1st January

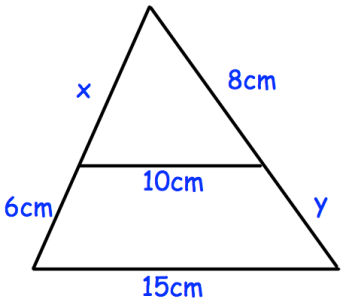
Corbettmaths

A is directly proportional to the square root of B.

When A = 50, B = 4.

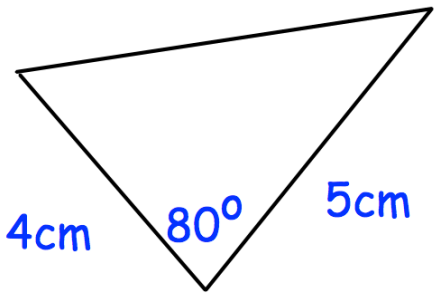
Find A in terms of B.

Solve $x^2 = 51 + 14x$



Find x and y.

Calculate bearing of A from B.

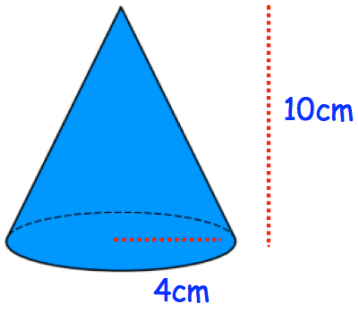


Work out the length of the missing side.

Name: _____ 5-a-day Higher

2nd January

Corbettmaths



Calculate the volume of the cone.

$\sqrt{3^2 + 4^2 + 12^2} = \sqrt{3^2 + 4^2} + \sqrt{x^2}$

x is a positive integer.
Find x.

Gary is playing cricket.
When attempting to catch the ball, the probability Gary is successful is ¾
During the game, Gary attempts two catches.

Find the probability Gary is successful with both catches.

Simplify

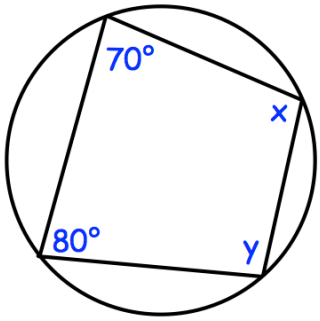
$$\frac{x^2 + 5x + 4}{x^2 + 4x + 3}$$

Find where the line $7y = 3x + 10$ meets the x-axis.

Name: _____ 5-a-day Higher

3rd January

Corbettmaths



Find x and y

Simplify $\sqrt{8}$

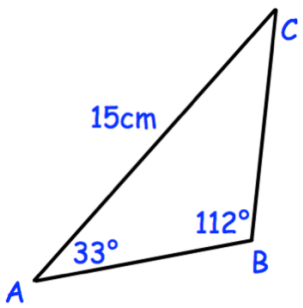
A biased coin is flipped three times.

The probability of the coin landing on tails is 0.7

Find the probability the coin lands on tails exactly once.

A circular mirror has a diameter of 60cm to the nearest centimetre.

Find the greatest possible area of the mirror.
Give your answer in cm²



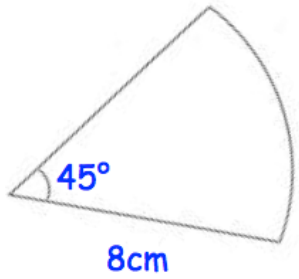
Work out the length of BC

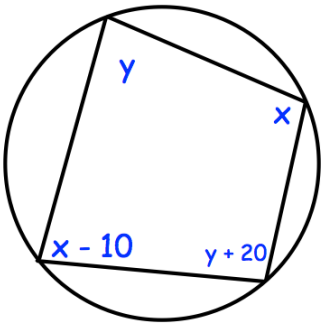
Name: _____ 5-a-day Higher

4th January

Corbettmaths

Find the perimeter of the sector.





Find x and y.

Solve these simultaneous equations

$3x - 4y = 18$

$2x - 5y = 19$

w is inversely proportional to c squared.

When w = 100, c = 2.

Find w when c = 4.

Evaluate

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

Name: _____ 5-a-day Higher

5th January

Corbettmaths

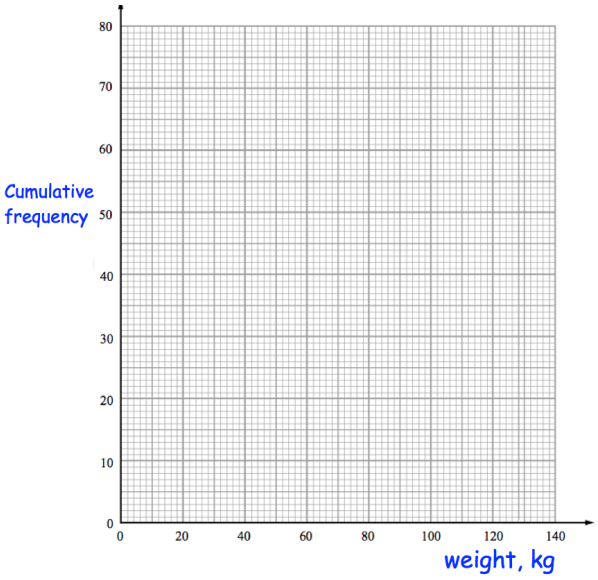
Estimate $\sqrt[4]{5000}$

Solve, giving your answers to one decimal place.

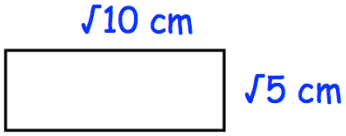
$x^2 - 8 = x$

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.



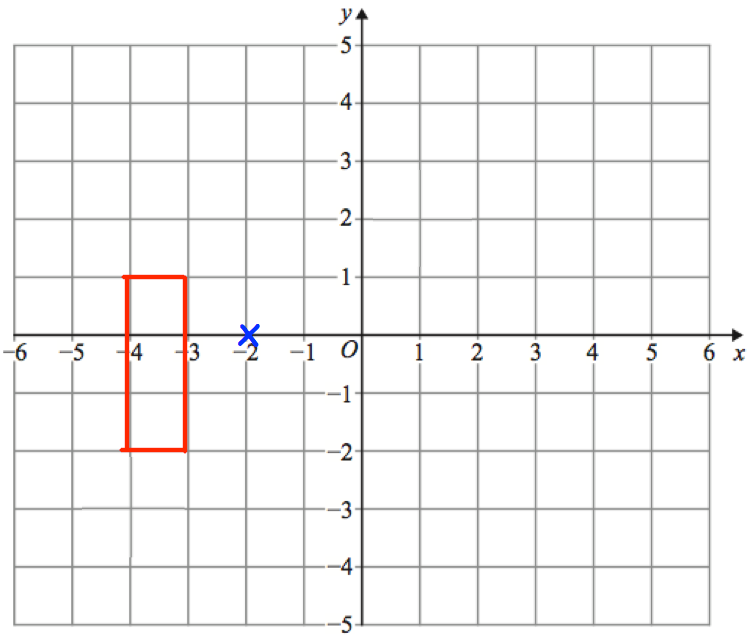
Find the area of the rectangle



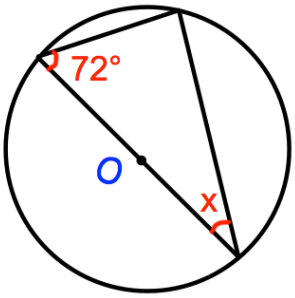
Name: _____ 5-a-day Higher

6th January

Corbettmaths



Enlarge the rectangle by scale factor -2, centre of enlargement (-2, 0)



Find x

Offer 1	Offer 2	Offer 3
40% extra free	40% 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?

$(x + 3)(x + a)(x + 7) = x^3 + 15x^2 + 71x + 105$

Find a

Name: _____ 5-a-day Higher

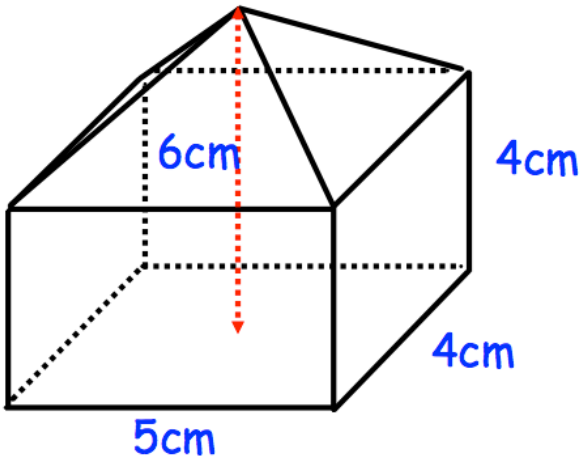
7th January

Corbettmaths

Make x the subject of $A = \frac{1}{2}(x + y)$

Evaluate

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



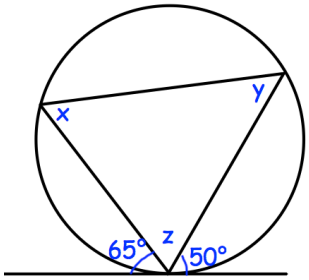
Shown is a solid that is made of a pyramid and a cuboid.
Calculate the volume of the solid.

A boat leaves a port and sails 55km due west and then 30km due north and arrives at an oil rig. What is the bearing of the oil rig from the port?

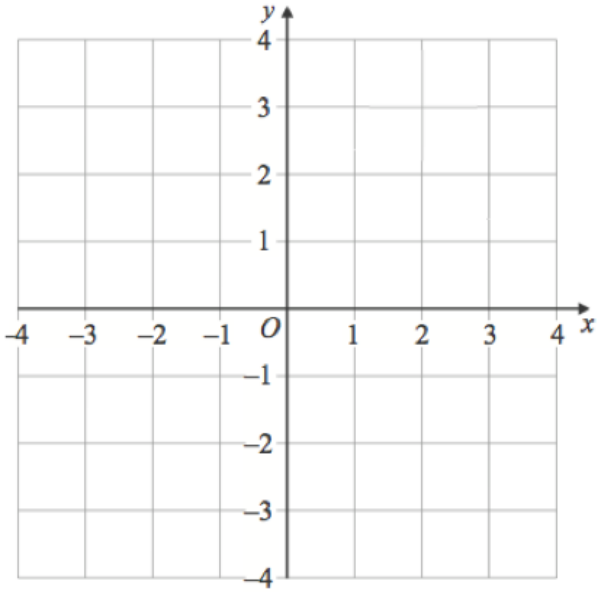
Name: _____ 5-a-day Higher

8th January

Corbettmaths



Find x, y and z.



Show the region which satisfies

$x \geq 0$
$y < 2x + 3$
$y > x - 1$

A full water tank has sprung a leak. It loses 5% of its contents every minute.

Work out how long until the tank loses 40% of its contents.

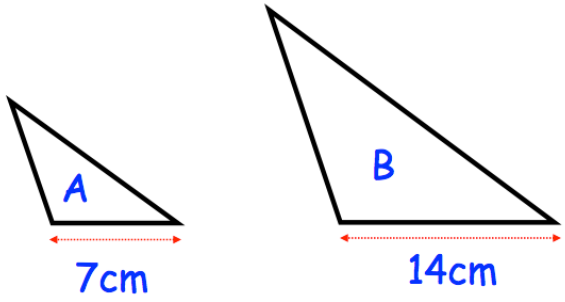
y is directly proportional to the square of x.
When y = 24, x = 2.

Find the value of y when x = 4.

Name: _____ 5-a-day Higher

9th January

Corbettmaths

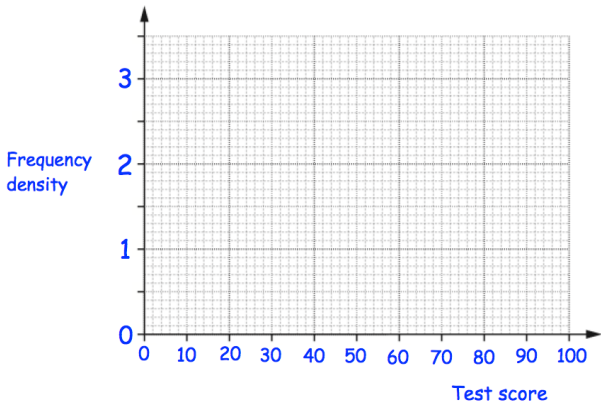


The area of triangle A is 20cm²
Work out the area of triangle B.

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

Test score, x	Frequency
$0 < x \leq 30$	15
$30 < x \leq 40$	22
$40 < x \leq 50$	28
$50 < x \leq 70$	30
$70 < x \leq 100$	9

Draw a histogram for this data.



At a rugby match, the ratio of women to men is 4:3.
The ratio of men to children is 2:5.
What percentage of the people at the rugby match are children?

Name: _____ 5-a-day Higher

10th January

Corbettmaths

What is the sum of the interior angles for an octagon?

What is the size of each interior angle for a regular octagon?

Calculate the gradient of the straight line passing through (4, 2) and (7, 11).

Write down the equation of the line.

Simplify
$\sqrt{1000}$

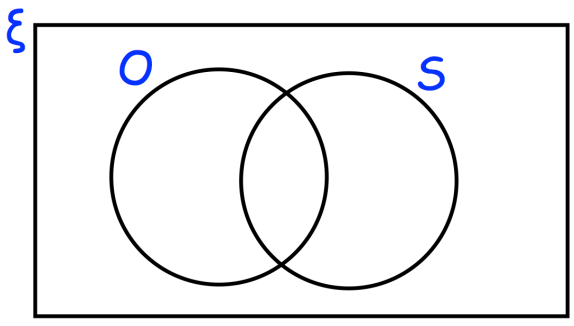
Simplify

$3\sqrt{2} \times 3\sqrt{14}$

$\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$

O = odd numbers
S = square numbers

Complete the venn diagram



Write down $P(O \cup S)$

Write down $P(O \cap S)$

Name: _____ 5-a-day Higher

11th January

Corbettmaths

A is directly proportional to B squared.

When A = 500, B = 10.

Find A when B = 20.

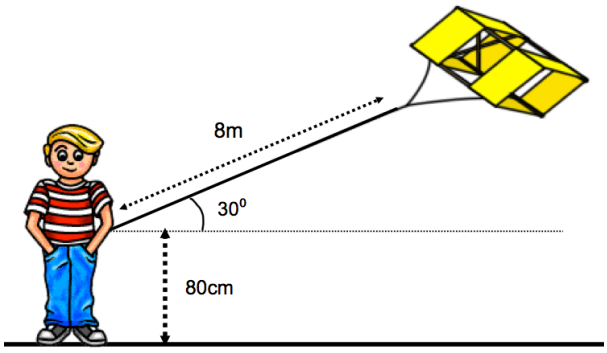
A book weighs 200g to the nearest 10g.

What is the greatest possible weight of 20 books?

Line 1 has gradient 4 and passes through the point (3, 10).

What is its equation?

Write down the equation of a line perpendicular to line 1.



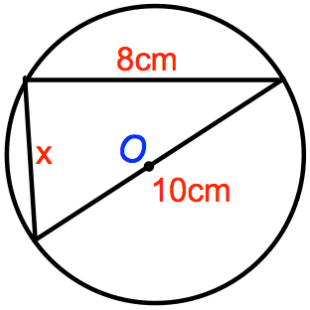
The string is held 80cm above the ground.
The kite is on a string which is 8m long.
The string makes an angle of 30^0 with the horizontal.
Calculate the height of the kite above the ground.

Name: _____ 5-a-day Higher

12th January

Corbettmaths

$4^0 + 4^{\frac{1}{2}} + 4^1 + 4^2$



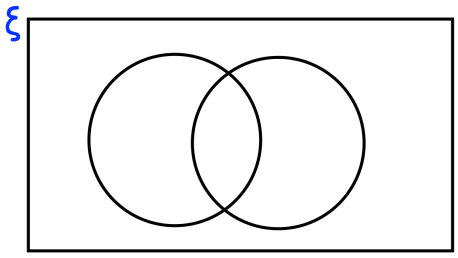
Find x

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

Draw a box plot to show this information

The students in a school sit two tests, a French test (F) and German test (G). Everyone passed at least one test. 78% passed the French test and 84% passed the German test.

Show this information in the Venn diagram



After a reduction of 6% in the original price, a caravan is sold for £7000.

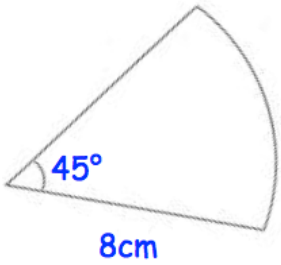
Both these values are correct to one significant figure.

Calculate the lowest possible original price before the reduction was applied.

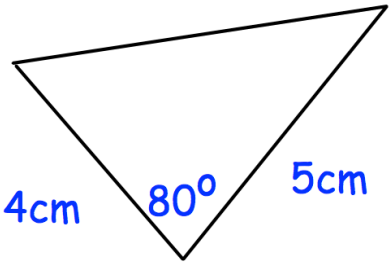
Name: _____ 5-a-day Higher

13th January

Corbettmaths



Find the area of the sector.



Work out the area of the triangle.

A car travels at 50mph to the nearest 10mph.

It travels 220 miles to the nearest 10miles.

What is the shortest possible time taken for this journey?

Helen is taking part in a quiz on TV.
The probability she answers a question correctly is ⅘
Helen is asked two questions

Calculate the probability she answers both questions correctly.

An oil tank loses 32% of its contents every hour.
Peter says the tank will have lost 95% of its original contents by the end of the sixth hour.
Is Peter correct?

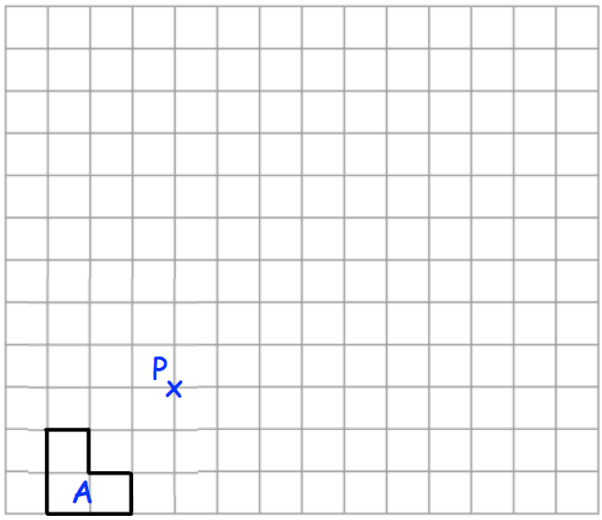
Name: _____ 5-a-day Higher

14th January

Corbettmaths

Make w the subject of

$$a + 3w^2 = s$$



Enlarge shape A by scale factor –3, using the point P as centre of enlargement.

Simplify fully

$$\frac{x^2 + 6x + 8}{2x + 8}$$

Simplify

$$\frac{(3^6)^5}{9 \times 3^7}$$

Give your answer as a power of 3.

Name: _____ 5-a-day Higher

15th January

Corbettmaths

Shown below are four fractions.

$\frac{5}{8}$ $\frac{1}{3}$ $\frac{2}{7}$ $\frac{11}{20}$

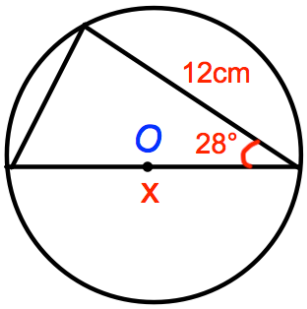
Circle any fractions which are recurring decimals.

$a \times 10^4$ is a square number written in standard form.
a is a positive integer
Write down all the possible values of a.

The attendance at a football match is 40000.
This number is correct to the nearest 500.
The number of males attending the match is 29000.
This number is correct to the nearest 1000.

Work out the maximum number of females that could be attending the match.

Find x



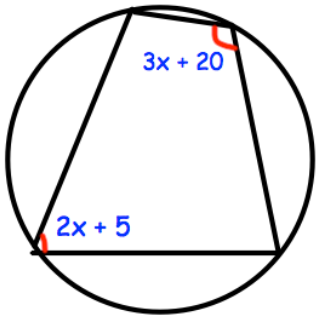
Solve using the quadratic formula

$3x^2 + 11x + 9 = 0$

Name: _____ 5-a-day Higher

16th January

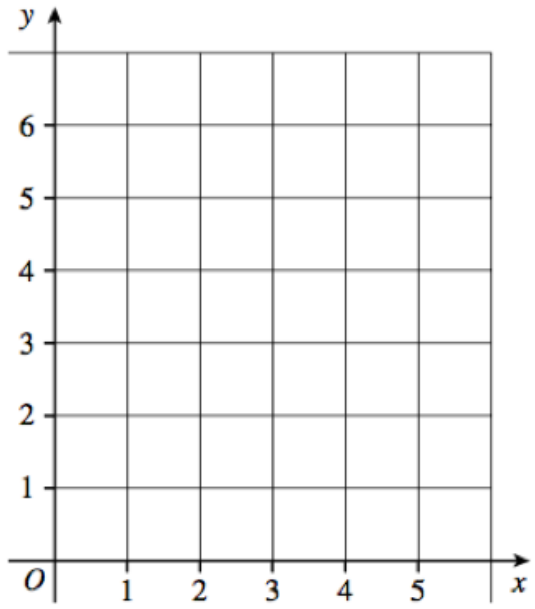
Corbettmaths

Calculate the distance between the coordinates (4, 10) and (2, 4). Give your answer correct to 1 decimal place.	
Find the coordinates where the graphs $y = x + 3$ and $y = 3x - 9$ meet.	
	Find x.
Two containers are mathematically similar. The height of container A is 5cm. The height of container B is 12.5cm The volume of A is $240cm^3$	What is the volume of B?
The number of ice creams sold increases by 40% in August compared to July. The number of ice creams sold in September is the same as the number sold in July. Work out the percentage decrease in sales for September compared to August.	

Name: _____ 5-a-day Higher

17th January

Corbettmaths

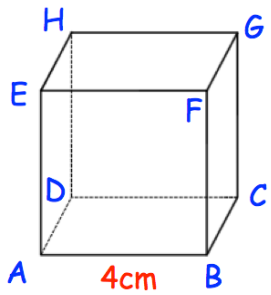


On the grid, clearly indicate the region that satisfies all these inequalities.

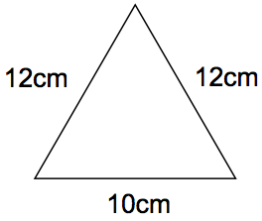
$x \geq 3$ $y \geq 1$ $x + y \leq 5$

Make x the subject of

$\frac{1}{3}w = \frac{1}{4}x + t$



Shown is a cube with side length 4cm.
Calculate the length AG



Shown is an isosceles triangle.
Calculate its area.

Name: _____ 5-a-day Higher

18th January

Corbettmaths

Simplify

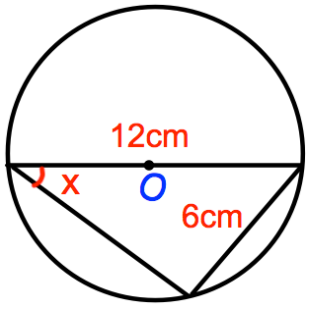
$(2xy^3)^3$

Solve, giving your answers to one decimal place.

$3x^2 = 10 - 2x$

Work out

25^0



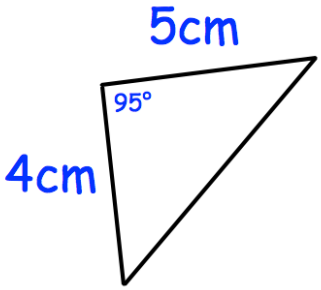
Find x

Write 0.3111111… as a fraction

Name: _____ 5-a-day Higher

19th January

Corbettmaths

Solve, to 1 decimal place. $x^3 + 2x = 150$	
Find the equation of the line passing through the points (–3, –1) and (1, –13)	
Calculate the missing side	
Calculate the area	
Solve $5x^2 + 19x - 4 = 0$ using factorisation.	

Name: _____ 5-a-day Higher

20th January

Corbettmaths

Line 1 has equation y = 5x + 2

Write down the equation of a line parallel to Line 1.

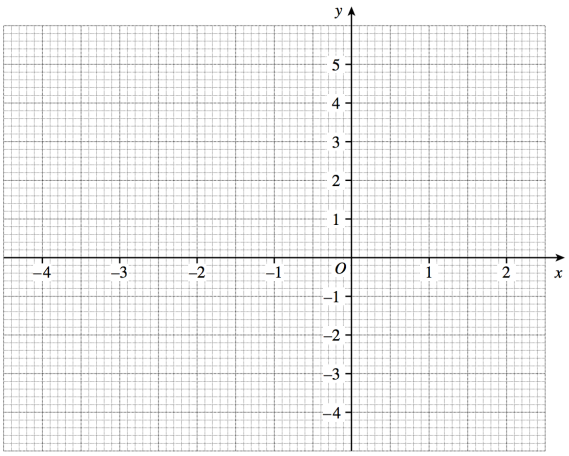
Line 2 has equation y = 2x - 1

Write down the equation of a line perpendicular to Line 2.

A large bottle of cola is 18cm tall.
A small bottle is 12cm tall.

David claims the small bottle contains two-thirds the amount of cola than the large bottle.

Show he is wrong.



Draw $y = x^2 + 2x - 3$

Solve the simultaneous equations below graphically
$y = x^2 + 2x - 3$
$x + y + 1 = 0$

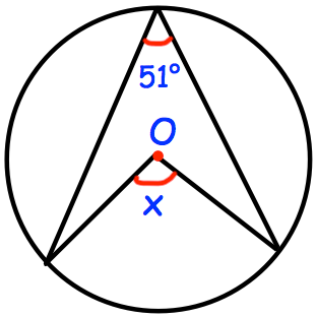
Solve using the quadratic formula

$2x^2 + x - 8 = 0$

Name: _____ 5-a-day Higher

21st January

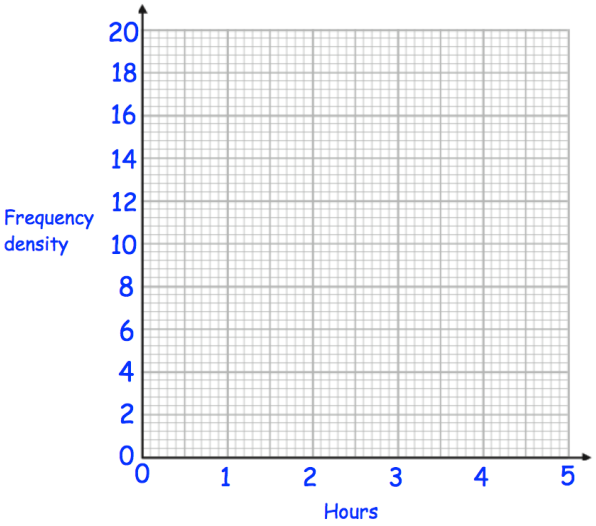
Corbettmaths



Find x

Waiting time, h	Frequency
$0 < h \leq 0.5$	8
$0.5 < h \leq 1$	10
$1 < h \leq 1.5$	7
$1.5 < h \leq 3$	9
$3 < h \leq 5$	6

Draw a histogram for this data.



A is inversely proportional to B.

If A = 10, B = 3.

Find B when A = 15.

A fair six sided dice is rolled three times.

Find the probability of getting exactly one six.

Name: _____ 5-a-day Higher

22nd January

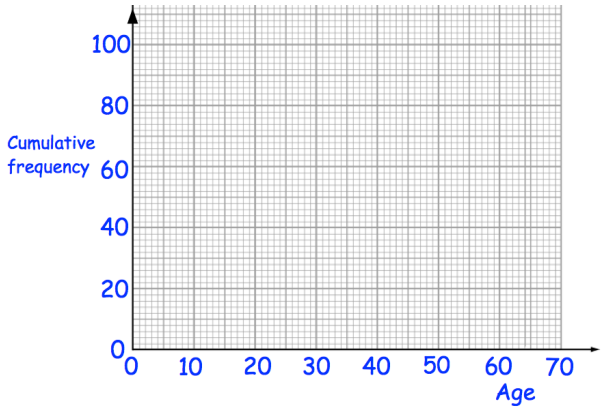
Corbettmaths

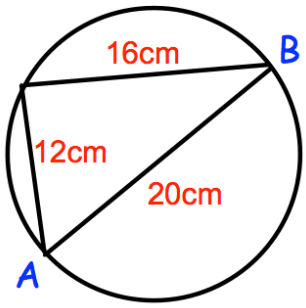
Calculate the distance between (3, 8) and (5, 0).

Age, x years	Frequency	Cumulative frequency
$20 < x \leq 30$	12	
$30 < x \leq 40$	30	
$40 < x \leq 50$	28	
$50 < x \leq 60$	22	
$60 < x \leq 70$	8	

(a) Complete the cumulative frequency column in the table.

(b) Draw a cumulative frequency graph for this information.





Is AB the diameter of the circle?
Explain your answer

Evaluate

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

Name: _____ 5-a-day Higher

23rd January

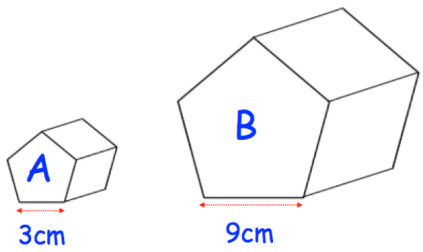
Corbettmaths

Factorise

$3x^2 - 13x + 4$

Work out

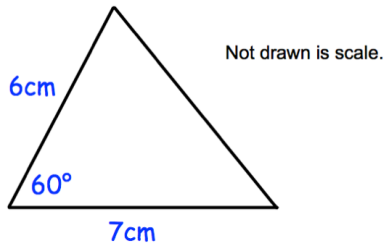
$$25^{\frac{1}{2}} \div 3^{-2}$$



The prisms are similar.
The volume of prism A is 15cm³
Work out the volume of prism B.

Victor is y years old.
His brother Fred is four years older than Victor.
The product of their ages is 780.

Set up an equation to represent this information and solve to find Victor's age.



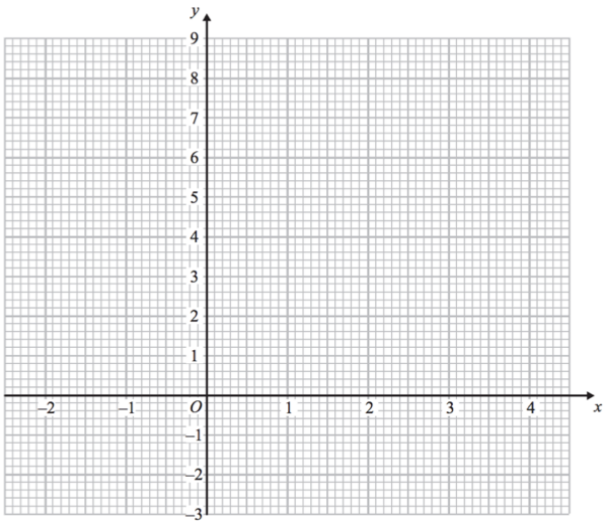
Find the area of this triangle.

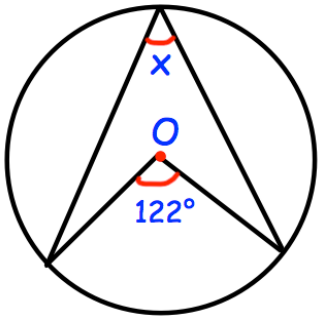
Name: _____ 5-a-day Higher

24th January

Corbettmaths

Draw $y = x^2 - 2$ and draw $y = 2x + 1$.
Write down the coordinates of where the two graphs intersect.





Find x

Simplify

$$\frac{a}{c} \div \frac{d}{5}$$

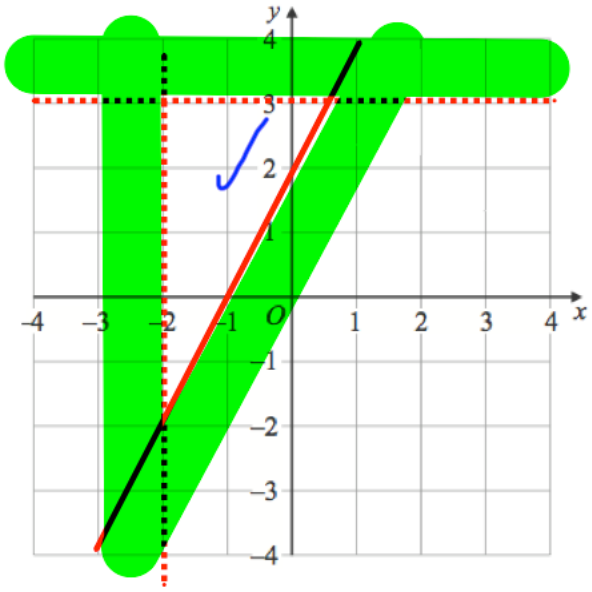
Write the numbers 2, 3, 4 and 5 into the boxes to give smallest possible answer.

$$\square\frac{\square}{7} \div \square\frac{1}{\square}$$

Name: _____ 5-a-day Higher

25th January

Corbettmaths



The diagram shows a region which satisfies 3 inequalities.

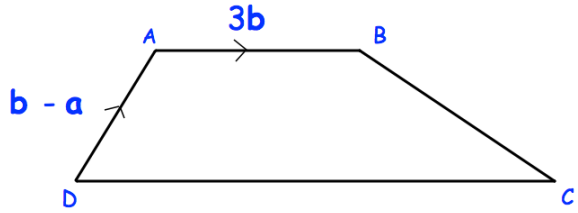
Find these inequalities.

Make w the subject of

$a(w - 2) = 5w + k$

Write $0.\dot{8}\dot{1}$ as a fraction.

Give your answer in its simplest form.



AB and DC are parallel.
DC = 2AB

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

Name: _____ 5-a-day Higher

26th January

Corbettmaths

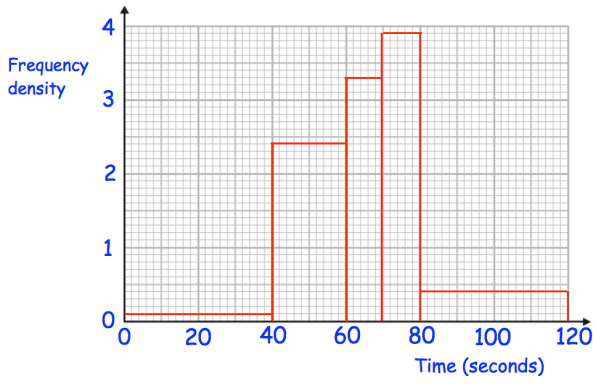
Simplify $\sqrt{20}$

Factorise

$3x^2 - 5x - 2$

Simplify

$\frac{2}{g} \times \frac{3}{h}$



Complete this frequency table.

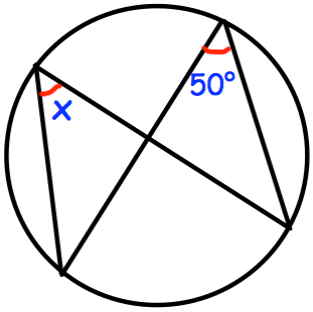
Time, t seconds	Frequency
$0 < t \leq 40$	4
$40 < t \leq 60$	
$60 < t \leq 70$	33
$70 < t \leq 80$	
$80 < t \leq 120$	16

Name: _____ 5-a-day Higher

27th January

Corbettmaths

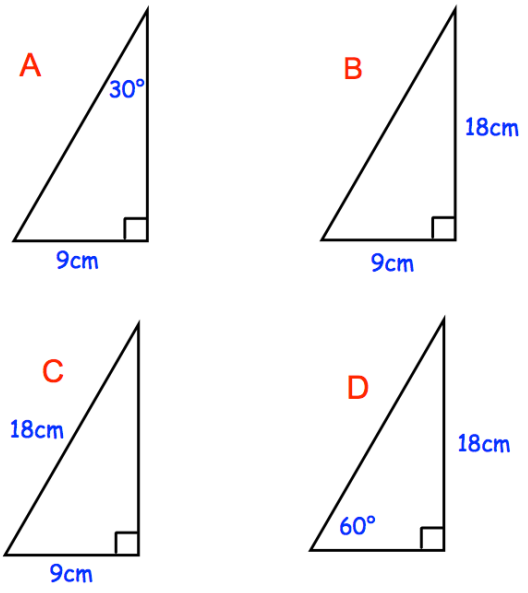
Estimate $\sqrt[4]{100}$



Find x

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?

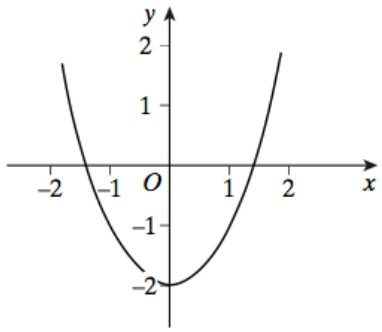
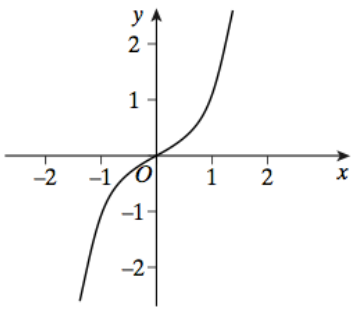


Identify the two congruent triangles and explain your answer.

Name: _____ 5-a-day Higher

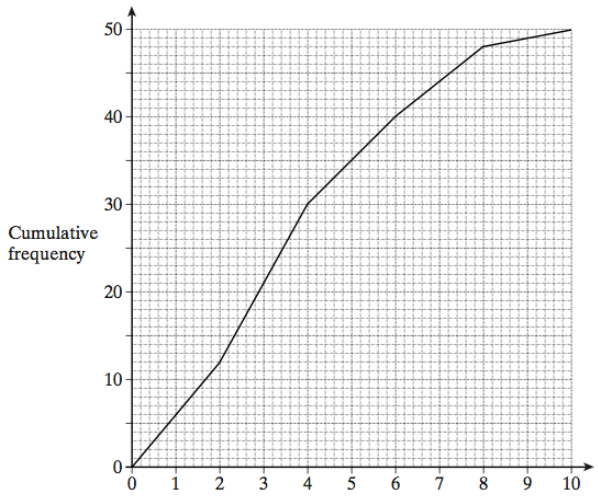
28th January

Corbettmaths

Factorise $2y^2 + 5y + 3$	
Find the equation of the straight line passing through the point (0, 6) which is perpendicular to the line $y = 3x + 1$	
 	Circle the correct equation $y = x^2 - 2$ $y = x^3 - 2$ $x^2 + y^2 = 2$
 	Circle the correct equation $y = x^2$ $y = x^3$ $x^2 + y^2 = 25$
Mersenne primes are prime numbers that can be written in the form $2^n - 1$ where n is a whole number.	If n = 5, is $2^5 - 1$ a Mersenne prime? If n = 8, is $2^8 - 1$ a Mersenne prime?

Name: _____ 5-a-day Higher

29th January



Estimate the median

Estimate the interquartile range.

James, Fred and Kevin each take a penalty
The probability James scores is $\frac{4}{5}$
The probability Fred scores is $\frac{2}{3}$
The probability Kevin scores is $\frac{3}{4}$

What is the probability that all three miss?

A circle has an area of 120cm² to the nearest 10cm².

Work out the upper bound of the radius

Solve

$5y^2 - 4y - 1 = 0$

Name: _____ 5-a-day Higher

30th January

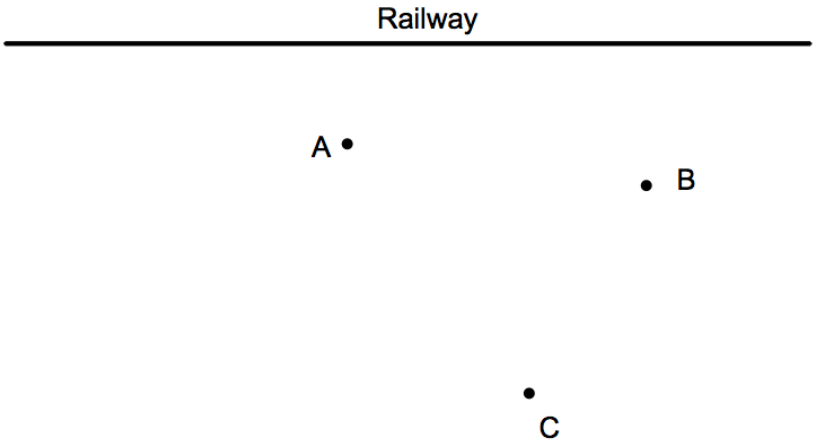
Corbettmaths

A barrel weighs 400kg to the nearest 10kg.

A lorry can hold 4 tonnes to the nearest 100kg.

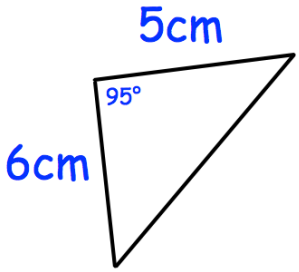
How many barrels can be safely transported?

1cm = 200m



The phone box is less than 500m from the railway track.
The phone box is between 300m and 500m from house A.
The phone box is closer to house C than house B.

Shade the region on the map where the phone box could is located.



Calculate the area.

The point A is (5, –2) and the point B is (11, 1).

Find the equation of the line perpendicular to AB passing through the origin.

Name: _____ 5-a-day Higher

31st January

Corbettmaths

The length of a side of an equilateral triangle is 4.52, correct to 3 significant figures.

Work out the lowest possible perimeter of the triangle.

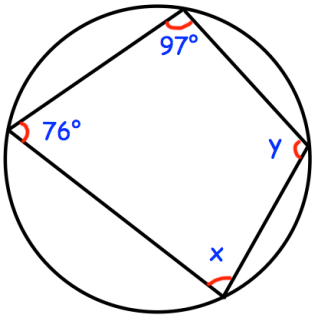
Simplify

$$\frac{2x^2 - 3x - 20}{x^2 - 16}$$

Simplify
$\sqrt{800}$

Simplify

$3\sqrt{3} \times 3\sqrt{12}$



Find x

Find y

Evaluate

$10000^{\frac{3}{4}}$