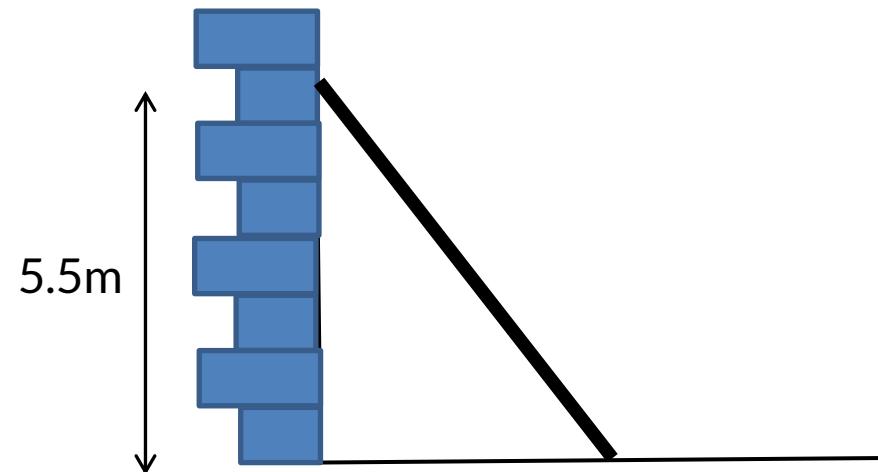
36 people chose A.

How many people chose B?

2
Higher

A 7 metre ladder rests against a wall.

The ladder reaches 5.5 metres up the wall.



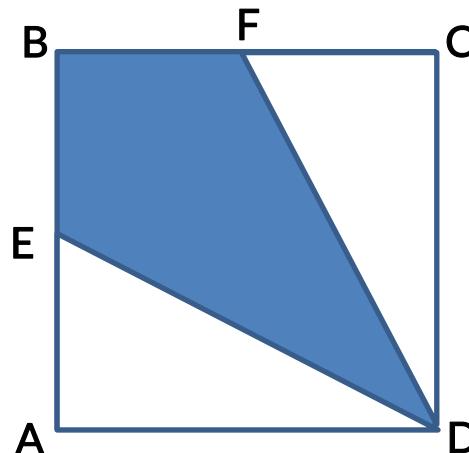
The ladder is then moved so that it now reaches 1 metre less than last time.

How much further is the base of the ladder now from the wall?

GCSE Problems of the Day

ABCD is a square that has sides of length 3cm.

E and F are the midpoints of two of the sides.



Find the area of the shaded region.

A jar contains some cookies.

The weight of the jar and cookies is 700g.

Meghan eats $\frac{4}{5}$ of the cookies.

The weight of the jar and cookies is now 400g.

How much does the jar weigh?

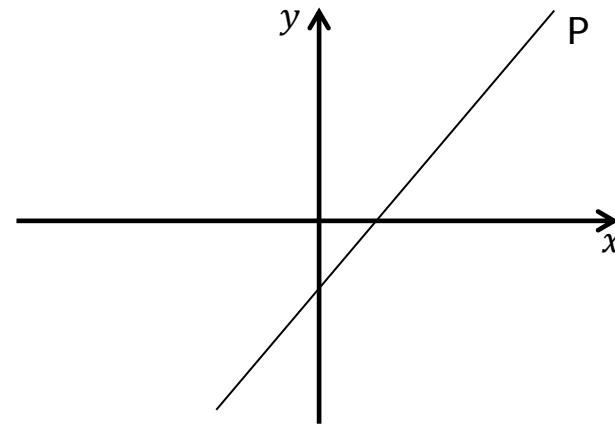
Each cookie weighs 25g.

How many cookies were in the jar at the start?

GCSE Problems of the Day

Higher 1

The line P has the equation $y = 3x - 2$



The line P is reflected in the y -axis.

Find the equation of the line.

The line P is reflected in the x -axis.

Find the equation of the new line.

Higher 2

If

$$x \triangleq y = (x + y)^2 - (x - y)^2$$

Calculate

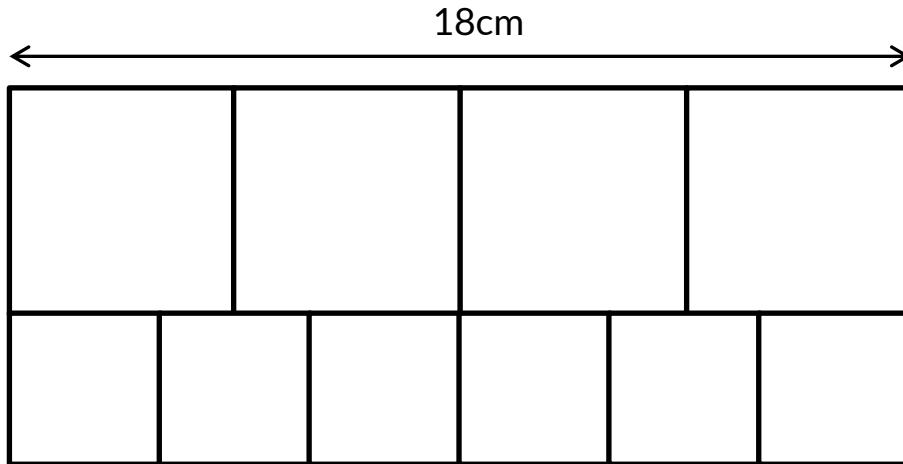
$$6 \triangleq 4 = (x + y)^2 - (x - y)^2$$

$$\sqrt{15} \triangleq \sqrt{15} = (x + y)^2 - (x - y)^2$$

GCSE Problems of the Day

1 A rectangle is made up of 4 large and 6 small squares.

The length of the rectangle is 18cm.



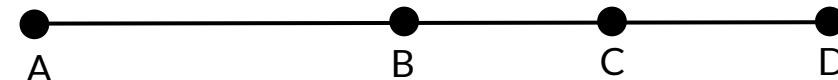
Find the perimeter of the rectangle.

2 Mary is doing a fitness test.

- She starts at A and runs to B
- She then returns to A
- She then runs to C and then returns to A
- She then runs to D and then returns to A

$$BC = CD = 22 \text{ metres}$$

In total Mary runs 318 metres.

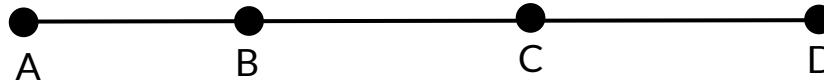


Find the distance between A and B.

GCSE Problems of the Day

Higher 1

The points A, B, C and D lie in a straight line.



$$AD = 82\text{cm}.$$

The ratio of the distance AB to BC is 2 : 5

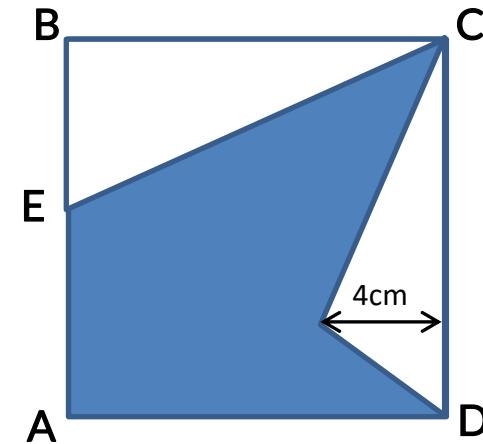
The ratio of the distance BC to CD is 3 : 4

Find the distance BC.

Higher 2

A square ABCD has sides of x cm.

$$BE = 6\text{cm}$$



The percentage of the square that is shaded is 60%.

Find the value of x

GCSE Problems of the Day

Wednesday 27th April 2016

Maryam makes dolls.

She uses the following formula to work out the cost, £C, of making n dolls.

$$C = 5n + 432$$

Maryam makes 170 dolls.

She sells them for £8.50 each.

How much profit does she make?

Taylor has some buttons.

Wendy has twice as many buttons as Taylor.

Yusif has 12 more buttons than Taylor.

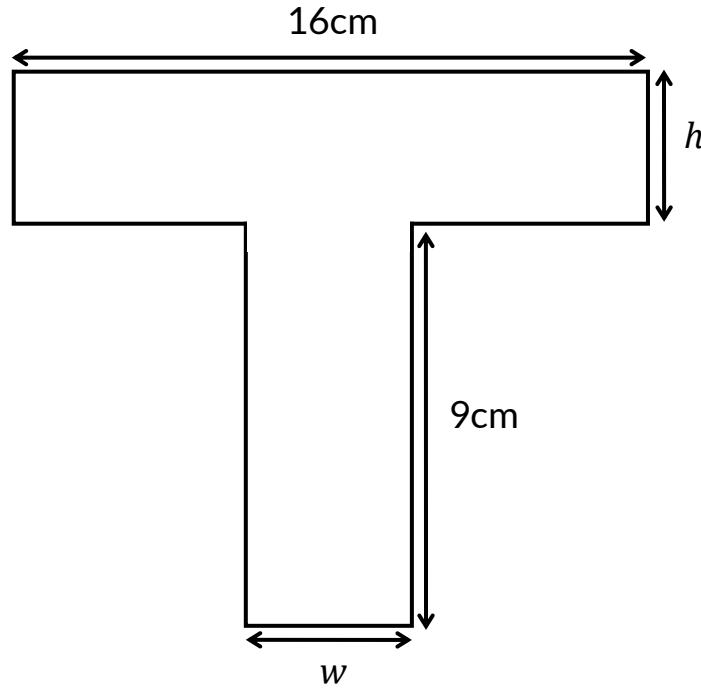
In total they have 260 buttons.

How many buttons does Yusif have?

GCSE Problems of the Day

Wednesday 27th April 2016

Higher 1



The perimeter of the shape is 60cm.

The area of the shape is 116cm^2

Find the length of the sides marked w and h

Higher 2

Some data is shown in a table.

x	frequency, f
4	10
5	a
6	9
7	5
8	2

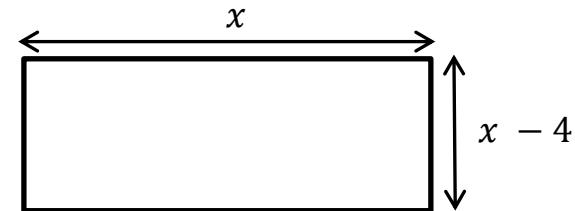
The mean of the data in this table is 5.3

Find the value of a

GCSE Problems of the Day

- 1 Mr Khan buys some potatoes and carrots.
35% of the total weight are carrots.
There are 2.7kg more potatoes than carrots.
How many kg of potatoes does he have?

Here is a rectangle.



The length of the rectangle is x cm
The width of the rectangle is $(x - 4)$ cm.



The perimeter of the shape is 58cm.
Find the value of x

GCSE Problems of the Day

Higher
1

A parcel company delivers two sizes of box.

Size of box	Weight of box	Cost of delivery
Large	5.6kg	£6
Small	4kg	£5.50

One day the company delivers 25 boxes.

The total weight of the boxes is 133.6kg.

How much does it cost to send the boxes?

Higher
2

James has some algebra expressions cards.

$$\begin{array}{ccc} y + 4 & 2y & 3y - 1 \end{array}$$

Andy also has some too.

$$\begin{array}{cccc} y & y & y + 1 & 2y + 9 \end{array}$$

If the mean of James' cards is equal to the mean of Andy's cards, find the value of y .

GCSE Problems of the Day

1 Adam is writing 720 as a product of its prime factors.

He writes his answer in index form.

$$720 = a^4 \times b^2 \times c$$

Find the values of a , b and c

Here is another number Q.

It is written as the product of its prime factors.

$$Q = 2^2 \times 3 \times 5^3 \times 11$$

Find the highest common factor of 720 and Q.

Eggs are packed into three different sized boxes small, medium and large.

The number of eggs in each box is shown in the table.

Small	Medium	Large
6 eggs	10 eggs	15 eggs

Vish has 120 full boxes.

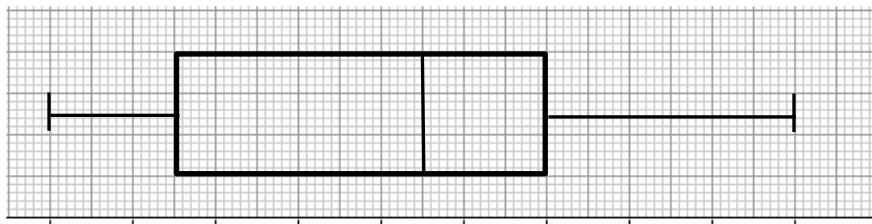
- 35% of the boxes are small.
- $\frac{2}{5}$ of the boxes are medium.
- The rest are large.

How many eggs does Vish have in total?

GCSE Problems of the Day

Higher 1

The box plot shows the heights in centimetres of 80 people.

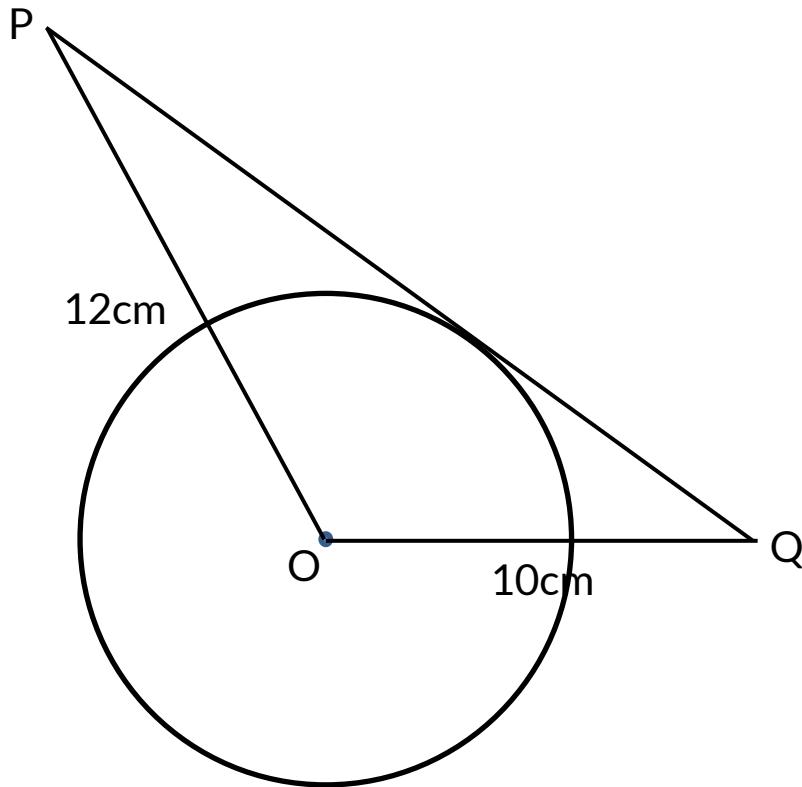


The median height is 172cm.

The interquartile range is 18cm.

Find the height of the tallest person.

Higher 2



PQ is a tangent to the circle with centre O.

The radius of the circle is 8cm.

$OQ = 10\text{cm}$ and $OP = 12\text{cm}$

Find the area of the triangle OPQ.

Give your answer in the form $a + b\sqrt{5}$

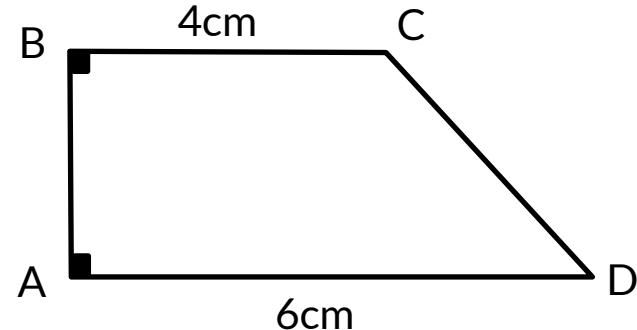
GCSE Problems of the Day

300 students are asked how they travel to school.

- 60% say they walk to school.
- The remaining travel by car or by bus.
- The ratio of students who travel by car to those that travel by bus is 2 : 3

How many more students walk to school than travel by car?

ABCD is a trapezium.



$BC = 4\text{cm}$ and $AD = 6\text{cm}$

The area of the trapezium is 25cm^2

Find the length of CD.

GCSE Problems of the Day

Higher
1

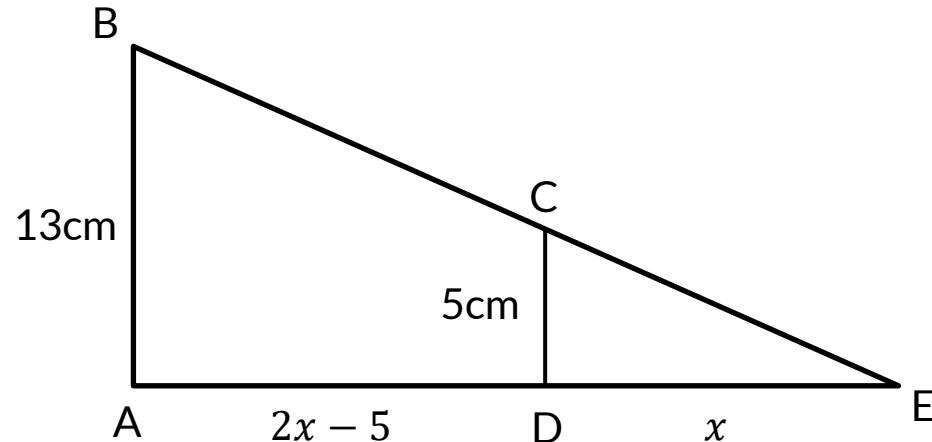
A group of students are asked how they travel to school.

- 55% say they walk to school.
- The remaining travel by car or by bus.
- The ratio of students who travel by car to those who travel by bus is 2 : 3

140 more students walk than travel by bus.

How many students travel by car?

Higher
2



AB is parallel to CD.

$$AB = 13\text{cm}, CD = 5\text{cm}$$

$$AD = (2x - 5) \text{ cm} \text{ and } DE = x \text{ cm}$$

Find the area of the trapezium ABCD.

GCSE Problems of the Day

280 people attend a theatre show.

An adult ticket costs £6

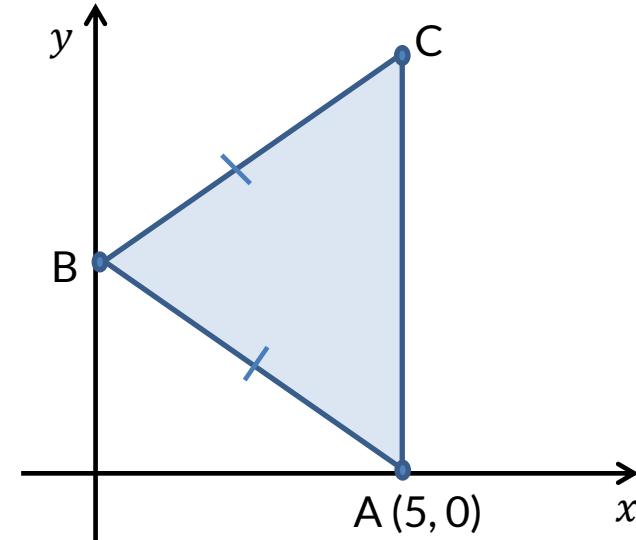
$\frac{4}{7}$ of the people are children.

In total the theatre take £1120 in ticket sales.

How much does a child ticket cost?

ABC is an isosceles triangle.

The area of the triangle shown is 30 units²

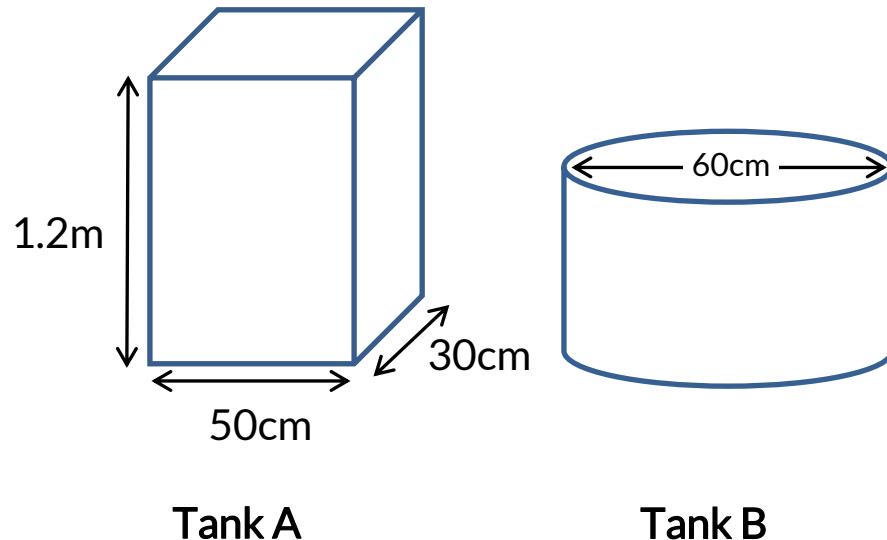


Find the co-ordinates of the point B.

GCSE Problems of the Day

Higher

1 Here are two water tanks.



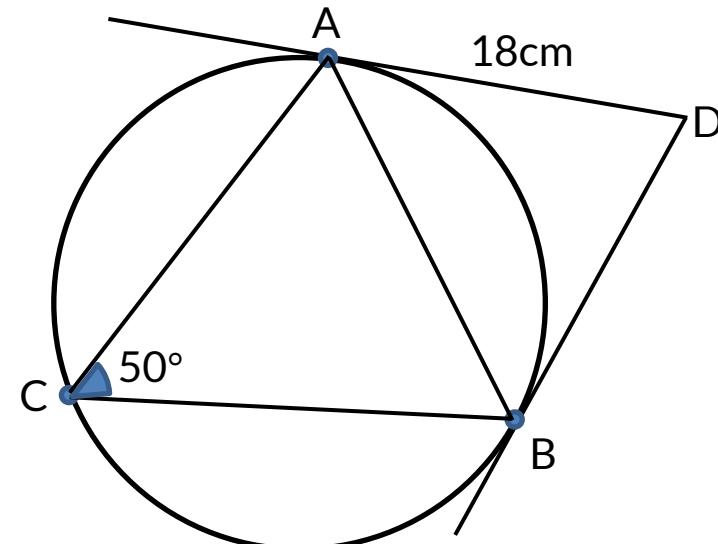
Tank A is $\frac{3}{5}$ full. Tank B is empty.

Half of the water from A is poured into B.

Tank B is now full.

Calculate the height of tank B.

2 Higher



A, B and C lie on the circumference of the circle.

Tangents are shown at points A and B.

$AD = 18\text{cm}$

Angle $ACB = 50^\circ$

Find the length of AB.

GCSE Problems of the Day

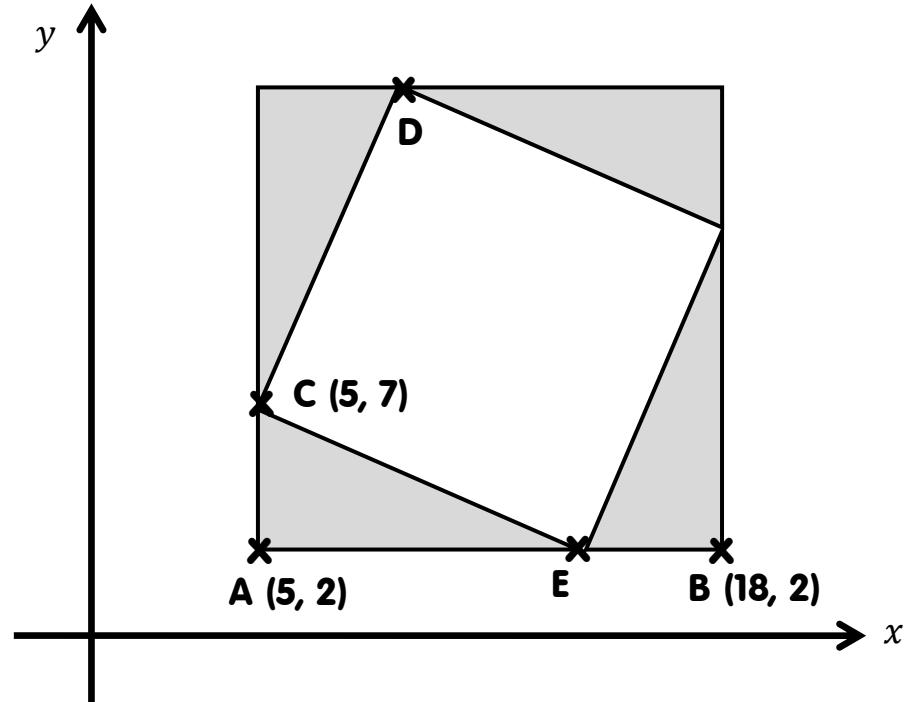
Steve and Gina were walking from Redtown to Bluesville at a constant speed.

At 3pm they were half way there.

At 4.20pm they were three quarters of the way there.

How long did the journey last?

Four congruent triangles are shown below.



The coordinates of three points are given.

A (5, 2), B (18, 2) and C (5, 7)

- (a) Find the coordinates of D.
- (b) Find the length of CE.

GCSE Problems of the Day

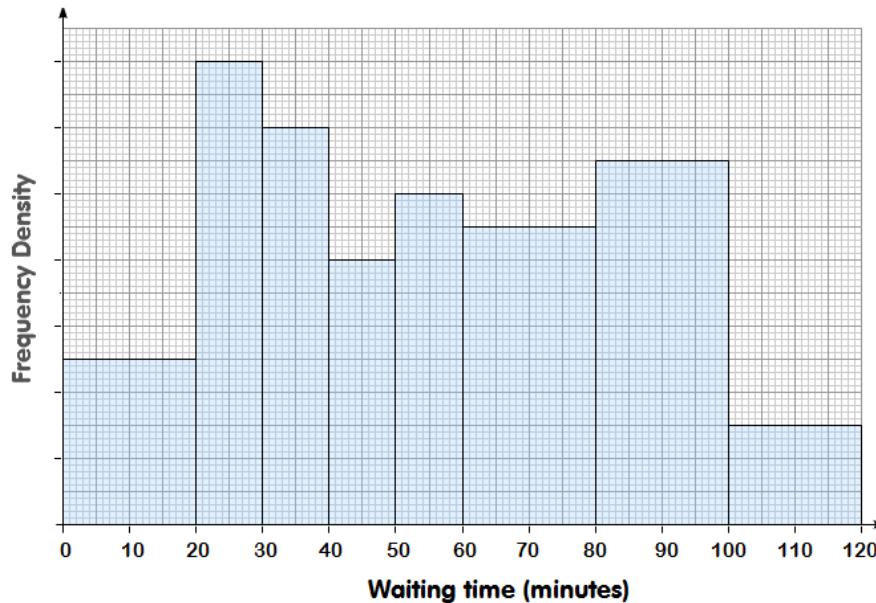
Higher

1

A hospital has some targets for its A&E department.

- 50% of people will be seen within one hour
- 80% of people will be seen within one and a half hours
- All people will be seen within two hours

The histogram shows the waiting times of patients for March.



Did the A&E department meet all the targets for March?

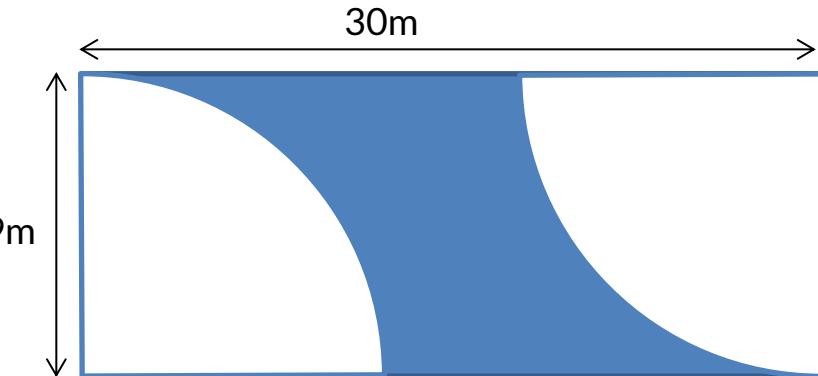
Show workings to support your answer.

2

Higher

The floor in an art gallery is to be painted blue.

The diagram shows the region of the floor to be painted.



A tin of paint covers 6.4m^2

Each tin of paint costs £12.95

How much does it cost to paint the floor?

GCSE Problems of the Day

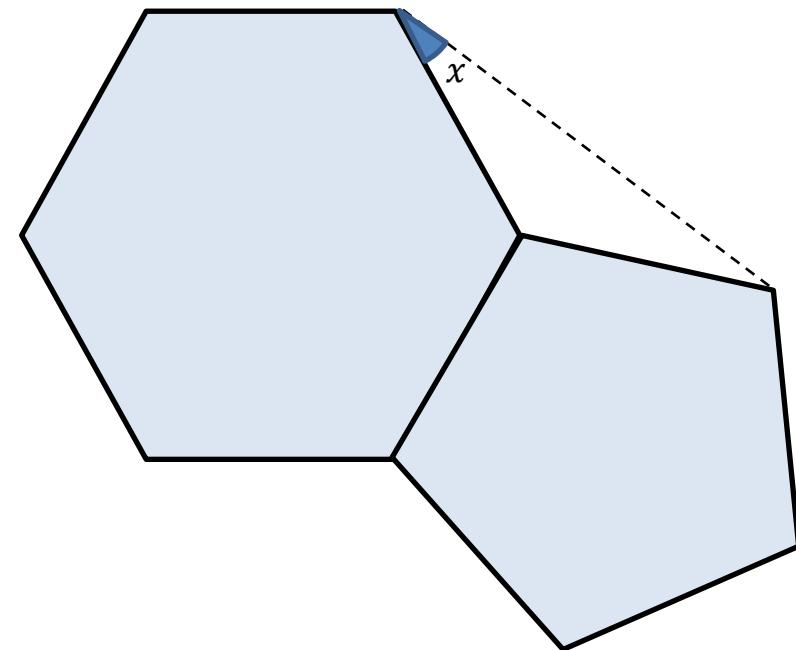
A box contains some coloured pencils.

- There are 25 more red pencils than green pencils.
- $\frac{2}{5}$ of the red pencils are blunt.
- $\frac{1}{3}$ of the green pencils are blunt.

Toby sharpens all of the blunt pencils.

If Toby sharpens 15 green pencils, how many red pencils does he sharpen?

The shape below is made up of a regular hexagon and a regular pentagon.



Find the size of the angle marked x

Give reasons for your answer.

GCSE Problems of the Day

Higher

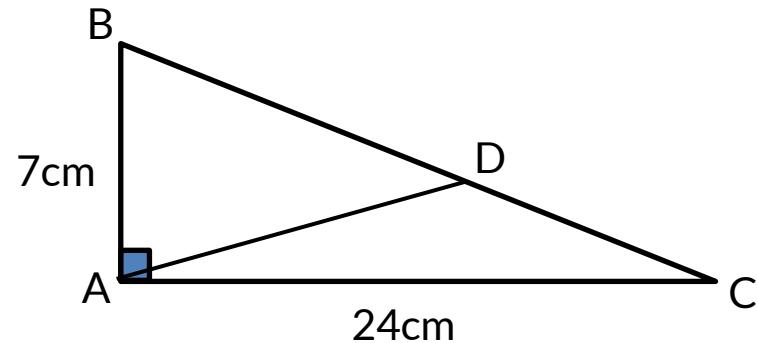
1 Ahmed, Boris and Carl have some marbles.

- Ahmed and Boris together have 65 marbles.
- Boris and Carl together have 48 marbles.
- Ahmed and Carl together have 55 marbles.

How many marbles do they have in total?

2 Higher

ABC is a right-angled triangle.



$$AB = 7\text{cm}$$

$$AC = 24\text{cm}$$

$$BD : CD = 3 : 2$$

Find the length of AD.

GCSE Problems of the Day

Four points lie on a straight line.



The distance AD is 129 metres.

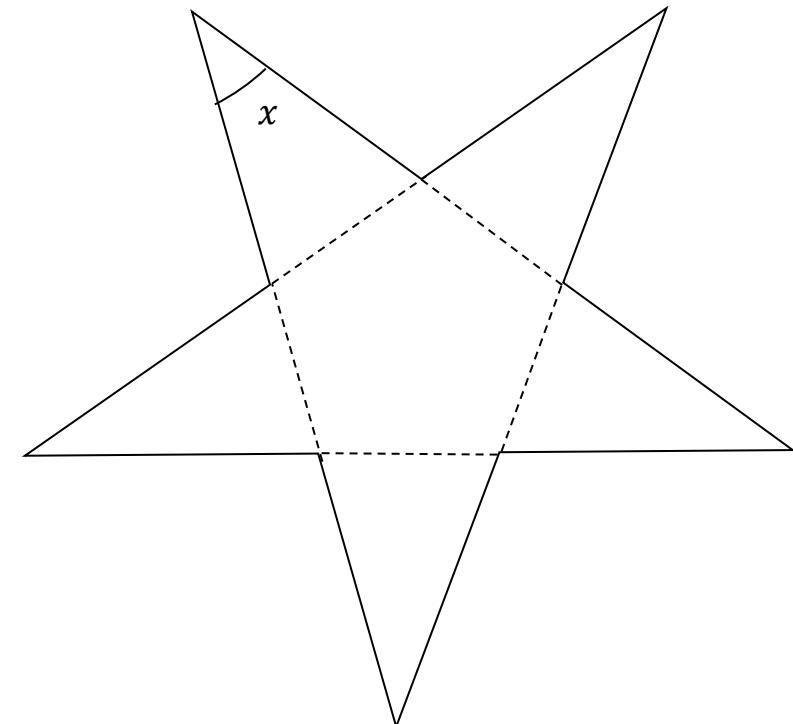
The distance BC is 15 more metres than the distance CD.

The distance AB is twice the distance BC.

Calculate the distance from B to C.

The diagram shows a five pointed star.

All of the ten sides are the same length.

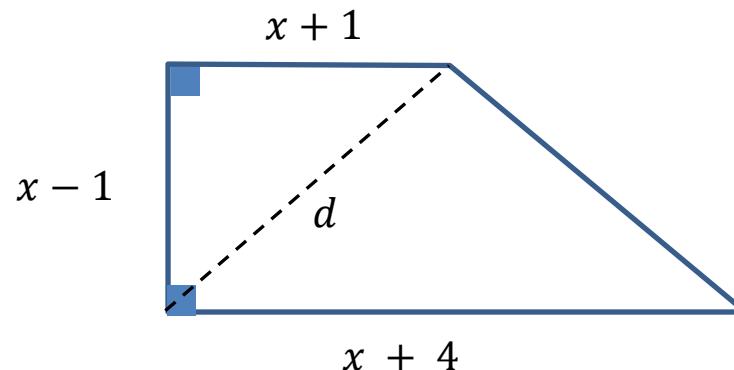


Find the size of the angle marked x

GCSE Problems of the Day

Higher

1 The area of the trapezium is 30 cm^2

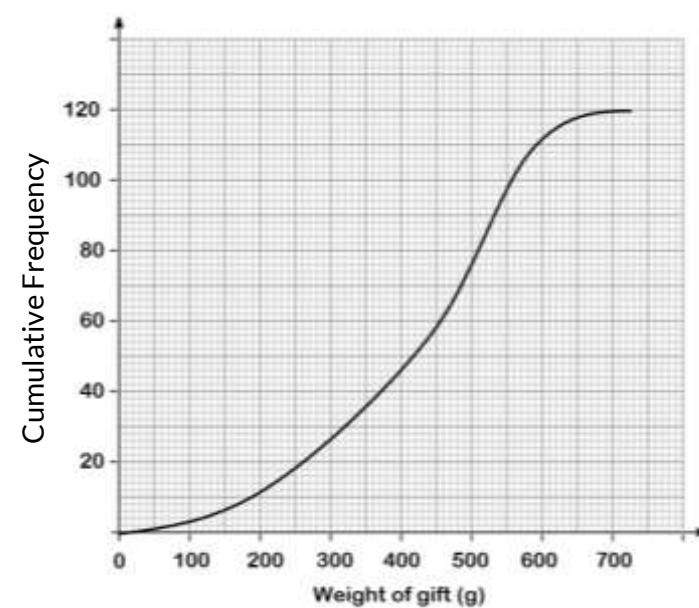


Find the length of d

2 Higher

Gemma sells hand-made gifts.

The cumulative frequency diagram shows the weights of 120 gifts that she sold this month.



She sends the gifts using a courier service.

The table shows the cost to send the gifts.

<u>Charges</u>	
500g or less	£2.50 per item
More than 500g	£4 per item

How much does it cost her to send the gifts this month?

GCSE Problems of the Day

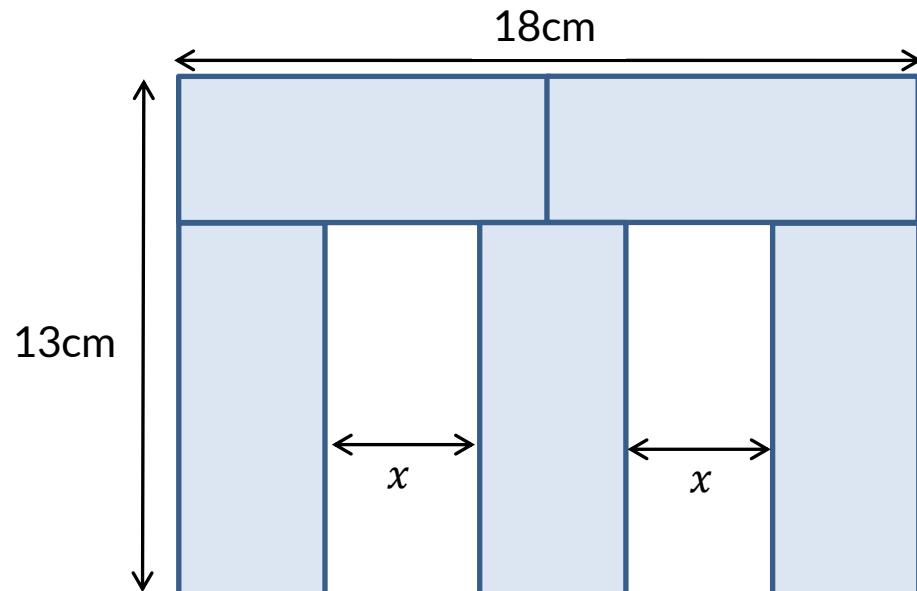
Wednesday 11th May 2016

Foundation & Higher

1 Amy has some identical rectangular blocks.



She uses five of these blocks to make a tower.



Find the distance marked x

2 Foundation & Higher

Two cars are travelling from A to B.

The first car travels at an average speed of 40mph.

The first car leaves A at 13:30 and arrives at B at 16:00

The second car travels at an average speed of 50mph.

If the second car sets off at the same time, how much earlier does the car arrive at B?

GCSE Problems of the Day

Wednesday 11th May 2016

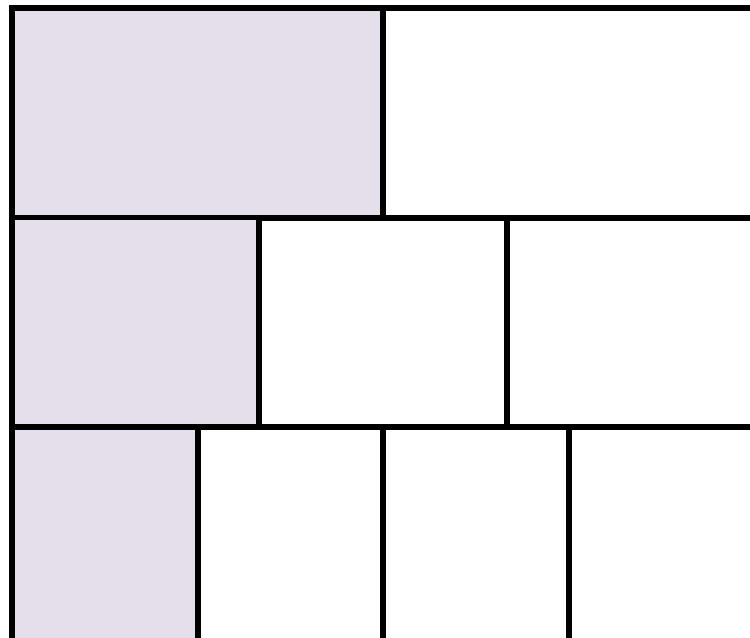
Higher

1

The diagram shows three rows of rectangles.

Each row in the diagram is the same height.

- The 1st row is made up of 2 equal sized rectangles.
- The 2nd row is made up of 3 equal sized rectangles.
- The 3rd row is made up of 4 equal sized rectangles.

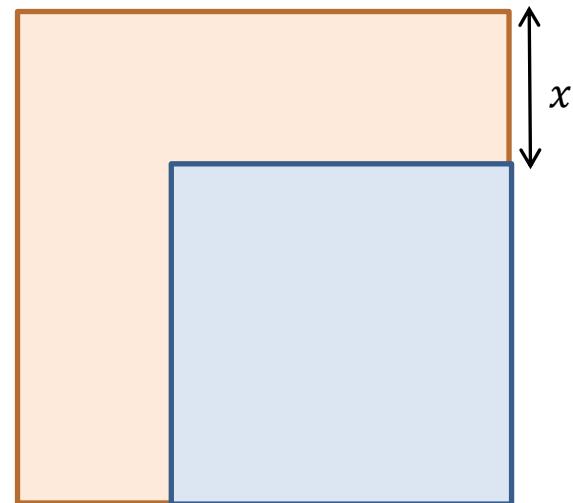


Find the fraction of the shape that is shaded.

2

The diagram shows a square inside another square.

Higher



The area of the blue square is 32cm^2

The area of the orange region is 40cm^2

Find the distance marked x in the diagram.

GCSE Problems of the Day

- (a) Here are two number cards.



20% of A equals 36

15% of B equals 30

Find $B - A$

- (b) Here is another number card.

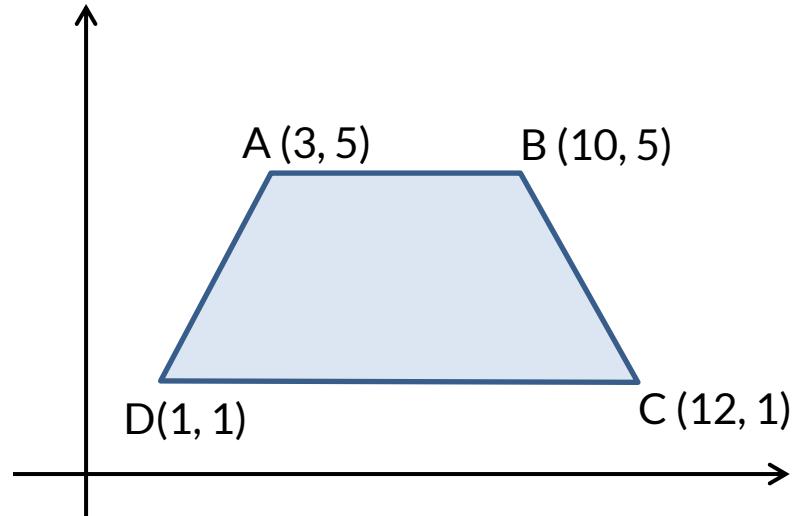


40% of C equals 18

Find $\frac{1}{3}$ of C

The diagram shows a trapezium ABCD.

The co-ordinates of the four vertices are shown.



Find the area of the trapezium.

GCSE Problems of the Day

Higher

1 Here are two number cards.

A

B

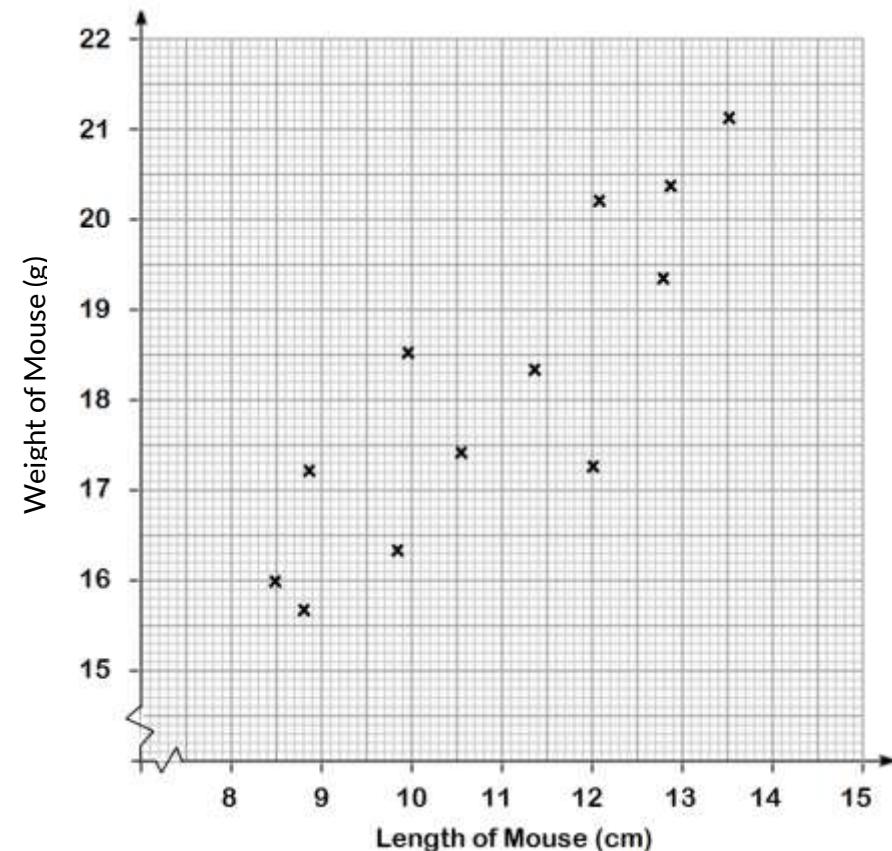
A is 12 more than B

20% of A is equal to 15% of B

Find $\frac{1}{3}(A + B)$

Higher

2 The scatter diagram shows the length and weight of 12 pet mice.



Megan selects two of the mice at random.

What is the probability that the two mice she selects both weigh over 19g?

GCSE Problems of the Day

Mr and Mrs Spencer and their two children are going to a theme park.

The entry price to a theme park is;

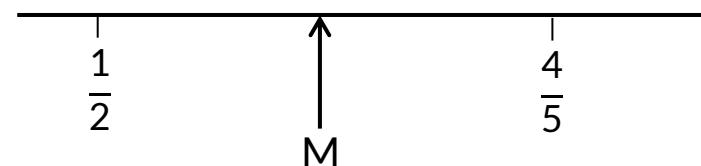
Adult	£20
Child	£14

Today there is a special offer on.

- $\frac{1}{5}$ off the price of an adult ticket.
- 35% off a child ticket.

How much does it cost the family to go into the theme park?

Two points are marked on the number line.
M is exactly halfway between the two points.



Find the value of M.

Give your answer as a fraction in its simplest form.

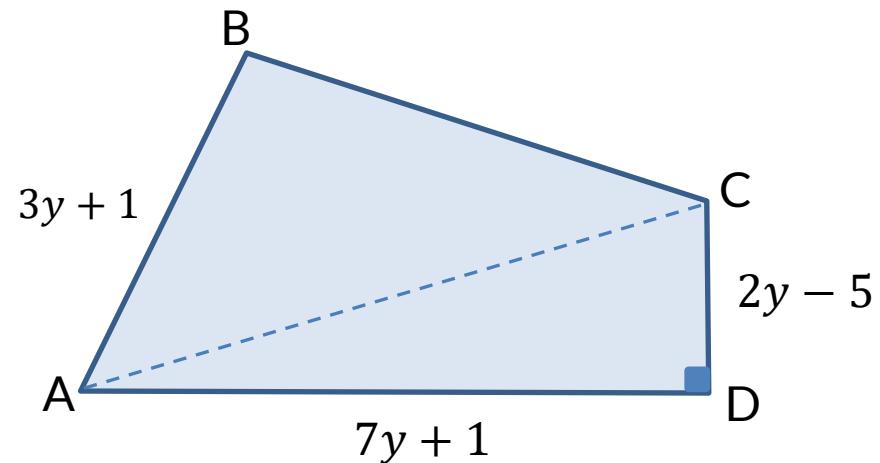
GCSE Problems of the Day

Higher

- 1 Martin and Brian are driving from Leeds to London.
 The distance is 270km.
 They both set off at 9am.
 When Martin reaches London Brian still has 48km to drive.
 Brian arrives in London 40 minutes after Martin.
 Brian and Martin each drive at a constant speed.
 What times does Martin arrive in London?

Higher

- 2 In the quadrilateral below $AB = BC$



The perimeter of the shape is 178cm.
 Find the distance AC.

GCSE Problems of the Day

A florist is making some bunches of flowers for a wedding.

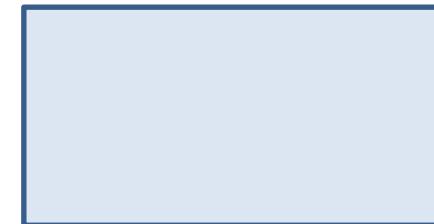
Each bunch contains some carnations, roses and lilies.

Each bunch is the same.

- A bunch contains 40 flowers
- 60% of the flowers are lilies
- The ratio of carnations to roses is 3 : 5

The florist only has 130 carnations.

How many bunches of flowers can the florist make?



The perimeter of the rectangle is 46 cm.

Find the area of the rectangle.

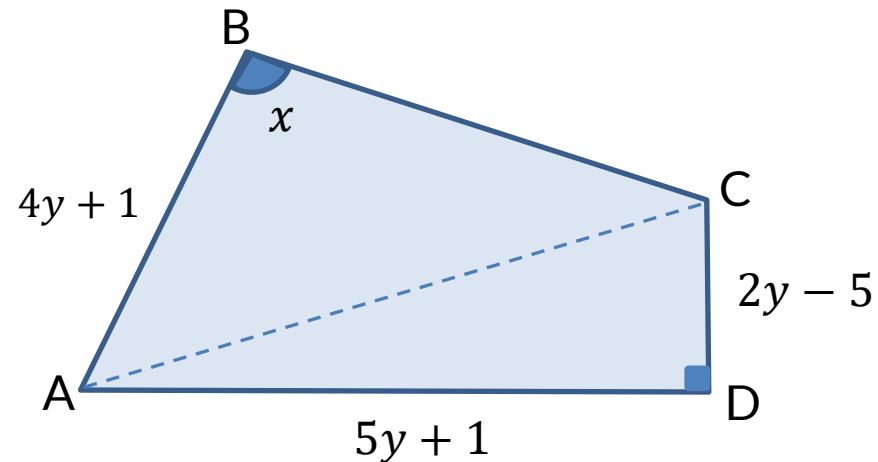
GCSE Problems of the Day

Higher

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 Brian arrives in London 40 minutes after Martin.
 Brian and Martin each drive at a constant speed.
 What times does Martin arrive in London?

Higher

- 2 In the quadrilateral below $AB = BC$



The perimeter of the shape is 178cm.
 Find the angle marked x

GCSE Problems of the Day

Wednesday 18th May 2016

Foundation & Higher

1

A bag contains some red, blue and white counters.

The probability of getting a red counter is $\frac{1}{3}$

The ratio of blue to white counters is 2 : 3

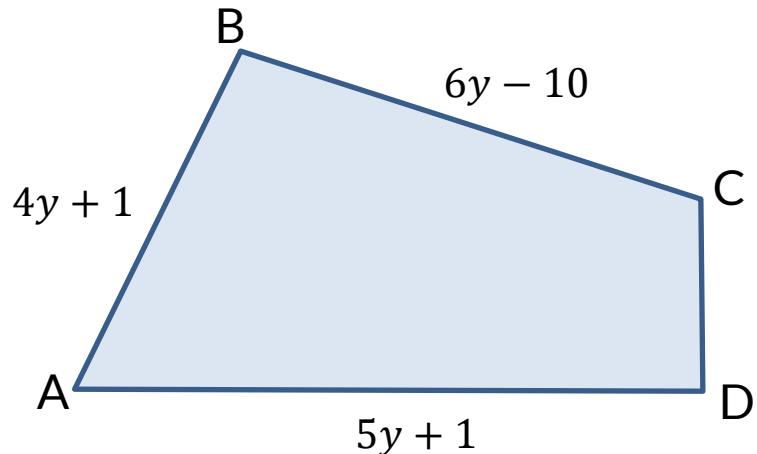
There are 18 white counters in the bag.

What is the probability of getting a blue counter from the bag?

2

The diagram shows a quadrilateral ABCD.

The perimeter of the quadrilateral is 80cm.



AB is the same length as BC.

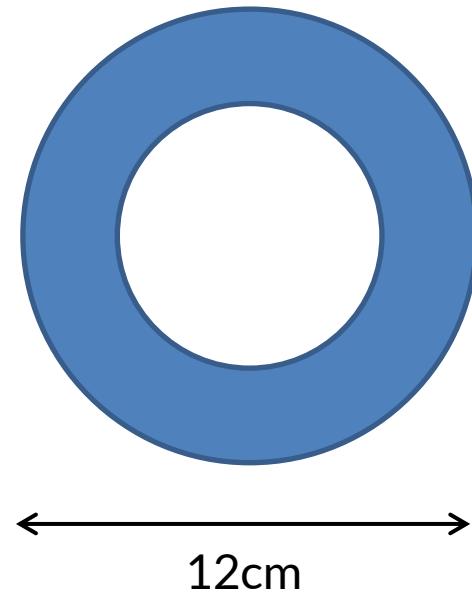
Find the length of CD.

GCSE Problems of the Day

Wednesday 18th May 2016

Higher

1 A shape is made up two circles.



The diameter of the large circle is 12cm.

The area of the shaded region is 50cm^2

Find the diameter of the smaller inner circle.

2 Higher

A spinner can land on either a 10, 20 or 30

The table shows the probability that it lands on each value.

Outcome	10	20	30
Probability	$2x + 0.1$	$3x - 0.3$	x

The spinner is spun twice.

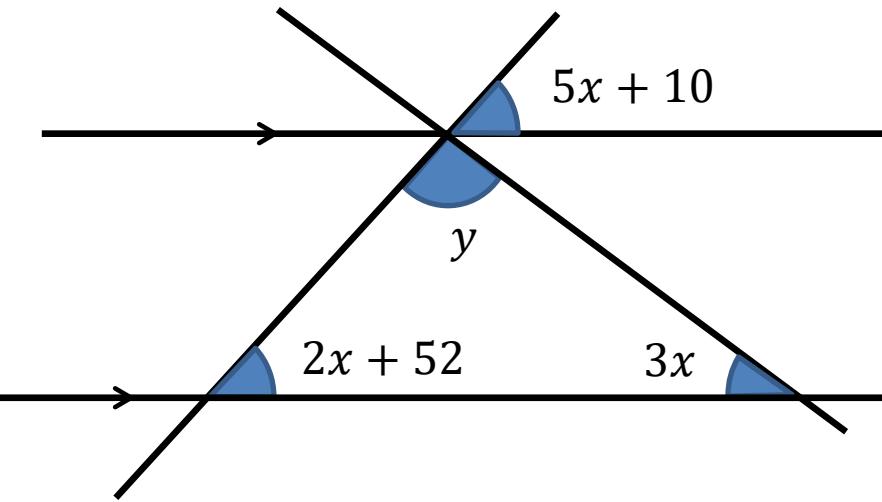
Find the probability that the total scored from the two spins is exactly 40.

GCSE Problems of the Day

Mike earns £1250 per month.

- 30% of his earnings are spent on rent.
- He also buys a new TV for £249
- He saves $\frac{1}{4}$ of what he has left.

How much money does he have left now?



Find the size of the angle marked y

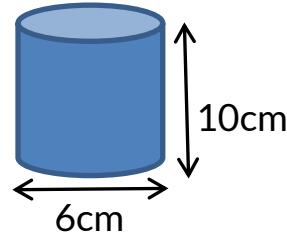
GCSE Problems of the Day

Higher

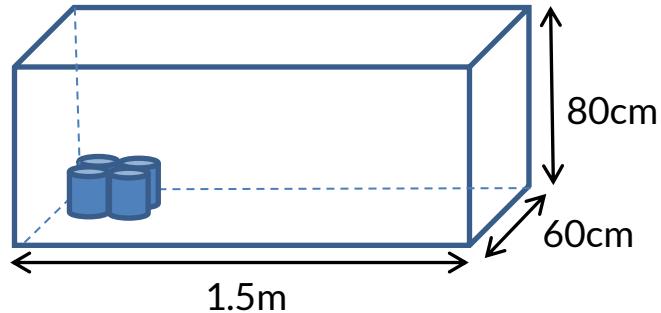
1

Empty cans are packed into boxes.

The diameter of each can is 6cm and the height is 10cm.



The measurements of the box are shown below.

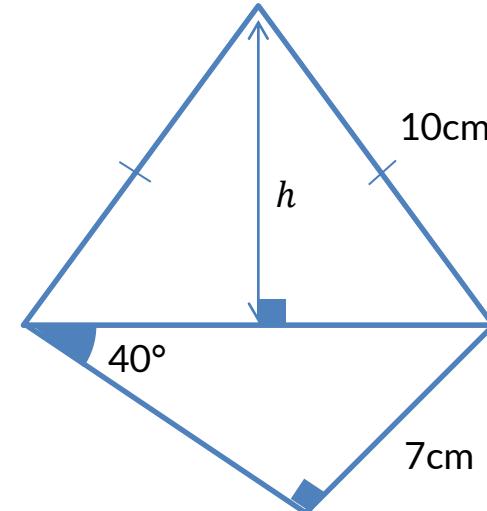


Cans are packed into the box until it is full.

How many cans can be packed into the box?

Higher

2



Find the height, h , of the triangle shown.

GCSE Problems of the Day

A machine mixes red and white paint in the ratio 4 : 1

- Red paint costs £1.80 per litre
- White paint costs 85p per litre

The machine fills 3 litre tins with this paint mixture.

Each 3 litre tin sells for £5.99

How much profit is made on each tin of paint?

Solve the following equation.

$$\frac{11}{2}p - 1\frac{3}{7} = 2.5$$

Give your answer as a fraction in its simplest form.

GCSE Problems of the Day

Higher

1 80 people take part in a race.

The ratio of children to adults in the race is 2 : 3

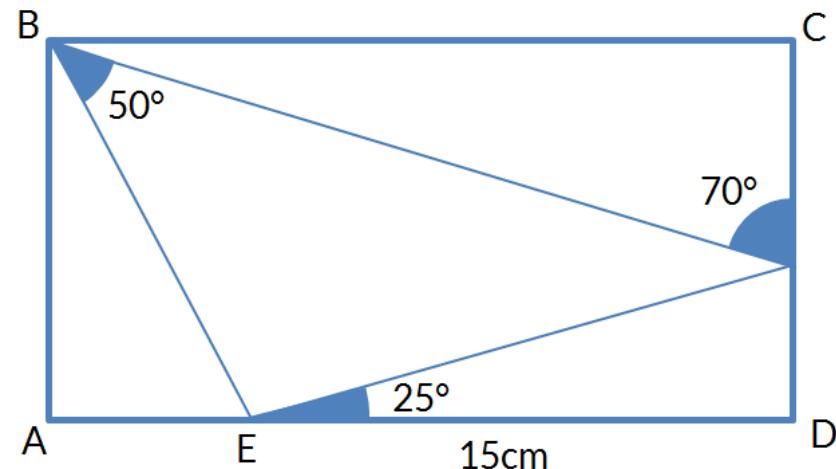
The mean time for the adults is 2 mins 15 seconds.

The mean time for all 80 people is 3 mins.

Find the mean time for the children.

2 Higher

ABCD is a rectangle.



DE = 15cm.

Find the length of BC.