Year 10 Summer Pack

Maths Support Booklet

Intermediate

Name: _____

This booklet is designed to support your learning over the summer period to help support you to be in the best possible position for your exams in 2023. We all know that eating 5 portions of fruit and veg a day is good for us; well so is completing maths questions on a regular basis through the Corbett-Maths 5 a Day Booklet.

How to use this booklet:

You have been issued with a paper copy. We recommend that you complete 50% of the booklet by the time we return in September. While the summer break is a time for rest and relaxation, we recognise that some students enjoy having something to work on. For those who are currently not where they want to be, this is the perfect opportunity to close that gap ready for September.

You are encouraged to do one page every day in August, but of course you can choose to do more or less if you wish. Once you have completed a page, use the web link or QR Code below to check your answers. You may find the first few days more challenging, but the skills are repeated throughout the booklet so you will find similar questions later on, giving you more opportunities to practise and improve.

Please hand your booklet in to your Maths teacher in September

Link to Answers:

https://corbettmaths.com/2016/10/26/august-answers/
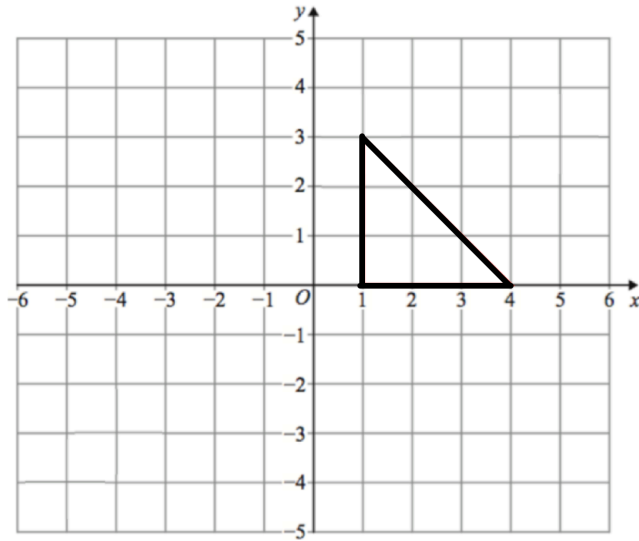
Translate the triangle, by the translation vector

$$\begin{pmatrix} -5 \\ -2 \end{pmatrix}$$

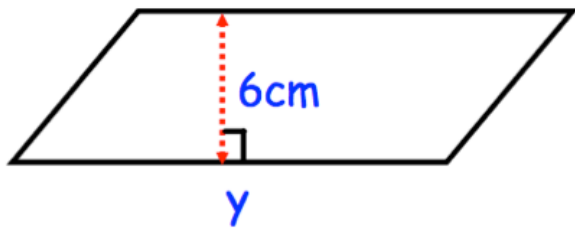| Solve $6x - 10 = 8$	Solve $8 - x = 2$
The ratio of red beads to white beads on a necklace is 2:1. What fraction of the beads are white?	There are 42 red beads, how many beads are there in total?
4cm 11cm 10cm	Calculate the volume of this prism.
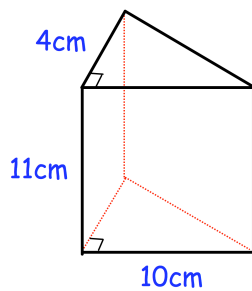
Corbettmaths

6cm

y

The area of the parallelogram is 72cm²

Find y

Andy earns £300 per week.

He is awarded a pay rise of 40%

What is his new wage?

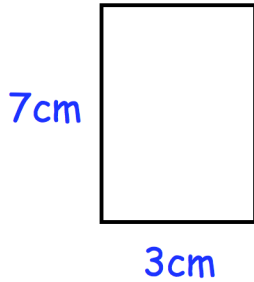Share 4000 in the ratio 3:5

Work out

$$\frac{4}{5} \div \frac{5}{6}$$

Solve 7(2y + 3) = 140

The depth of a river is 160cm and each day it falls by 3cm.

After how many days will the depth of the river fall to 124cm?

7cm

3cm

Calculate the perimeter of the rectangle
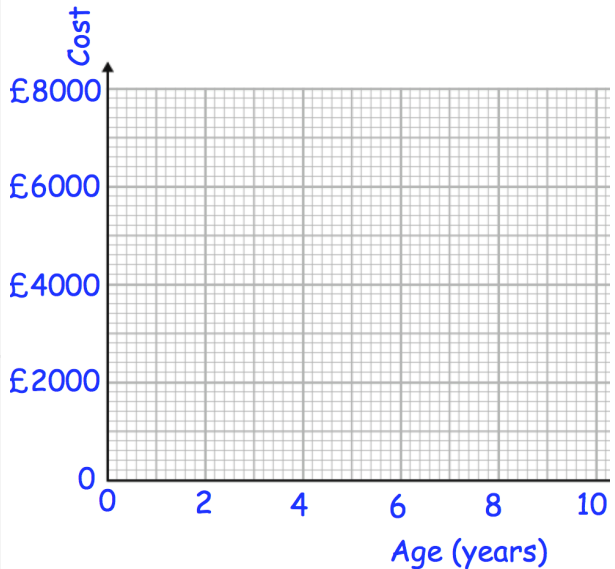

The rectangle is folded vertically.

Calculate the perimeter of the new rectangle

The table shows the ages and cost of 8 second hand cars.

Age, years	4	7	2	4	1	9	3	6
Cost, £	6000	3000	7500	5000	8000	1500	6000	4000

Plot the data on the scatter graph

Describe the relationship between the age of the cars and the cost.

Cost

£8000

£6000

£4000

£2000

0

0　　2　　4　　6　　8　　10

Age (years)

Corbettmaths

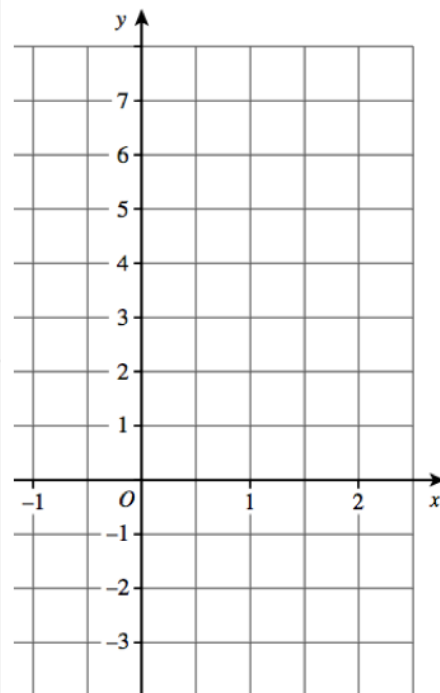Shown below is an isosceles triangle

f

g
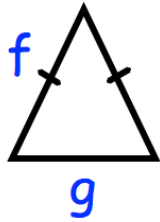
Write an expression for the perimeter

The median of five numbers is 7.

Four of the numbers are 2, 7, 8 and 9.

Write down a possible value of the fifth number.

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x	-1	0	1	2
y				

Complete the table for y = 3x + 1

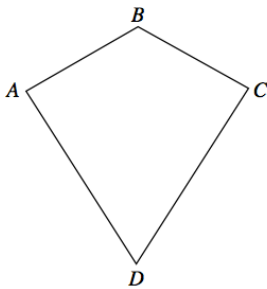Draw the graph y = 3x + 1 on the grid.

Work out 3.4 x 8.25

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Simplify

3a + 3a + 3a

Simplify

a x a

Is AB perpendicular to BC?

Does Angle B = Angle D?
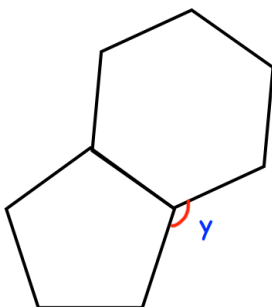
Work out the midpoint of AB, if

A is the coordinate (5, 1)
B is the coordinate (9, 12)

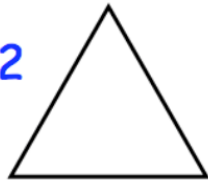Mary cycles at 20mph for 1¾ hours.

How far does she cycle?

Shown is a regular hexagon and regular pentagon.

Find y.

Corbettmaths

$3x - 2$

Shown is an equilateral triangle.

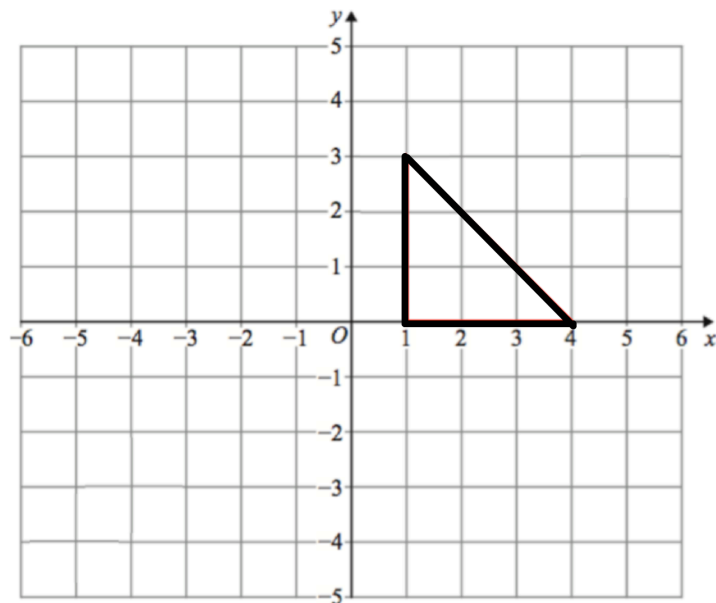Write an expression for the perimeter

$v = u + 10t$

Find V if u = 3 and t = 5

Work out the nth term of

13   18   23   28   ....

Work out the 40th term.

Rotate the triangle 90 degrees anticlockwise about the coordinates (−1, 0)

Write 35% as a decimal

There are 135 pupils in Year 10 at a school

$\dfrac{2}{5}$ of these students travel by bus to school.

How many students in Year 10 do not travel by bus?

Calculate the mean of:

2 7 1 1 1
5 2 1 1 5

Work out 0.7 x 0.2

The mean of five numbers is 7.
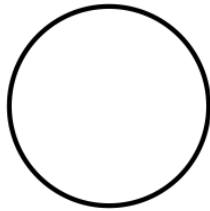
Four of the numbers are 2, 7, 8 and 9.

Write down a possible value of the fifth number.

Solve $5x + 3 = 58$

Solve

$$\frac{w}{3} = 12$$

Draw a tangent.

In a bag, there are red sweets and yellow sweets, in the ratio 3:4

Explain why there cannot be 25 sweets in the bag.

James buys 10 boxes of orange juice.

The cost of each box is £4.
Each box contains 10 cartons of orange juice.

James sells ¾ of the cartons for 80p each.

He then reduces the price by 25% and sells the remaining cartons.

Work out the total profit.

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Write down the cube root of 125

Work out

5^4

Work out

10^5

0.67 $\dfrac{5}{8}$ $\dfrac{4}{5}$ 70%

Write in order of size, starting with the smallest.

Luca and James share money in the ratio 2:7.

James receives £30 more than Luca.
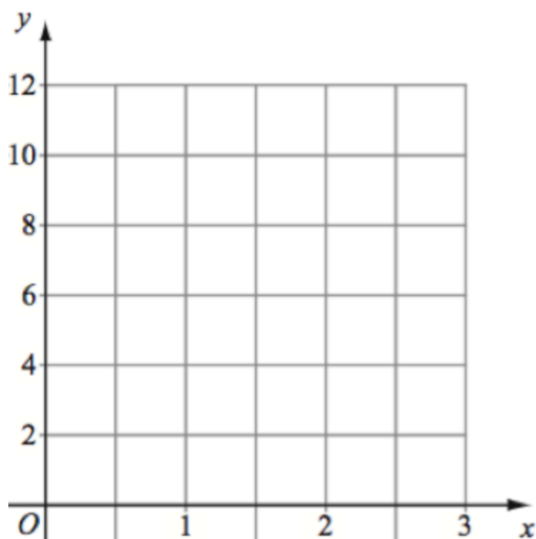
How much does James receive?

Estimate $\dfrac{98.7 \times 3.05}{0.497}$

Write a number that is both a square number and a cube number.

Simplify

2x + 3y + 5x − 2y − 4x

Draw the graph y = 2x + 4

Draw the graph y = 6.

Make w the subject

$$a = \frac{w}{c}$$

Work out the missing number

$\boxed{}$ **- 7 = -6**

Two angles in a triangle are 50 degrees and 36 degrees.

Calculate the third

20% of 30 = ____

50% of ___ = 30

p and q are odd numbers

Is p + q

$\boxed{}$ $\boxed{}$ $\boxed{}$

odd   even   either

Is pq

$\boxed{}$ $\boxed{}$ $\boxed{}$

odd   even   either

Make w the subject

$aw + 7 = c$

A win is worth 3 points.
A draw is worth 1 point.
A loss is worth −1 point.

How many points do Sunderland City have?

	Wins	Draws	Losses
Sunderland City	6	5	3
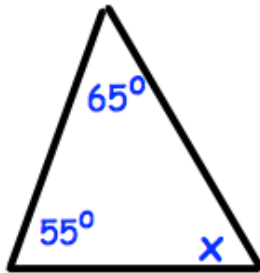
Find x

Write 15% as a decimal

Write 0.8 as a percentage

x	0	1	2	3	4
y					

Complete the table of values for $y = x^2$

Factorise

$25y + 50$

Factorise

$4y^2 + 6y$

This sequence increases by the same amount each time.

Find the two missing numbers.

12 39

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200 tickets are sold in a raffle
There is one prize.
Zayn buys one ticket.

What is the probability that he wins the prize?

Joanne buys five tickets.

What is the probability that she wins the prize? Give your answer as a fraction in its simplest form.
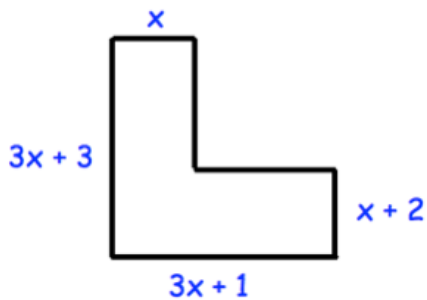

Jaxon drives 164km.

It takes 2 hours 30 minutes.

Work out his average speed.

Write down the nth term for this sequence

10   7   4   1   ...   .

Write an expression for the perimeter
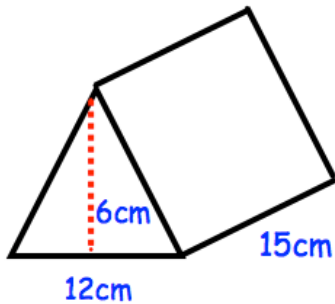
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Increase 40kg by 20%

A ferry leaves a port every 15 minutes, starting at 09:00

The last ferry leaves at 16:30

How many times does a ferry leave the port during one day?

The nth term of a sequence is
n² - 1

Work out the first 5 terms

Find the volume

Calculate the nth term of:
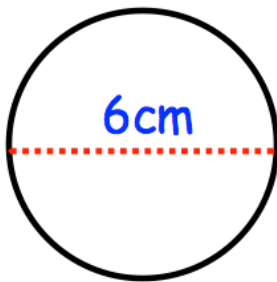
10   13   16   19   ...   ...

Find the 200th term.

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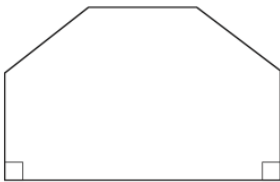100 people play a game that costs £1
The probability of winning is 0.1
The prize is £4.

Calculate how much profit the game makes.
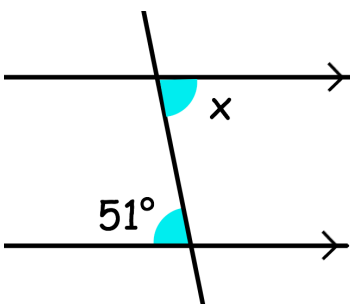

4kg of tomatoes is £4.80

How much does 3kg cost?

6cm

Calculate the circumference of this circle, to one decimal place.

The front of a house is in the shape of a hexagon with two right angles.
The other four angles are all the same size.
Calculate the size of one of these angles.

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x

51°

Find x

Reason

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A class has 30 students and 21 are girls.

Find the ratio of boys to girls in its simplest form.
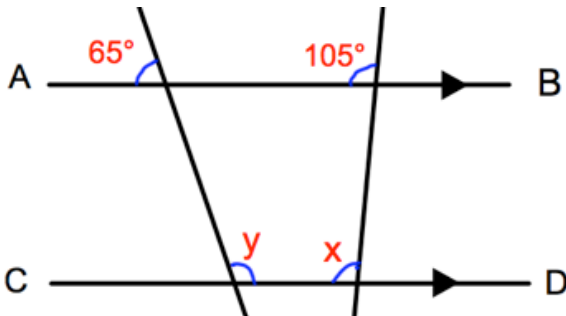

Simplify

3a + 3a + 3a

Simplify

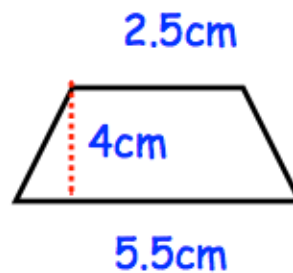4a + 8c + 2a + 2c

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The nth term of a sequence is

4n + 3

Work out the first 5 terms

Find x

Find y

Calculate the area of the trapezium

Write the next two terms

0.8   0.4   0.2   ....
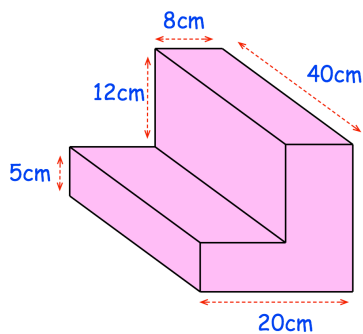
Write the next two terms

1   5   25   ....

Expand 6(x - 2)

Work out

$$\frac{5}{6} - \frac{1}{2}$$

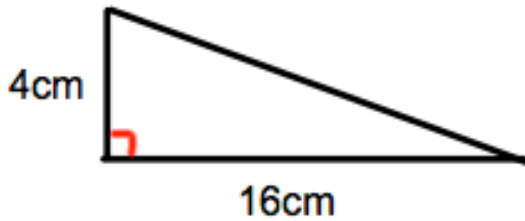|	French	Art
Female	8	3
Male	7	3

A student is chosen at random.

What is the probability they study French?

Calculate the volume of the prism.

What part of the circle is shown?

Find the area of the triangle.

4cm

16cm

Simplify

$$y^2 + y^2 + y^2$$

Arrange in order, from smallest to largest.

$$\frac{3}{4} \qquad \frac{7}{9} \qquad \frac{5}{7}$$

Find the nth term

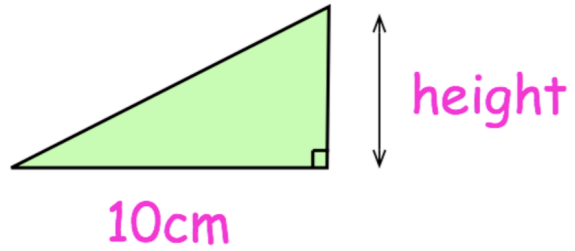1, 1.5, 2, 2.5, ...

Find the 20th term.

Corbettmaths

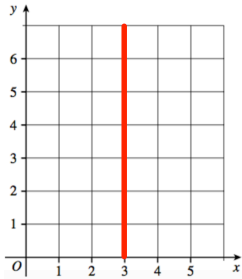Carol claims "when you square a number, the answer is always bigger than the number you started with."

Is she correct? Explain your answer.
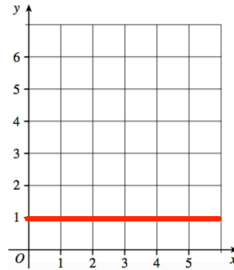

The area of a triangle is 30cm²

Find the height of the triangle

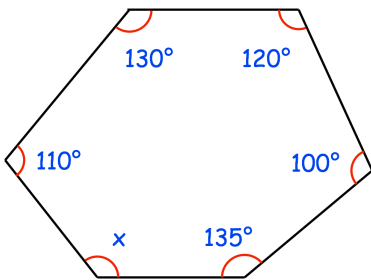10cm   height

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What is the equation of this line?

What is the equation of this line?

Work out an estimate to

$$\frac{49.1 \times 8.08}{3.98}$$

130°   120°

110°   100°

x   135°

Find x

List the prime numbers between 20 and 40.

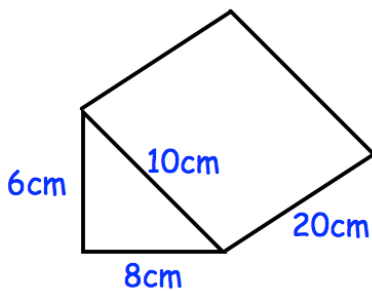When Ali takes a penalty the probability that he will score a goal is $\dfrac{4}{5}$

Ali takes 30 penalties, how many times is he expected to score a goal?

There are red, green and white counters in a bag.

$\dfrac{3}{8}$ of the counters are red.

$\dfrac{1}{6}$ of the counters are green.

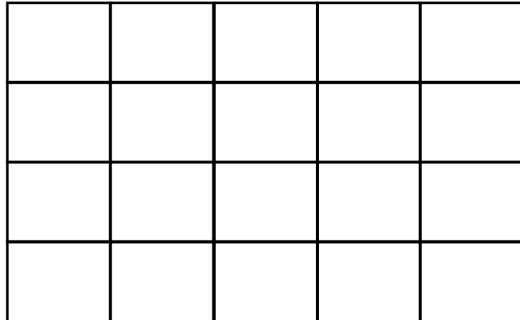What fraction of the counters are white?

6cm
10cm
20cm
8cm

Calculate the volume

Expand 4(x + 3)

Work out 2^3

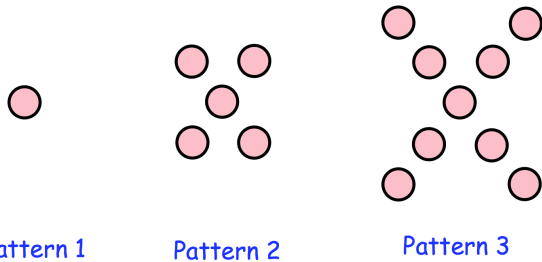Work out $\sqrt[3]{27}$

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Shade in squares so that the grid has:

- no lines of symmetry
- order of rotational symmetry 2

Find the missing terms.

14 __ 20 __ 26

Draw Pattern 4

Pattern 1   Pattern 2   Pattern 3

Write an expression for the number of circles in pattern n

How many circles will be in pattern 10?

There are 125 students in Year 11.

The number of pupils in Year 11 is one-fifth of the total number of pupils in the school.

Work out the total number of pupils in the school.

Enlarge P by scale factor 3

Simplify

$$y^5 \times y^2$$

Simplify

$$y^{10} \div y^2$$
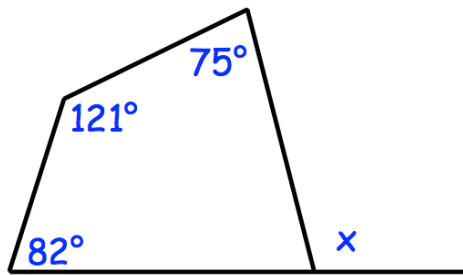
Expand and simplify

$$4(y + 3) + 3(y + 2)$$

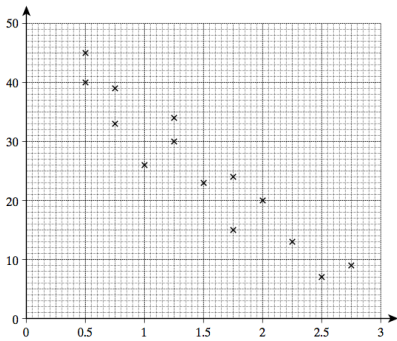In a triangle, the ratio of the angles a, b and c is 1:2:3

What is the size of each angle?

Write 0.4 as a fraction in its simplest form.

Find x

75°

121°

82°   x

What type of correlation is shown?

Henry buys a car that costs £8000.

He pays a 20% deposit and pays the rest of the money over 20 monthly payments.

How much is each payment?

Make g the subject

$$a = \sqrt{g}$$

Corbettmaths

Write the mode of these numbers

3   9   3   9   8   9   3   3

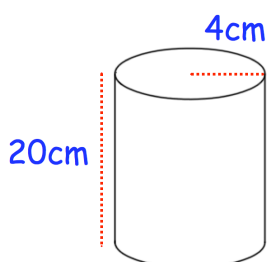
Solve:

6x = 30

Solve:

2x + 1 = 19

Work out

$\dfrac{3}{5} \times 7$

Country	Frequency
England	5
Ireland	15
Scotland	10
Wales	6

Ivan wants to draw a pie chart.

Work out the size of each angle.

4cm

20cm

Calculate the volume

Corbettmaths

PRINT CHARGES

3p per page
85p for the cover

A book costs £4.45

How many pages are in the book?

Find the angle between the hands of a clock at 1pm

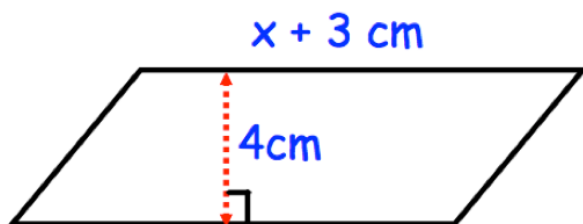Find the angle between the hands of a clock at 4pm

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If y = −4 and x = 2, work out the value of:
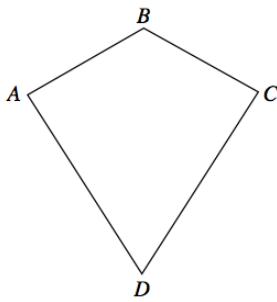
$$\frac{y + 20}{x}$$

$1.50 = £1

A pairs of trousers costs $45.

Work out the cost in pounds.

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x + 3 cm

4cm

The area of the parallelogram is 32cm²

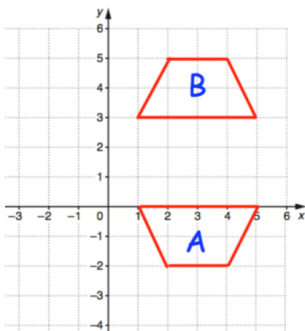Find x.

Is AB parallel to CD?

Does Angle A = Angle C?

Convert 0.14 into a fraction in its simplest form.

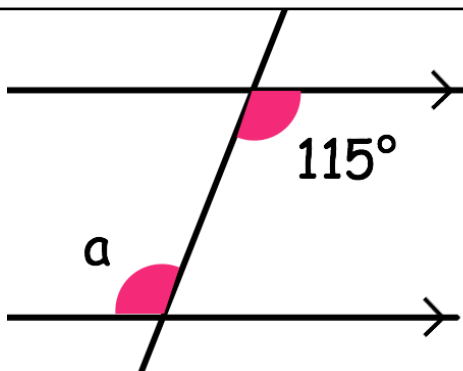Convert 80% into a fraction in its simplest form.

Martin and Laura share 415 sweets in the ratio 1:4.

How many sweets does Laura receive?

B is a reflection of A.

What is the equation of the mirror line?

Size of a?

Reason?

115°

a

Simplify

$3y \times 2y$

Simplify

$$\frac{25xy}{5x}$$

Work out

$$\frac{3}{8} + \frac{3}{4} + \frac{1}{2}$$

Factorise

8y + 10

20% of a number is 4.

What is the number?

30% of a different number is 15.

What is the number?

The mean of four numbers is 6.

Three of the numbers are 1, 3 and 8.

Work out the fourth number.

Erin says "my number is 500 to the nearest 10, but is not 500."

What could her number be?

Expand and simplify
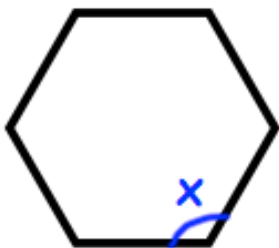
$$4(y + 3) - 3(y + 2)$$

Two spinners have the equal size sections with the numbers 1, 2, 3 and 4. They are spun and the two numbers are multiplied together.

Complete the table to show all the possible totals.

	1	2	3	4
1				
2				
3				
4				

What is the probability of the total being 2?

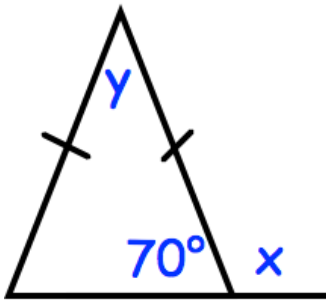What is the probability of the total being under 6?

What is the size of each interior angle in a regular hexagon

Elijah's watch is four minutes fast. Jo's watch is five minutes slow.

What time is shown on Jo's watch when Elijah's watch shows 13:04

Find x

Find y

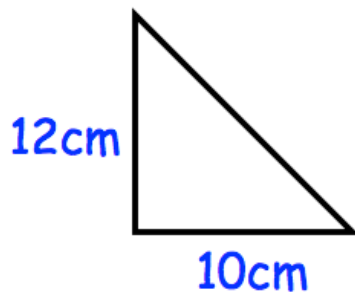Riley asked 6 friends their age.

21 28   28   28 29 30

If a seventh friend has an age of 34, will the mode decrease, increase or stay the same?

Factorise

6y + 27

A mother's and daughter's ages are in the ratio 7:2

If the daughter is 14, how old is the mother?

Find the area of this right angle triangle

£1 = $1.50

Nicola changes £20 into dollars.

How much will she get?

What fraction is halfway between

$$\frac{2}{5} \quad \text{and} \quad \frac{9}{10}$$

A watch costs €50 in Lisbon.
The same watch costs £35 in London.

Given £1 = €1.25

Which is cheaper?

500ml of shampoo costs 78p
1.25 litres of shampoo costs £2

Which is better value?

Corbettmaths

Corbettmαths

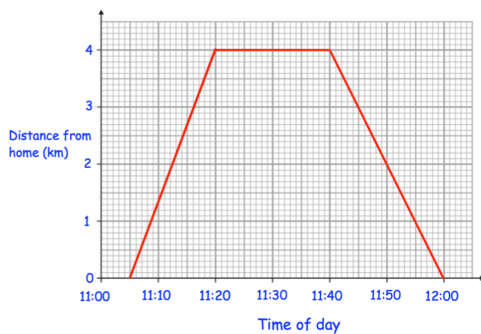Simplify

9(5y + 3) − 4

The ratio of red beads to white beads on a necklace is 5:2.

What fraction of the beads are white?

There are 60 red beads, how many white beads are there?

List all the integers that satisfy the inequality

$6 < x \leq 10$

David lives in Torquay.
He visited his aunt and then returned home.

How long did he stay at his aunt's?

How far away from Torquay does his aunt live?

How far did David travel?