1st August

Corbettmaths

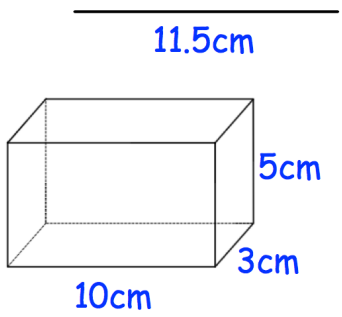
James is a student of a class of 29 students, 9 of which wear glasses.

1503 students attend the school.

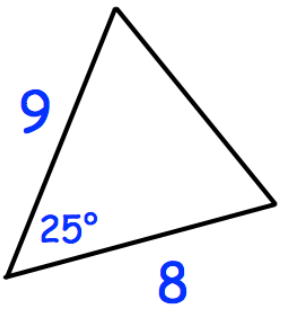
Use this information to estimate how many students in the school wear glasses.

Simplify fully

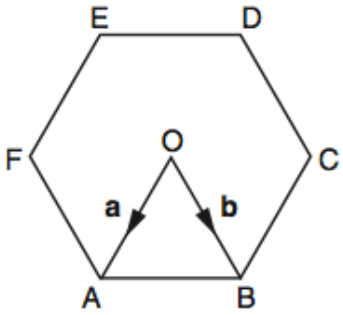
$$\frac{x^2 + 8x}{x^2 - 64}$$



Is it possible to fit a thin, straight rod that is 11.5cm entirely inside the box?



Find the area of the triangle.



Find in terms of **a** and **b**

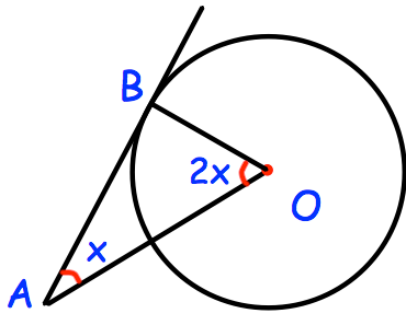
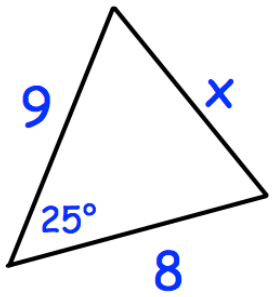
BA

AE

Name: _____ 5-a-day Higher

2nd August

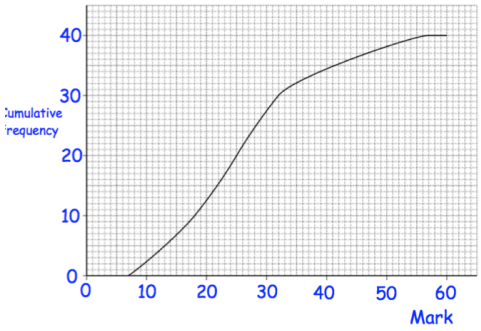
Corbettmaths

The width of a rectangle is 50cm, correct to 2 significant figures. The length of a rectangle is 115cm, correct to 3 significant figures.	Calculate the lower bound for the area of the rectangle.
What percentage of a distribution lies between the lowest value and the upper quartile?	
	Find x
The population of a country increases by x % each year. At the beginning of 2014 the population of the country was 24,000,000 At the beginning of 2017 the population was 26,996,736	Find the value of x
	Find the length of the side labelled x.

Name: _____ 5-a-day Higher

3rd August

Corbettmaths



Estimate the median mark.

Simplify

$(2y^5)^3$

Freddie and Martha have dentist appointments.

The probability that Freddie is on time to his appointment is 0.9
The probability that both Freddie and Martha are on time to their appointments is 0.72

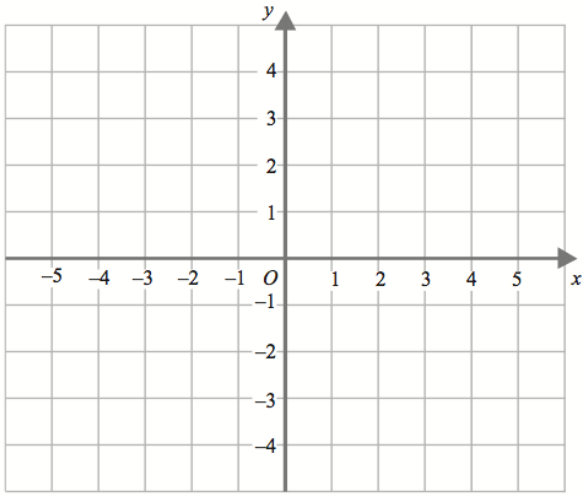
Find the probability that both people are late for their appointments

On the grid, clearly label the region which satisfies all three inequalities below

$y < 2$

$y > 2x - 1$

$x + y + 3 > 0$



Name: _____ 5-a-day Higher

4th August

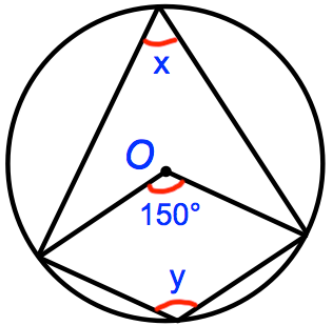
Corbettmaths

Simplify $\sqrt{56} \div \sqrt{7}$

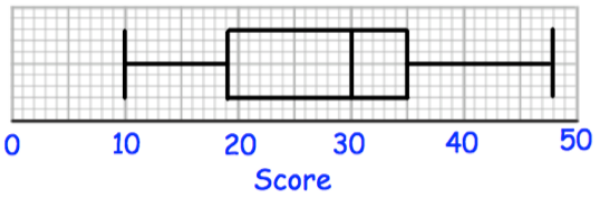
m is an irrational number such that

$3 < m < 4$

Write down a possible value of m



Find x and y



Find the interquartile range.

What percentage of people scored under 35 marks?

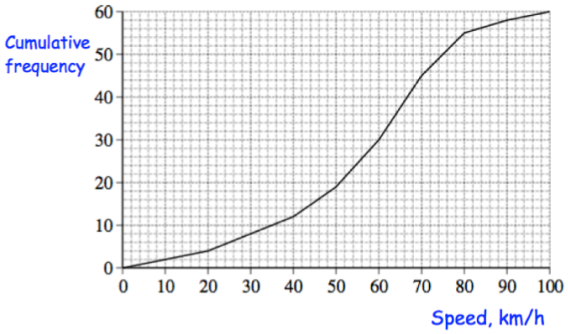
Two people are selected at random.

What is the probability both scored under 35 marks.

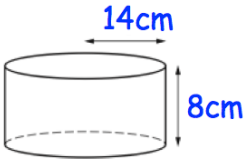
Name: _____ 5-a-day Higher

5th August

Corbettmaths



Estimate the median.



A solid metal cylinder is melted down and the metal is made into solid spheres of radius 4cm.

How many spheres are made?

Solve $3x^2 - 12 = 0$

In a netball league there are 10 teams.
Each team plays each other team once.

Work out the total number of matches played.

In 1980 a man's age was the square root of the number of the year of his birth.

When was he born?
Did he have to join the forces in the First World War or the Second World War?

Name: _____ 5-a-day Higher

6th August

Corbettmaths

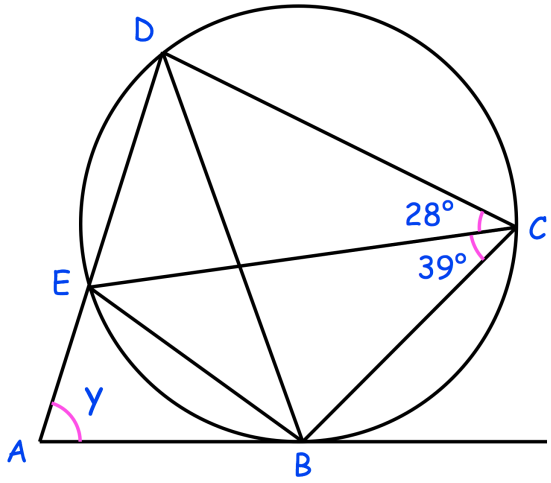
Evaluate

$36^{\frac{1}{2}}$

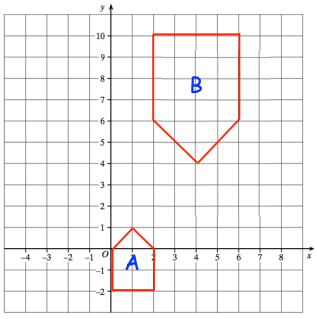
Solve $2x^2 + 5x - 12 = 0$

Shown below is cyclic quadrilateral BCDE
AB is a tangent to the circle.
AED is a straight line.

Work out the size of angle y.



Describe fully the single transformation that maps shape A onto shape B

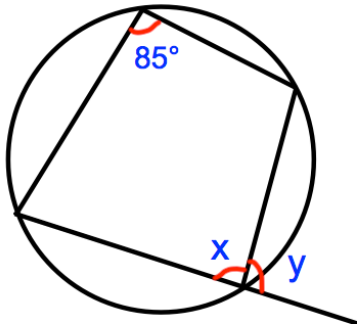


Name: _____ 5-a-day Higher

7th August

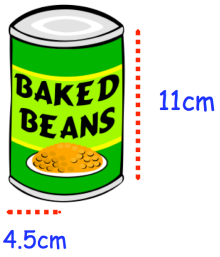
Corbettmaths

Simplify $\sqrt{1000}$



Find x and y

A can of baked beans has a paper label wrapped around the outside.
The can has a height of 11cm and radius of 4.5cm.
The label covers the entire height of the can.
The label has a 1cm overlap vertically so that it can be stuck together
Calculate the area of the label.



Solve $3x^2 - 7x + 4 = 0$

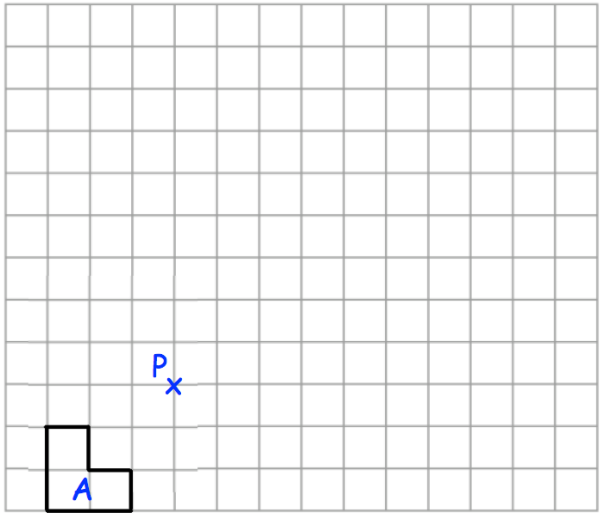
Name: _____ 5-a-day Higher

8th August

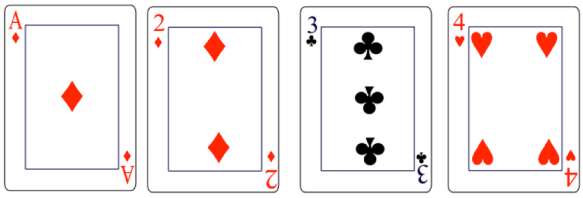
Corbettmaths

Solve, giving your answers to one decimal place.

$x^2 - 6x - 20 = 0$

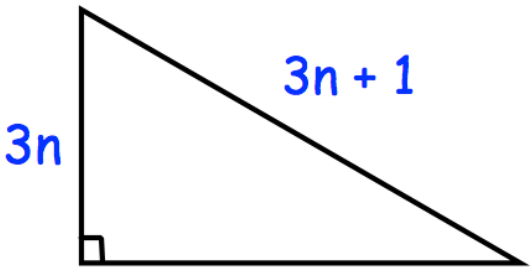


Enlarge shape A by scale factor –2, using the point P as centre of enlargement.



Sophie selects a card at random, then replaces it. She then selects another.

What is the probability she selects one black card and one red card?



Find an expression for the third side.

9th August

Corbettmaths

Calculate the distance between the coordinates (0, 3) and (3, 10).

Give your answer correct to 1 decimal place.

Matthew is playing darts.
The probability he hits a bullseye is 0.4

Matthew throws two darts.

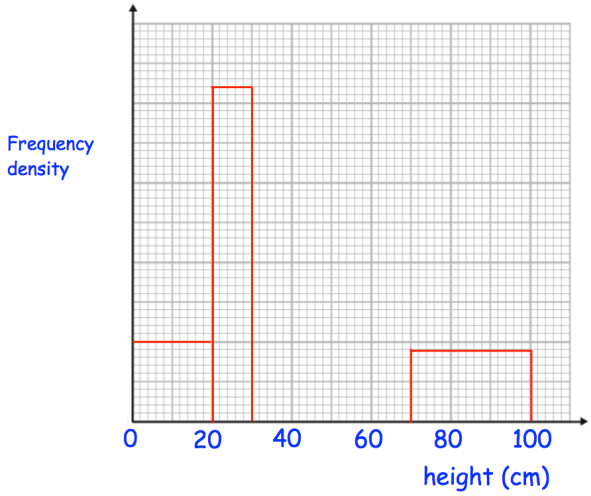
Find the probability Matthew hits the bullseye with both darts

Two containers are mathematically similar.

The height of container A is 5cm.
The height of container B is 10cm

The volume of B is 240cm³

What is the volume of A?



(a) Complete the table

Height (h cm)	Frequency
$0 < h \leq 20$	800
$20 < h \leq 30$	
$30 < h \leq 40$	1200
$40 < h \leq 70$	1800
$70 < h \leq 100$	

(b) Use the table to complete the histogram.

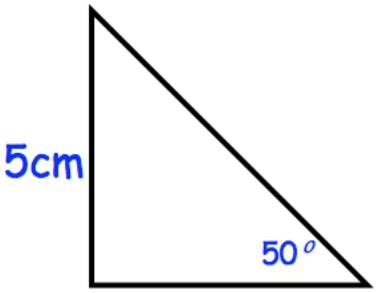
Name: _____ 5-a-day Higher

10th August

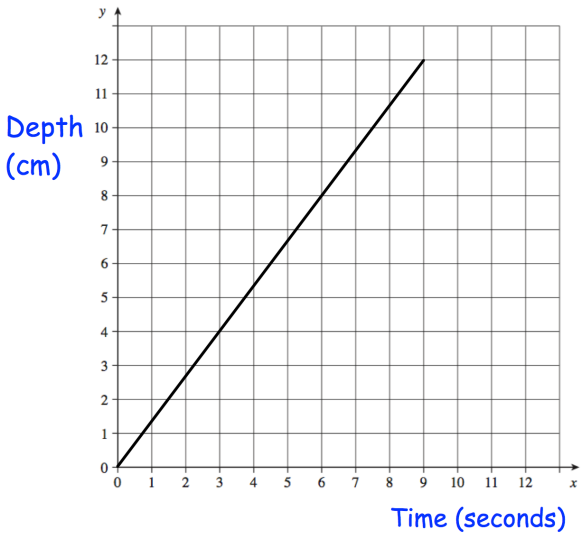
Corbettmaths

A circular plaque of diameter 8cm is cut from a square piece of metal with side length 8cm.

What percentage of the metal is wasted?



Calculate the area of the right angled triangle.



Water is poured into a glass for 6 seconds.
The graph shows the depth of the water in the glass.

What is the rate of change of the depth of the water?
Give your answer in cm/s.

Another glass contains water that is 10cm deep.
It is emptied at a rate of 2.5cm/s.
Show this on the graph.

Shapes A, B and C are similar.
The height of shape A is 8cm
The height of shape C is 4cm
The ratio of the surface area of shape B to the surface area of shape C is 25:9
Work out the ratio of the volume of shape A to shape B.

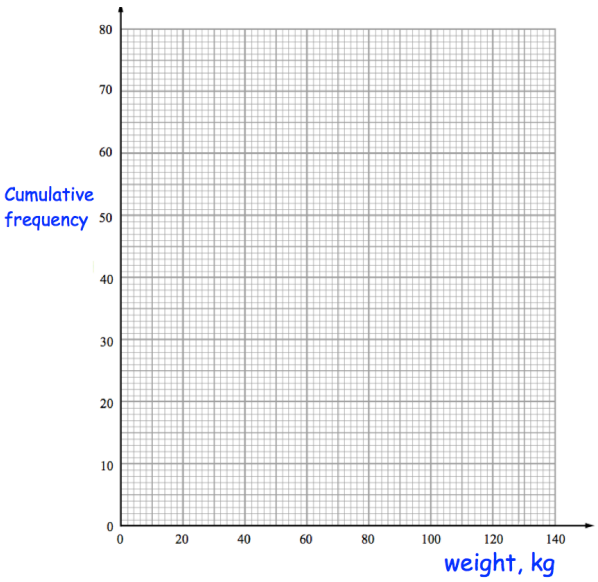
Name: _____ 5-a-day Higher

11th August

Corbettmaths

Weight, w kg	Cumulative frequency
$0 < w \leq 20$	2
$0 < w \leq 40$	6
$0 < w \leq 60$	15
$0 < w \leq 80$	36
$0 < w \leq 100$	58
$0 < w \leq 120$	73
$0 < w \leq 140$	80

Draw a cumulative frequency graph for this information.



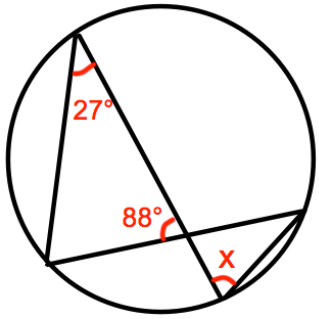
Offer 1	Offer 2	Offer 3
30% extra free	30% off the price	Buy one get one half price

There are 3 different offers on jars of coffee.
The jar usually contains 500g of coffee.

Which offer is best value for money?

Solve

$$\frac{x+11}{2x-5} = 2$$



Find x

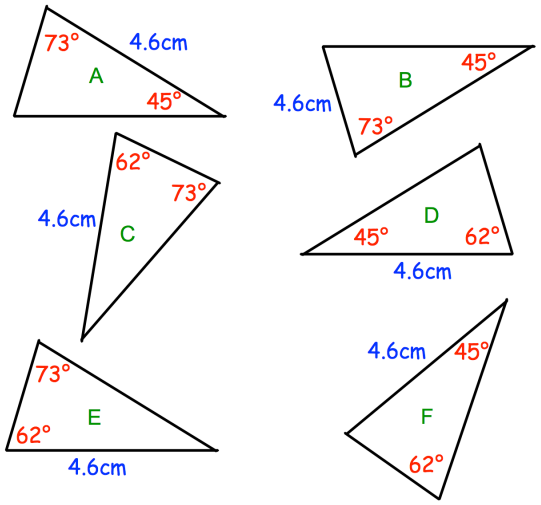
Name: _____ 5-a-day Higher

12th August

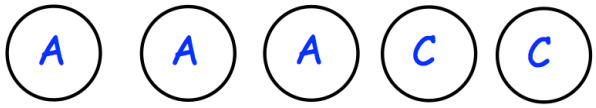
Corbettmaths

At a football match, the ratio of women to men is 2:5.
The ratio of women to children is 7:6.

What percentage of the people at the football match are children?



Which triangles are congruent?



A counter is selected at random, the letter recorded and the counter put back into the bag. A second is then selected.

What is the probability that both letters are different?

Arrange in ascending order

938000 9.4×10^3 10×5^8

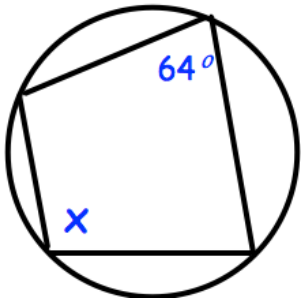
Name: _____ 5-a-day Higher

13th August

Corbettmaths

The LCM of two numbers is 352
The HCF of the numbers is 4.
One of the numbers is 44.

Find the other number.

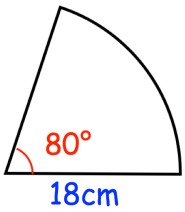


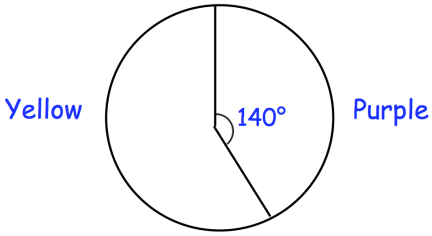
Find x

Number of goals	0	1	2	3
Probability	0.4	0.3	0.2	0.1

What is the probability David scores 5 or more goals in two consecutive games?

Calculate the perimeter of this sector, give your answer in terms of pi





In an election there are two parties to vote for, the Yellow party or the Purple party.

6124 more people voted for the Yellow party than the Purple party.

Work out the total number of voters

Name: _____ 5-a-day Higher

14th August

Corbettmaths

Estimate the cube root of 50.

Which of these equations has a rational solution?

Equation 1 $\frac{3}{4}x^2 = 30$

Equation 2 $\frac{2}{25}x^3 = 10$

Equation 3 $\frac{2}{3}x^4 = 6$

The probability that Ben goes running on a Sunday is 0.8

The probability that Carl goes running on a Sunday is 0.7

Calculate the probability that both Ben and Carl do not go for a run on Sunday.

x	2	4	b
y	20	a	5000

y is inversely proportional to the square of x

Find a and b.

A leaking fish tank loses 25% of its contents each day.
Danny says that the fish tank will have lost over 90% of its original contents by the end of day 4.

Is Danny correct?

Name: _____ 5-a-day Higher

15th August

Corbettmaths

Solve the simultaneous equations

$6x + 4y = 3$
$2x - 3y = 14$

Work out, giving your answer in standard form

$(8.2 \times 10^6) - (3.51 \times 10^5)$

Write as a fraction.

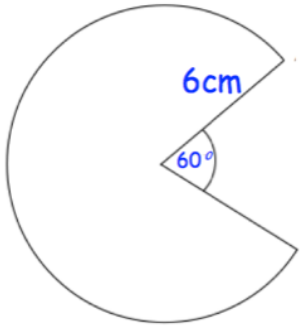
5^{-3}

Evaluate

25^{0}

Simplify fully

$$\frac{4x^2 - 25}{6x^2 - 11x - 10}$$



Calculate the perimeter of the sector.

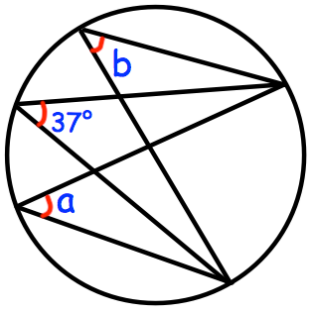
Name: _____ 5-a-day Higher

16th August

Corbettmaths

Simplify fully.

$(2m^4)^3$



Find a and b

Lower Quartile	3.4
Median	3.9
Upper Quartile	4.1
Highest Value	5.4
Range	3.7

Draw a box plot for the information given

Mark writes down the day and the date.
For example, Monday 14th March.

- The day of the week begins with a T.
- The month begins with a vowel.
- The date number is a prime number.

How many different possibilities are there?

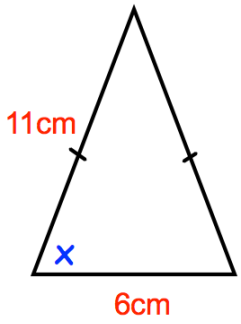
Shown is a shape with perimeter
$240 + 70\pi$ m

Find the area of the shape.

Name: _____ 5-a-day Higher

17th August

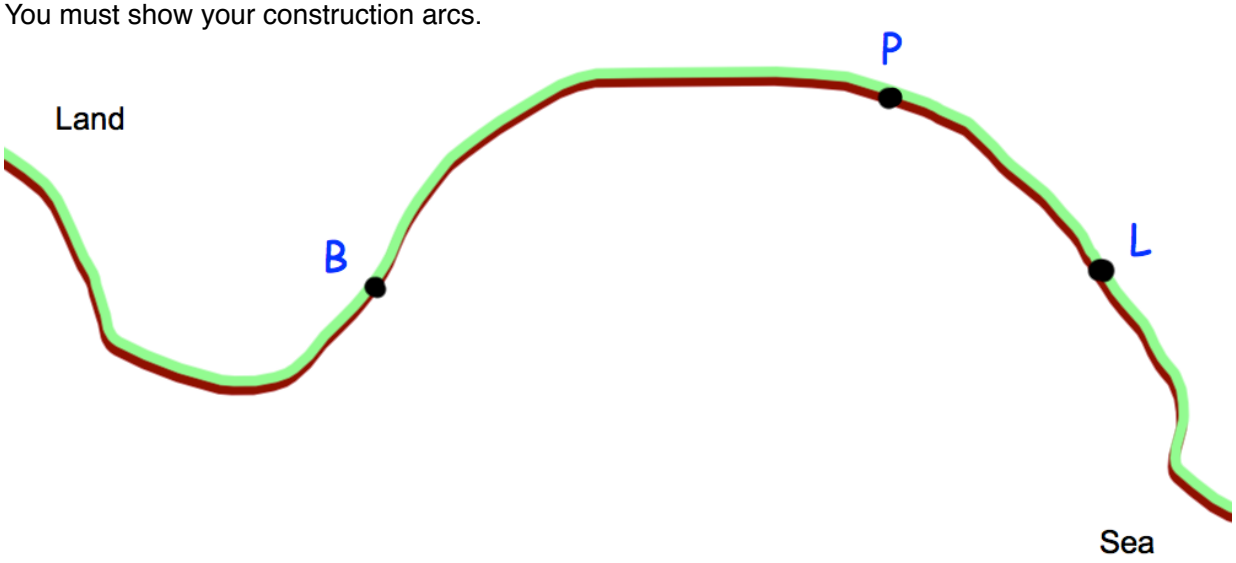
Corbettmaths



Find the size of x.

At a university, the ratio of women to men is 4:3.
70% of the women are under the age of 30.
35% of the men are over the age of 30.
What percentage of all the people at the university are over 30?

A yacht leaves the port, P, on a course that is an equal distance from PB and PL.
Using ruler and compasses only, construct the course on the diagram.
You must show your construction arcs.



Expand $\sqrt{2}(\sqrt{18} - \sqrt{2})$

Name: _____ 5-a-day Higher

18th August

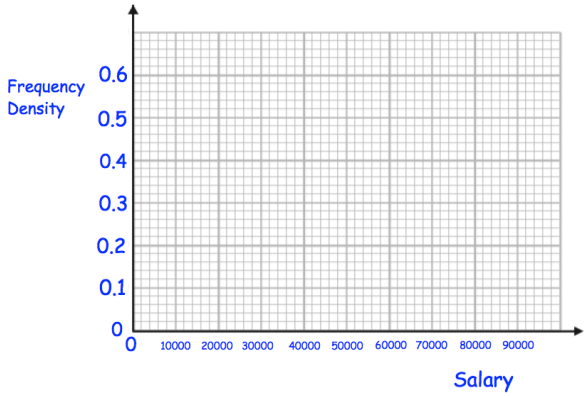
Corbettmaths

The cost of a circular table is directly proportional to the square of the radius.
A circular table with a radius of 40cm cost £50.

What is the cost of a circular table with a radius of 60cm?

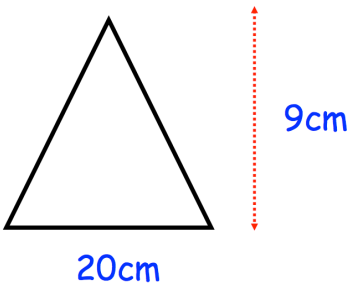
Salary, p	Frequency
$0 < p \leq 8000$	1200
$8000 < p \leq 15000$	1750
$15000 < p \leq 25000$	4500
$25000 < p \leq 40000$	1500
$40000 < p \leq 80000$	2000

Draw a histogram for this data.



Expand and simplify

$(2x - 1)^3$



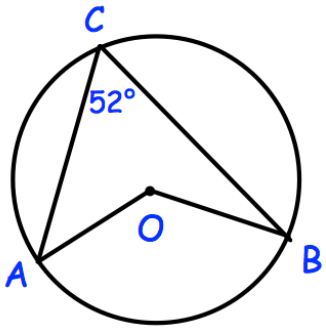
Shown is a triangle with measurements given to 1 significant figure.

Calculate the upper bound for the area

Name: _____ 5-a-day Higher

19th August

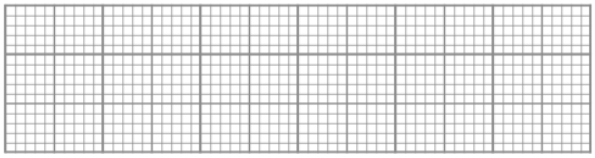
Corbettmaths



O is the centre of the circle.

Find angle AOB

The lightest female rugby player is 53kg.
The lower quartile is 70kg.
The median is 78kg.
The range is 47kg and interquartile range is 20kg.



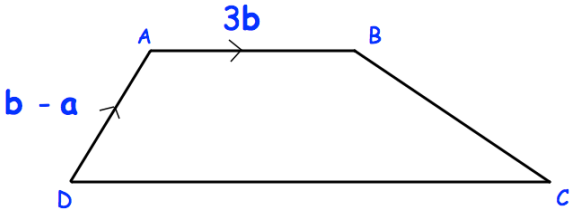
Draw a box plot to show this information

What weight is 75% of the rugby players lighter than?

A rectangular field has:

length 160m, to 2 significant figures.
width 81m, to 2 significant figures.

Calculate the upper bound for the area of the field.



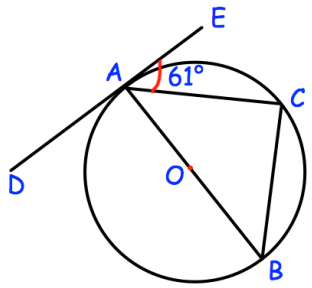
AB and DC are parallel.
DC = 3AB

Write down a vector for $\overrightarrow{DC}$

Name: _____ 5-a-day Higher

20th August

Corbettmaths



AB is the diameter. DE is a tangent at A.

Angle CAE is 61°.

Find angle BAC.

Find angle ABC.

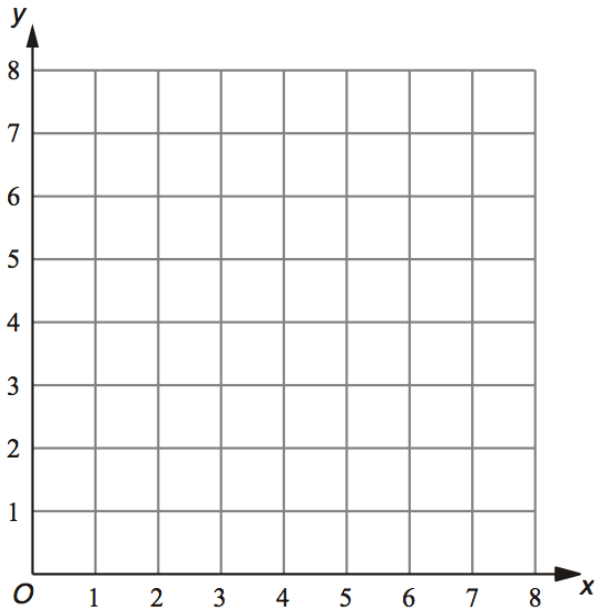
A region R satisfies the inequalities

$x + y \leq 5$

$x > 3$

$y \leq 1$

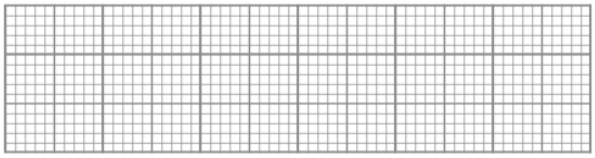
Show this region on the grid.



Make w the subject of

$8(w - 3a) = 3w + 7$

Lowest	68kg
Lower Quartile	74kg
Median	82kg
Upper Quartile	88kg
Highest	100kg

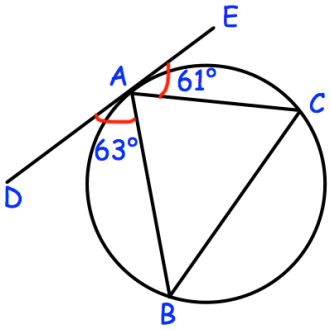


Draw a box plot to show this information

Name: _____ 5-a-day Higher

21st August

Corbettmaths

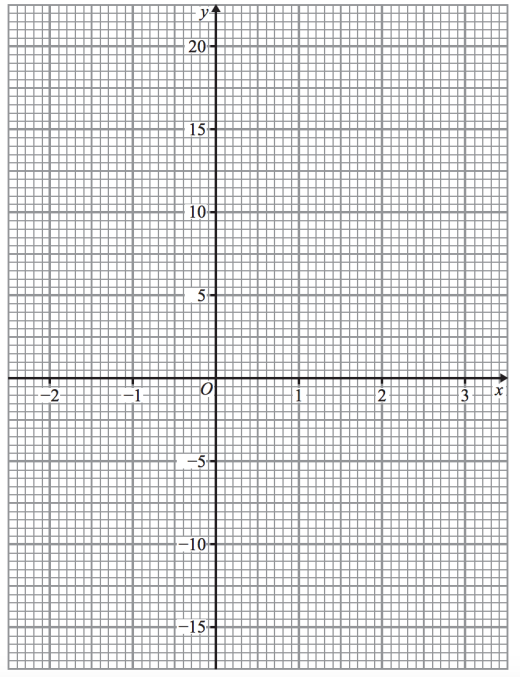


Find angle BAC.

Find angle ACB.

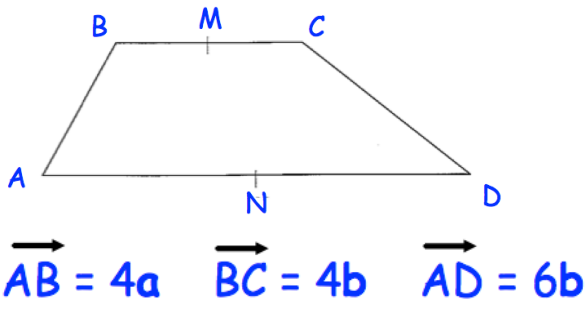
A car travels at 50mph, correct to 1 significant figure. It covers a distance of 300 miles, correct to 2 significant figures.

Calculate the **least** possible time taken.



Draw the graph of $y = x^3 - 2$ for the values of x from –2 to 2.

Use your graph to find an approximate answer to $x^3 - 3 = 0$



$\overrightarrow{AB} = 4a$ $\overrightarrow{BC} = 4b$ $\overrightarrow{AD} = 6b$

M is the midpoint of BC.
N is the midpoint of AD.

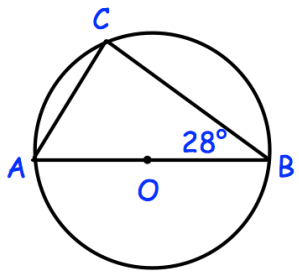
Find

$\overrightarrow{MN}$

Name: _____ 5-a-day Higher

22nd August

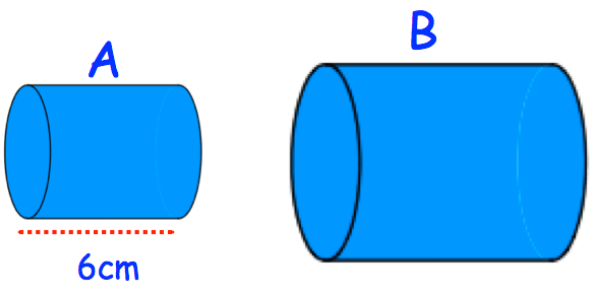
Corbettmaths



AOB is the diameter of the circle.

Write down the size of angle ACB

Find the size of angle BAC



The surface area of A is 500cm²
The surface area of B is 2000cm²

The length A is 6cm.

Find the length of B.

A ball is dropped from h metres.
After each bounce the ball reaches 60% of its previous height.
After its third bounce it reaches a height of 0.648m.

Find h

$$(x+4)^2 \equiv x^2+8x+16$$

$$(x+4)^2$$

$$(x+4)^2 < 10$$

$$(x+4)^2 = x-3$$

Circle the expression

Factorise $2x^2 + 5x + 2$

Name: _____ 5-a-day Higher

23rd August

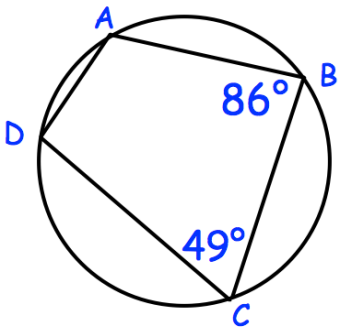
Corbettmaths

Evaluate

$1000^{\frac{1}{3}}$

Evaluate

$27^{\frac{2}{3}}$



Find angle BAD.

Find angle ADC.

A and B are positive numbers.
A is inversely proportional to B.
When A = 4, B = 36.

Find the value of A when B = A.

Simplify

$\frac{\sqrt{6}}{\sqrt{3}}$

Solve the simultaneous equations

$\frac{2}{3}x + \frac{1}{2}y = -1$

$x - y = 16$

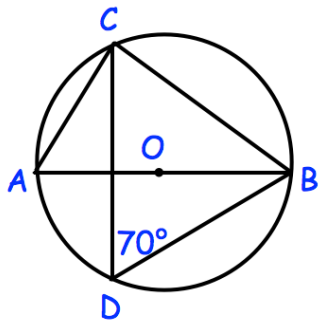
Name: _____ 5-a-day Higher

24th August

Corbettmaths

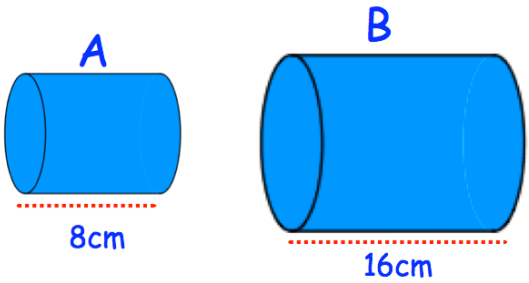
$\frac{4}{11}$

Write as a decimal.



AB is the diameter. O is the centre. Find angles

(a) CAB (b) ABC



A and B are similar.

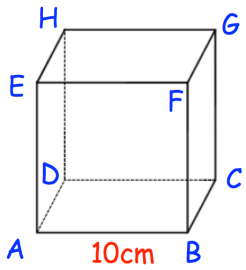
The volume of A is 200cm³.

Find the volume of B.

W is directly proportional to the square of M.

When W = 80, M = 2.

Work out W when M = 6.

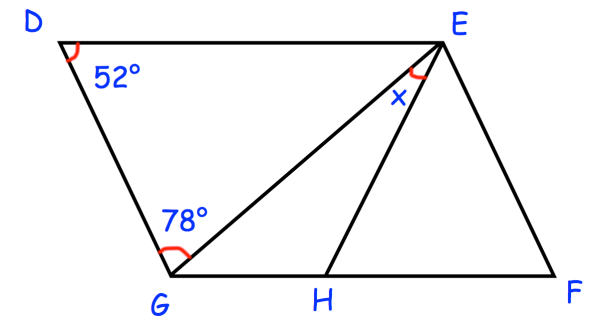


Can a 12cm rod fit into cube ABCDEFGH?

Name: _____ 5-a-day Higher

25th August

Corbettmaths



DEFG is a parallelogram
EH = EF

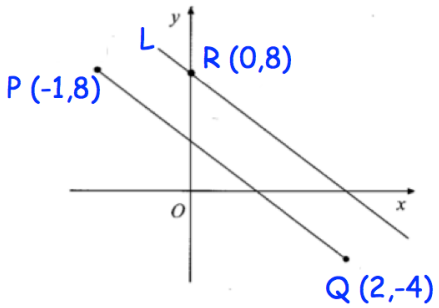
Find x

Factorise

$x^2 - y^2$

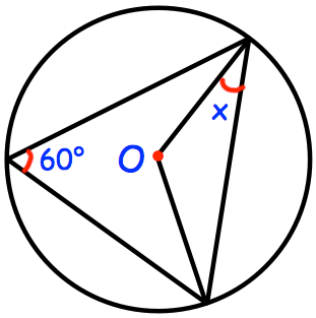
Factorise

$2x^2 + 17x + 21$



Line L and PQ are parallel.

Find the equation of L.



Find x

A radioactive substance decays with time. The mass of the substance reduces by 8% each year.

How many years will it take for 400kg of the substance to decay to a mass of less than 20kg?

Name: _____ 5-a-day Higher

26th August

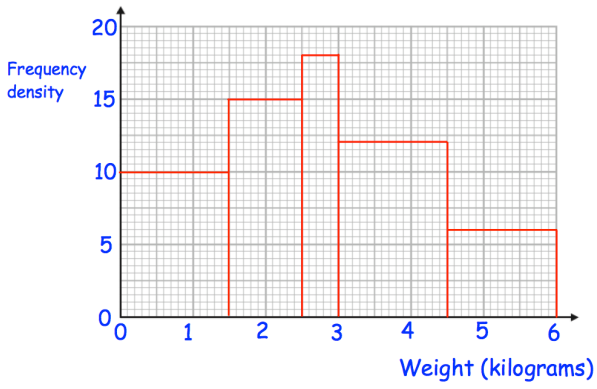
Corbettmaths

Find the gradient of the line with equation $2x - 4y = 7$

The length of a side of a regular pentagon is 1200mm, correct to 2 significant figures.

Work out the highest possible perimeter of the pentagon.

A dice is rolled four times. What is the probability of obtaining a 6 four times.



Use the histogram to complete the frequency table.

Weight, w	Frequency
$0 < w \leq 1.5$	
$1.5 < w \leq 2.5$	
$2.5 < w \leq 3$	
$3 < w \leq 4.5$	
$4.5 < w \leq 6$	

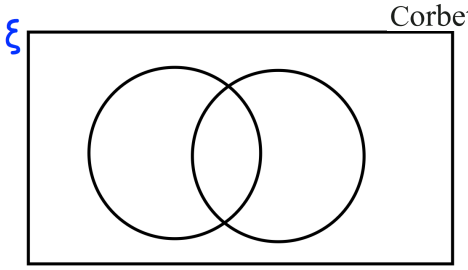
Name: _____ 5-a-day Higher

27th August

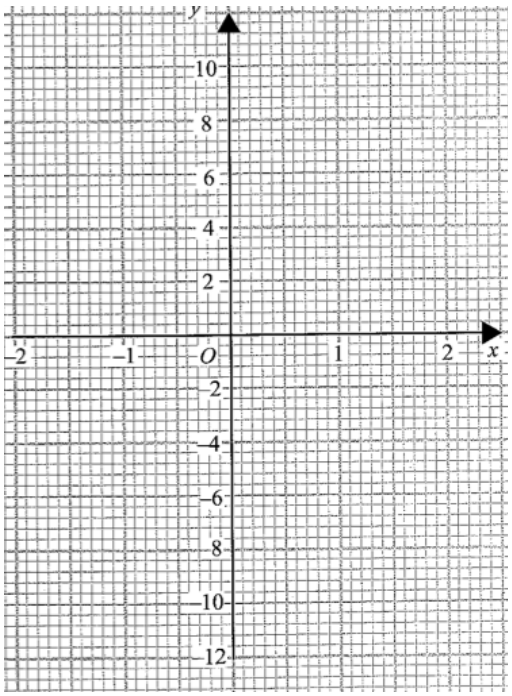
Corbettmaths

The students in a school sit two tests, a French test (F) and German test (G). Everyone passed at least one test. 68% passed the French test and 82% passed the German test.

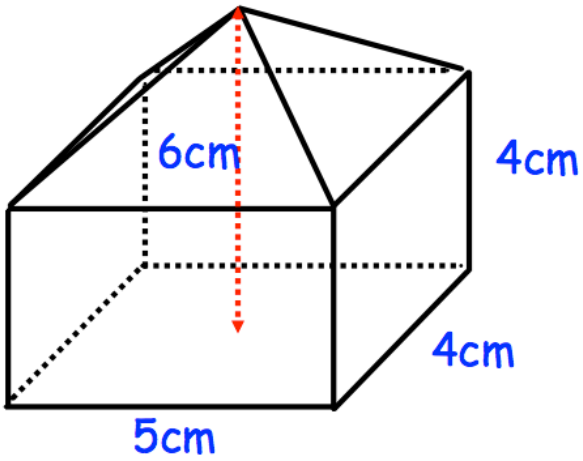
Show this information in the Venn diagram



On the grid, draw $y = 2x^2 + x - 8$



Using your graph, solve
$2x^2 + x - 8 = -4$



Shown is a container made of a pyramid and a cuboid.
$90cm^3$ of water is poured into the container.
How high above the base of the container will the water reach?

Name: _____ 5-a-day Higher

28th August

Corbettmaths

The bearing of Leek from Milton is 304°

Find the bearing of Milton from Leek.

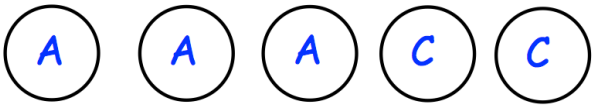
Jay is organising a party.
People will sit at circular tables.

Each table has a diameter of 110cm
Each person needs 70cm around the circumference of the table.

140 people will be at the party.

How many tables are needed?

Calculate bearing of A from B.



A counter is selected at random, the letter recorded and the counter put back into the bag. A second is then selected.

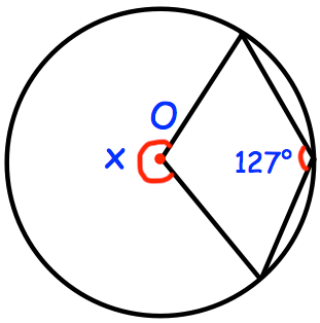
What is the probability that both letters are the same?

Write 0.0393939393... as a fraction

Name: _____ 5-a-day Higher

29th August

Corbettmaths

Work out the value of 2500^3 Give your answer in standard form.	
Solve, to 2 decimal places $4x^2 - 3x - 9 = 0$	
Megan has £8000 to invest for 5 years. Nationbank: 3% interest for the first year and then 0.5% each year. Moneyworld: 1% interest each year	Which of these accounts should Megan choose?
	Find x
Evaluate $10000^{\frac{3}{4}}$	

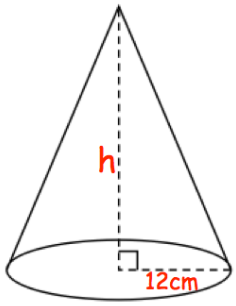
Name: _____ 5-a-day Higher

30th August

Corbettmaths

$$w = \frac{20(a + c)}{c}$$

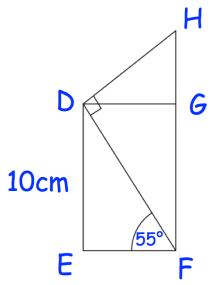
Make c the subject.



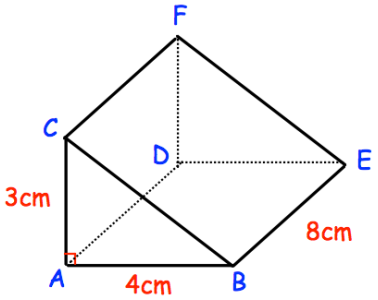
The volume of the cone 500cm³
Find h

Solve, giving your answers to one decimal place.

$x^2 - x - 11 = 0$



DE = 10cm
Angle DFE = 55°
Find the length of DH

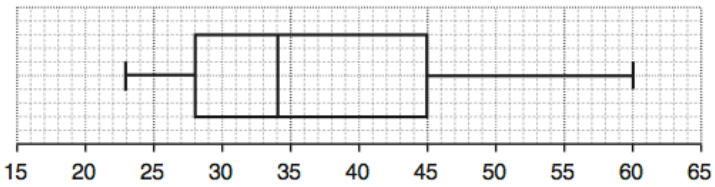


Shown below is a triangular prism.
Triangle ABC is a right angled triangle.
Find the length of CE.

Name: _____ 5-a-day Higher

31st August

Corbettmaths



Marks

Work out the interquartile range.

A fish tank has sprung a leak, at the base of the tank. 5% of the water is lost every minute.

How much water is lost from the tank after ten minutes?

Here are the first and third terms of a different Fibonacci-type sequence

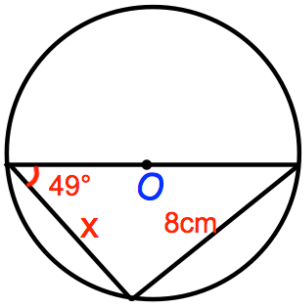
d __ e __ __ __

Work out an expression in terms of d and e for the fifth term

Liquid A has a density of 0.85g/cm³
Liquid B has a density of 1.2g/cm³

200g of liquid A and 30g of liquid B are mixed for make liquid C.

Work out the density of liquid C.



Find x