



Family Maths Toolkit

Family Maths Scrapbook Activities Year 2

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Any questions, please email:
enquiries@nationalnumeracy.org.uk

familymathstoolkit.org.uk

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 **National
Numeracy**
Getting on with numbers

Registered charity no: 1145669



Family Maths Toolkit

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3

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For parents and carers

However you might feel about maths, you can make a huge difference to your children's numeracy learning.

All the evidence shows that talking about everyday maths helps develop children's maths confidence. Here are some questions that you can ask each other when tackling the activities:

- What do we need to do?
- What information do we have? What do we need to find out?
- Would any equipment help?
- What do you notice when...?
- Shall we make a guess and see if it works?
- What could we do if we get stuck?
- If we were doing this again, is there anything we could do differently?

You can adapt these activities to suit your family's interests and use whatever items you may have to hand, at home or out and about.

You might want to take photos, draw pictures, write calculations or create diagrams - it's up to you!

Do use the comment boxes to reflect your discussions and thoughts as you complete each activity together.

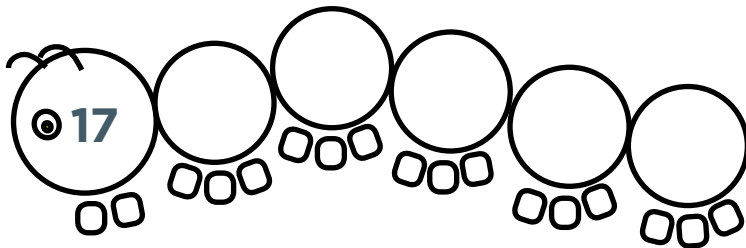
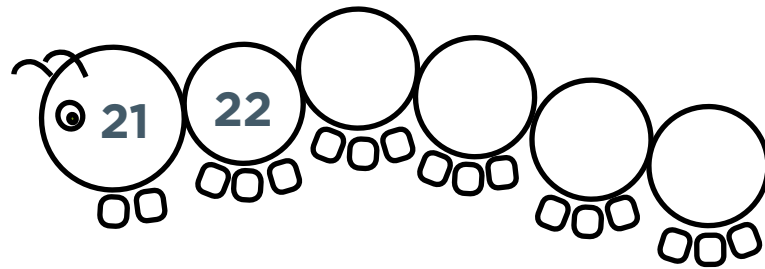
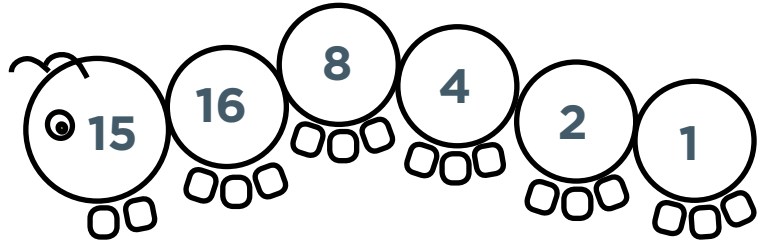
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Caterpillars



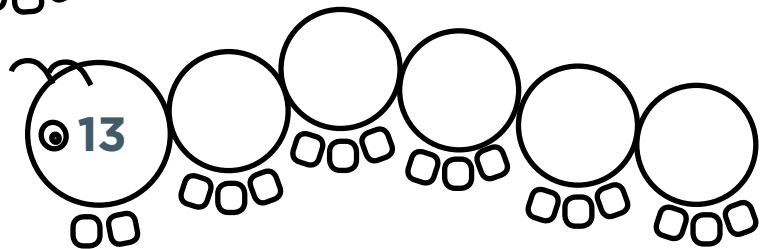
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Toolkit

Complete a caterpillar by adding 1 if a number is odd, or if a number is even halve it. Carry on until you get to 1. The first one has been done for you.



Can you make up some caterpillars of your own?

Using numbers less than 20 what is the shortest caterpillar? What is the longest caterpillar?



Family comments:

Child comments:



Curriculum Link

Odd and even numbers, adding and subtracting to 20, halving.

Writing maths stories



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Maths is all around us! Can you spot any examples of maths in your house and write a maths story using some numbers? Here are some ideas:

There are 5 pieces of fruit in the bowl.
3 are bananas and 2 are apples.

6 birds came to our garden to eat; 3 flew away so there were 3 left.

I had 25 pieces of building bricks to build a house.
I only used 14 so I put 11 back in the box.

There are 5 pieces of fruit in the bowl. 3 are bananas and the rest are apples - how many apples?

Have some fun with some funny stories using numbers!



Challenge -
Can you write a maths story with a question?

Family comments:

Child comments:



Curriculum Link

To practise reading, writing and comparing numbers and solve a variety of problems to develop fluency.

Puppy multiplication fun



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Some puppies are playing on the beach. Each puppy has 1 waggy tail; 1 wet nose; 2 floppy ears; 2 bright eyes; 4 long legs and 5 clipped claws on each foot.

There are 10 puppies on the beach – how many long legs? How many wet noses? How many floppy ears?

There are 5 puppies playing ball – how many waggy tails?

How many long legs? How many bright eyes?

2 puppies are digging a hole! How many clipped claws?

Can you make up some more questions (and answers!) about the puppies on the beach? You can change how many puppies there are if you like.

Helpful hint: Drawing the puppies helps to see the repeated addition or multiplication.



Adapted from the Dogs Trust 'Real life problems for 7-11 year olds'.

Family comments:

Child comments:



Curriculum Link

Using multiplication to solve everyday problems.

Sharing sweets



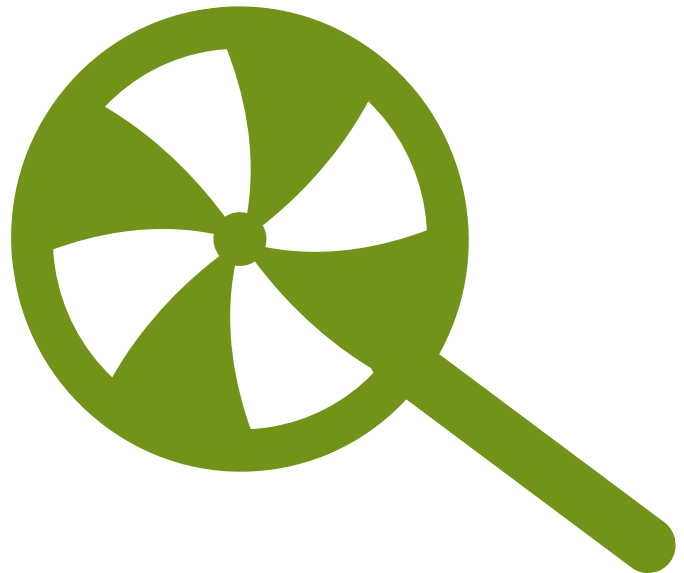
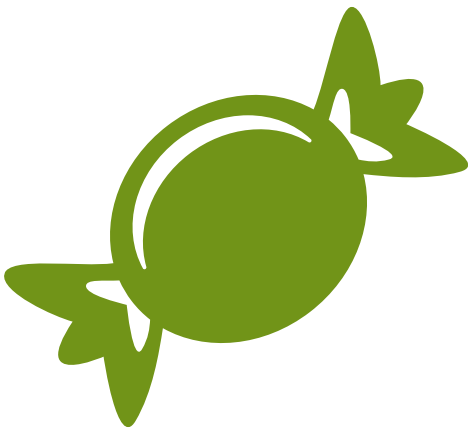
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In the cupboard are a bag of 6 lollies, a bag of 4 chocolates and a bag of 10 chews.

How could these be shared fairly between 4 friends?

Can you find another way?

If there were 2 of each bag, how would that make it easier to share?



Helpful hint: Use counters or other small objects to represent the sweets or draw pictures to help understanding.

Family comments:

Child comments:



Curriculum Link

Be introduced to multiplication and division through sharing and equal grouping of a variety of objects.

The witch's spell

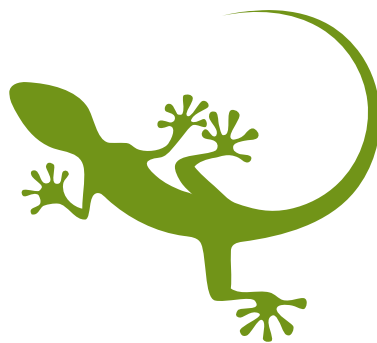


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The witch needs a 24-leg potion to turn her teacher into a frog. She's got spiders (8 legs), lizards (4 legs) and bats (2 legs).

Try to find all the possible spells to turn her teacher into a frog!

Make up your own spell for a member of your family!



Helpful hint: An example - 2 spiders, 1 lizard and 2 bats would do the trick!



Challenge -
The witch needs a 32 leg potion to turn the headteacher in to a frog. What spells could she use this time?

Family comments:

Child comments:



Curriculum Link

Using addition and multiplication to solve problems; working systematically to find all the possibilities.

Fireworks



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Toolkit

Find the coins that will buy the fireworks.

Choose two fireworks and see how much they will cost altogether. Do this again with different fireworks.



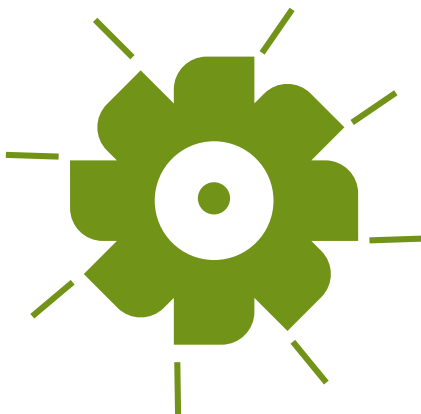
15p



35p



10p



25p

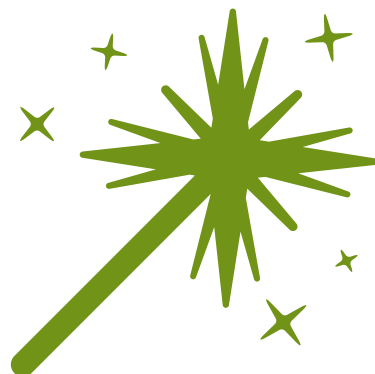


30p

Which fireworks could you buy with exactly £1.00?



45p



20p



40p



30p

Family comments:

Child comments:



Curriculum Link

Addition of money of the same unit.

Estimating time



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Write as many activities as possible that you do at home into each column - include as many of your family as possible to fill in each column (don't forget any pets!).



5 - 10 minutes	About 30 minutes	About 1 hour	More than 1 hour

Family comments:

Child comments:



Curriculum Link

Working with and recognising time intervals to the nearest 5 minutes.

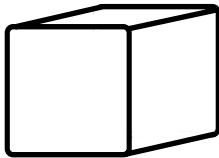
3D shapes



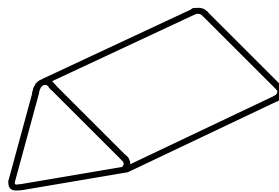
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Find objects around the house which are 3D shapes and see how many 2D shapes there are on the object.

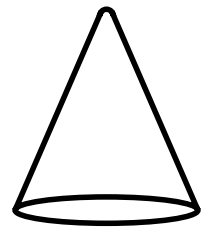
For example, a can of beans is a cylinder and it has 2 circles, one at each end and the middle is a rectangle.



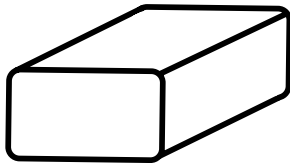
cube



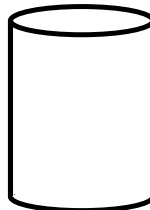
triangular prism



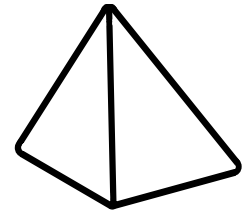
cone



cuboid



cylinder



tetrahedron

How many did you find?

Family comments:

Child comments:



Curriculum Link

Identify 2D shapes on the surface of 3D shapes, for example a circle on a cylinder and a triangle on a pyramid.

Symmetrical letters



Family Maths
Toolkit

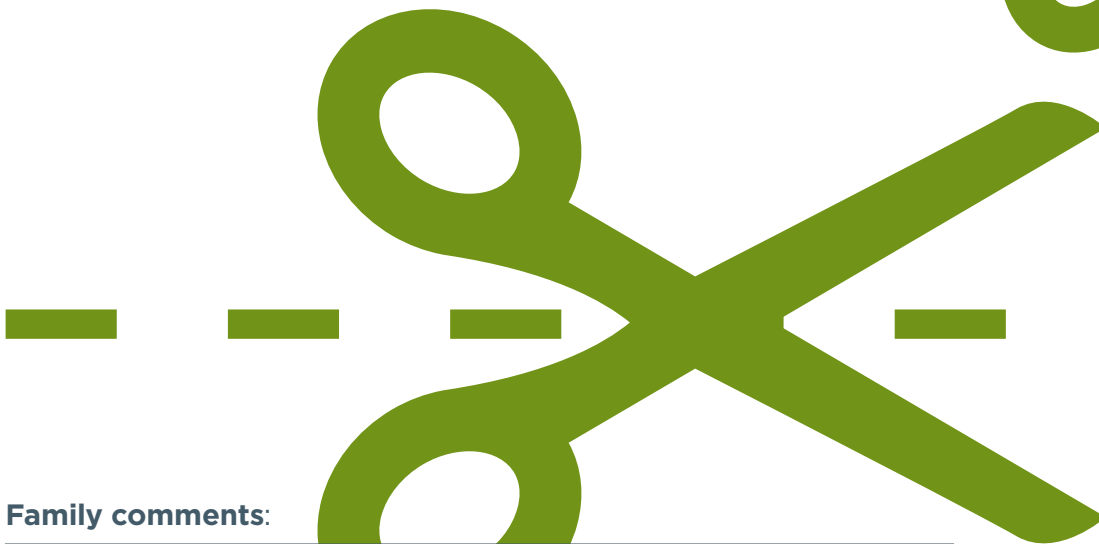
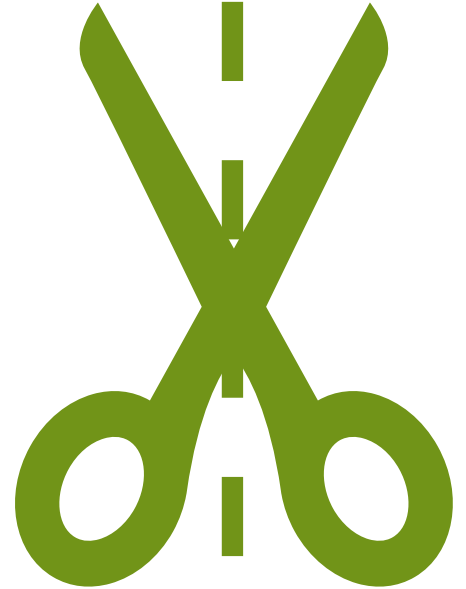
Think about these capital letters - M, A, T, H

Imagine them made out of card, and lying flat on the table in front of you.

Imagine cutting each letter in half - both halves must be symmetrical - that means exactly the same on each side if one side was flipped over. Which are symmetrical?

Now imagine your name in capital letters made of card. Which of the letters are symmetrical? Does anyone in your family have a name with no symmetrical letters?

Can you make up a name with only symmetrical letters?



Family comments:

Child comments:



Curriculum Link

Identify and describe symmetry.

Christmas elves



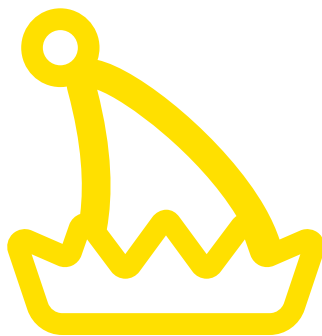
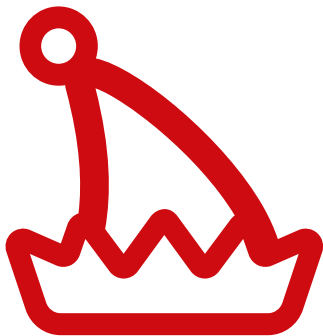
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Mrs Claus made new Christmas suits for three of the workshop elves.

Each suit had matching trousers, jacket and hat.

One suit was all red, one was all green and one was all yellow. The elves were delighted with their presents, but decided it would be fun to wear a different outfit every day for as many days as possible. So they agreed to swap around parts of their suits until they ran out of new combinations.

How many days did their fun last?



Family comments:

Child comments:



Curriculum Link

Solving problems involving finding all possibilities.

Using mathematical signs



Family Maths
Toolkit

Everyone knows that $=$ means equal or the same value as.

Find ways to use $<$ and $>$

$<$ is less than and $>$ is more than.

Find things at home or in the garden to compare. Record your ideas like this:

- Leaves on the tree $>$ petals on a plant
- A child's age $<$ a teacher's age

How many examples can you think of?



Family comments:

Child comments:



Curriculum Link

Compare numbers
using $+$, $<$ and $>$

Telephone numbers



Family Maths
Toolkit

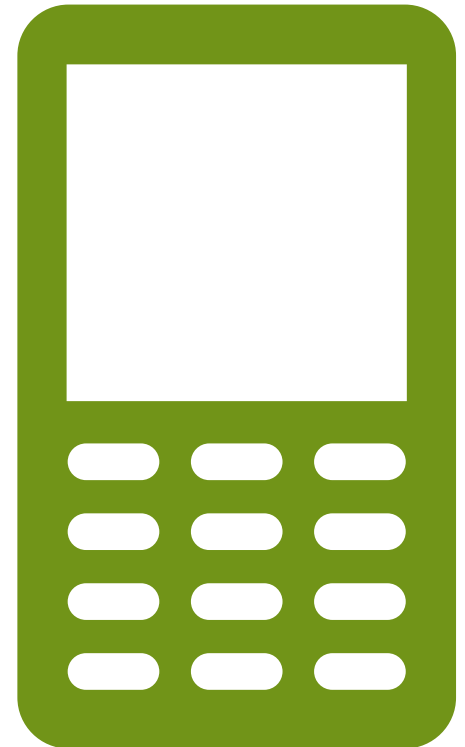
Here is a challenge. You can add up the digits in any telephone number to make a total; what is the largest total you can find?

What do the digits in your telephone number add up to? Try out all your family's numbers. Look in newspapers and magazines – can you find one which adds up to more?

If you are out and about, look at telephone numbers in shops or on vehicles.

Most mobile numbers start with 07 – what digits would follow to make the highest number possible?

Helpful hint: Add only 2 or 3 numbers at a time to make this manageable; break up and share the task.



Family comments:

Child comments:



Curriculum Link

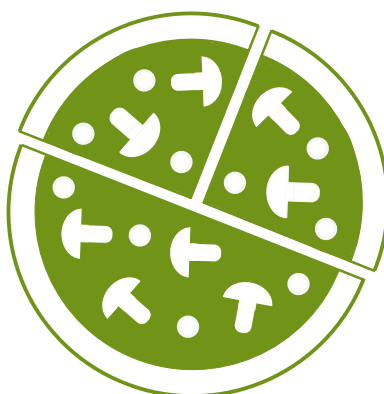
Practise addition to become increasingly fluent.

Sharing the pizzas



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Toolkit

At a family meal there are 3 pizzas
and 4 people to share them.
All the pizzas are cheese.



How many different ways could you share
them so that everyone gets the same?

Would it be different if one pizza is cheese,
one is ham and one is prawn? How would
you share them now?

Make up your favourite pizza for your family
- how many people would share it? How
many pizzas would you get?

Family comments:

Child comments:



Curriculum Link

Recognise, find, name
and write fractions of
a shape, set of objects
or quantity; recognise
equivalence of two
quarters and a half.

At the pet shop



Family Maths
Toolkit

Paddy is a large dog and needs a new bed and a bag of food.



At the shop	Bed	Drinking bowl	Safe fluffy toy	Food bowl	Lead	Bag of food
Large dog	£30.00	£10.00	£15.00	£14.00	£25.00	£50.00
Small dog	£20.00	£8.00	£12.00	£10.00	£15.00	£30.00



How much will this cost at the pet shop?

If he also buys a new lead, will the total be more than £100?

His friend Monty is a small puppy – he only has £50 to spend – what could he have?

A dog needs a new bag of food every 3 months. How much will it cost Paddy for a year?

Do you know any pets? Can you find out some of their costs? (If you don't know anyone with a pet, what would you like – imagine what they would need.)



Family comments:

Child comments:



Curriculum Link

Addition of money using £; intervals of time.

Months of the year



Family Maths
Toolkit

*Thirty days hath September,
April, June and November.
All the rest have thirty one
Except February alone;
It has twenty eight days clear
And twenty nine in each leap year.*

Use a calendar or diary to talk about:

1. Which month is your birthday in? How many days are in that month?
2. Find out which month your family's birthdays are in - who has a birthday in the longest months?
3. How many days is it until your birthday? What day of the week will it be on this year? Will it be the same day next year?
4. How many days until the next school holiday?
5. February is the shortest month - does anything special happen in February?
6. What is the next exciting thing on the calendar?
7. If you chose a birthday for one of your toys, when would it be? Why?
8. Is there something special you do on the same day every week? How many times will you do this in March?



Family comments:

Child comments:



Curriculum Link

Compare and
sequence intervals
of time.

Times around the house



Family Maths
Toolkit

How many things can you find in your house which display the time? Are they all the same?

Do you see any times displayed when you are out and about? Where?

Look in a newspaper – can you find any times? Can you see which is the longest TV programme today?

How long is your favourite programme?



Family comments:

Child comments:



Curriculum Link

Tell and write the time to the nearest 5 minutes.

Investigating pancakes



Family Maths
Toolkit

On Shrove Tuesday, it is traditional to make pancakes to eat. Sometimes they can be eaten with sugar and lemon; other people like them with syrup or jam.

Pancakes can be different sizes. If you had to share one, investigate (use a paper circle if you are not making pancakes!) the smallest size you could make for all your family to have a piece.

What is the largest you could make? (Measure the diameter of the pancake - across the middle from edge to edge.) What is a good size for one person? What size could you make for one of your teddies?



Family comments:

Child comments:

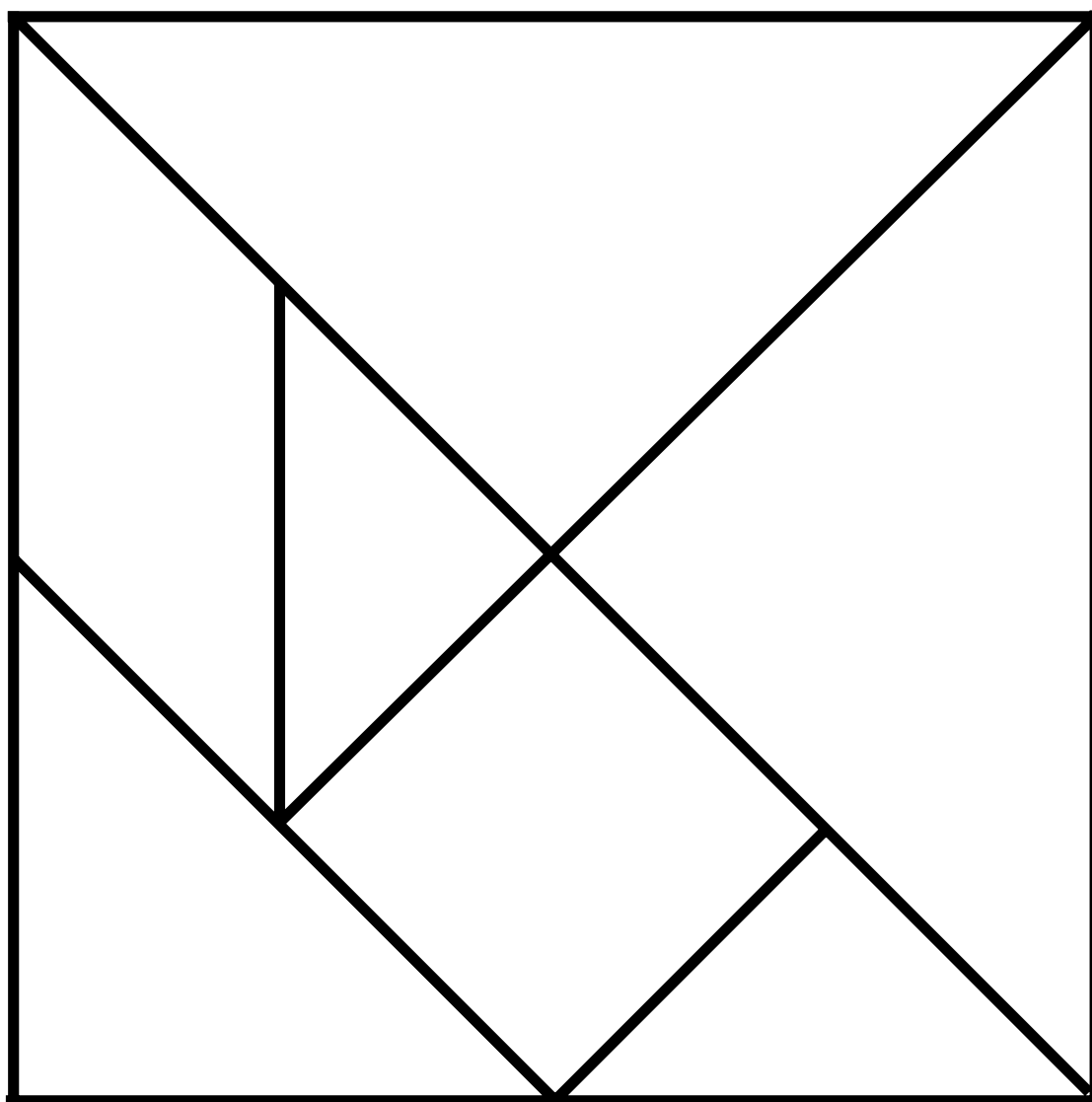


Curriculum Link

Use appropriate standard units to compare and order lengths.

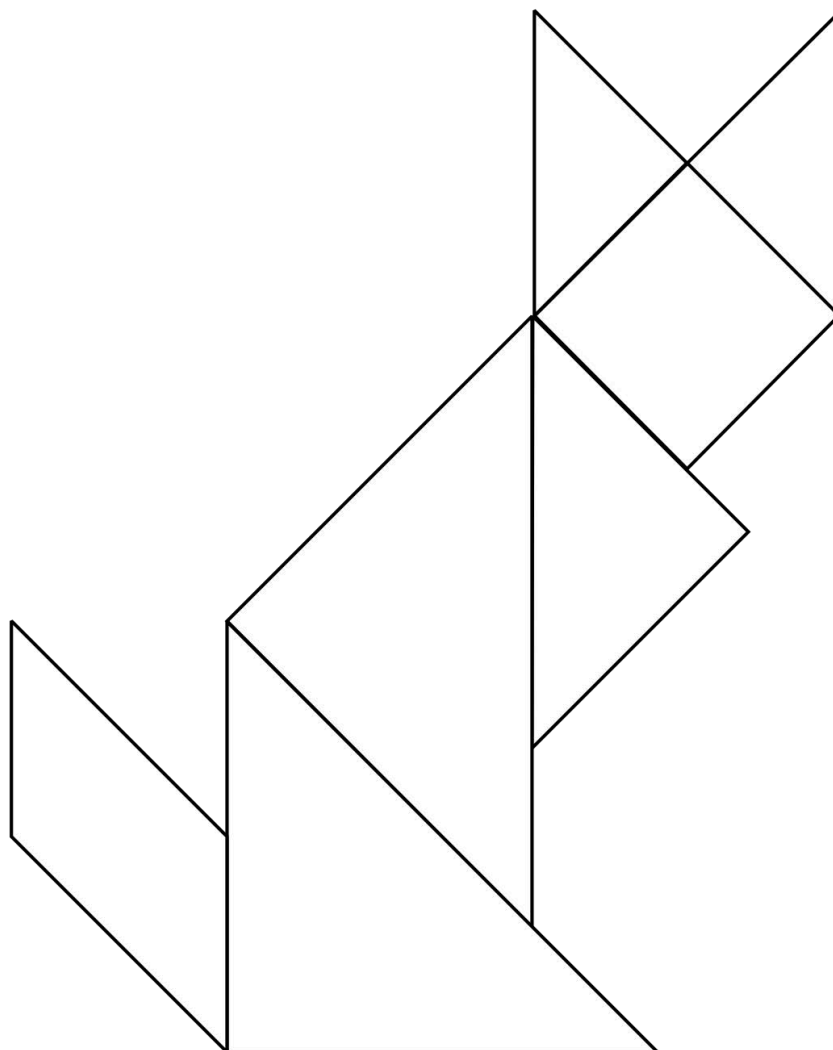
A tangram is a type of puzzle that's popular in China.

What shapes are the tangram pieces?



Try using the simple shapes in the tangram template to make a picture (cut out carefully from the sheet).

Here is a cat as an example. Can you make any other animals or things from the tangram pieces?



Helpful hint: Talk about the number of sides of each shape, number of vertices (corners).

Family comments:

Child comments:

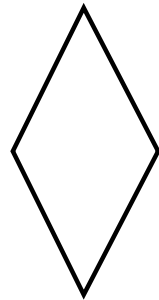
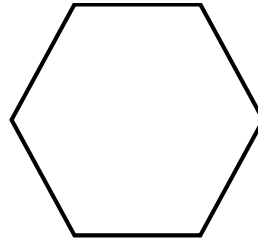
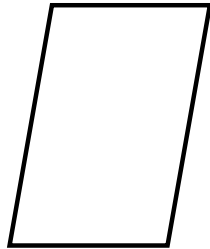
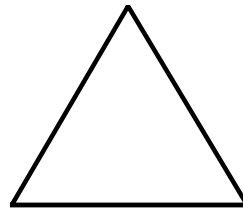
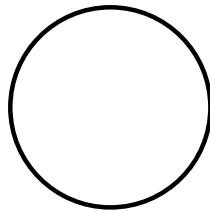
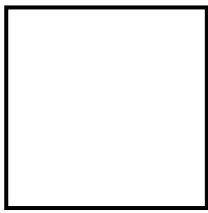


Curriculum Link

Handle and name a variety of 2D shapes and identify them on the basis of their properties.

Which of these shapes tessellate?

Find things in the house this shape, or you could draw the shapes and cut them out, to see if they fit next to each other with no spaces. Add a tick or a cross:



What do all of the tessellating shapes have in common?
Which shapes do not tessellate? Why is this?

Draw and colour your own tessellating pattern.
Can you use more than one shape?

Where might a tessellated shape pattern be used in real life?

Family comments:

Child comments:



Curriculum Link

Compare and classify geometric shapes based on their properties and work with patterns of shapes.

Easter egg symmetry

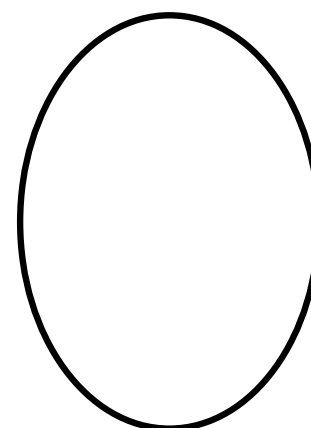
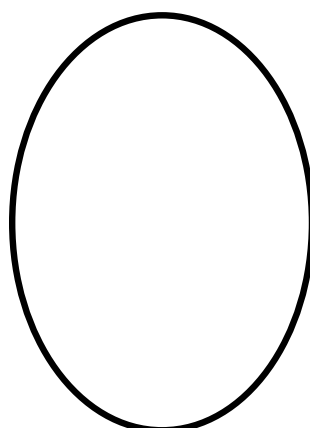
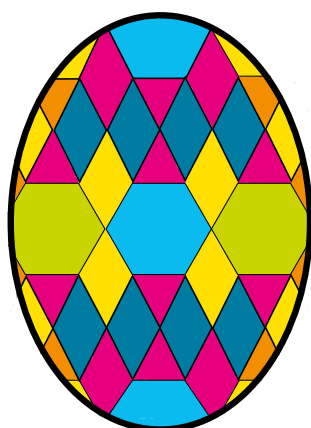


Family Maths
Toolkit

Easter egg wrappers often have symmetrical patterns. They sometimes use mathematical shapes to make the patterns.

Can you design an egg wrapper using different shapes and colours – make it symmetrical!

Can you draw half a symmetrical pattern, for an egg, and ask someone in your family to complete it? Do not make it impossibly hard!



Helpful hint: Talk about which shapes have been used and their orientation.

Family comments:

Child comments:



Curriculum Link

Work with patterns of shape, including those of different orientations.

True or false



Family Maths
Toolkit

Take it in turns to read out these sentences and say whether they are true or false – if you are right, you get one point. The person with the most points at the end wins.

Then make up two more sentences each to try out on the family (you must work out the answer to know if they are right!).



Two more than three is 6.

Sally is 15 and Daniel is 7.
The difference between their ages is 8.

There are 6 people on a red table,
3 on a green, and 4 on a blue.
There are 15 people altogether.

There were 12 people on the bus.
4 people got off. There were 8 left on the bus.

There are 15 biscuits in the packet.
I ate 5 of them after lunch.
There were 11 left.

The total of 4, 5 and 3 is 12.

A teacher has 15 stickers. She gives out 3. She has 10 left.

There are 22 children in purple class. One Monday, 3 children were absent. There were 19 in school.

There are 12 chocolates in a box. I ate 6 of them. There are 6 left.

I have 10 sweets. I give 3 to my friend. I have 6 left.



I share 8 sweets equally between my 2 friends. They have 5 each.

5 kittens are in a basket. 2 jump out. There are 4 left in the basket.

Family comments:

Child comments:



Curriculum Link

Solving word problems using addition and subtraction, and reasoning to justify an answer.

Trooping the Colour



Family Maths
Toolkit

When Trooping the Colour takes place in London, in front of the Queen, all the guardsmen practise for a long time to be in straight rows. This is a photo of just one regiment. Can you estimate how many soldiers there are?



If they stand in rows of 10, how many rows would a regiment of 200 soldiers make? The horses also have to be trained. In one group there are 30 horses on parade. How many could be in each row of horses? 400 musicians play. If one band has 20 musicians, how many different ways could they stand in rows?

Using squared paper, design some formations for 24 guardsmen to stand in.

Family comments:

Child comments:

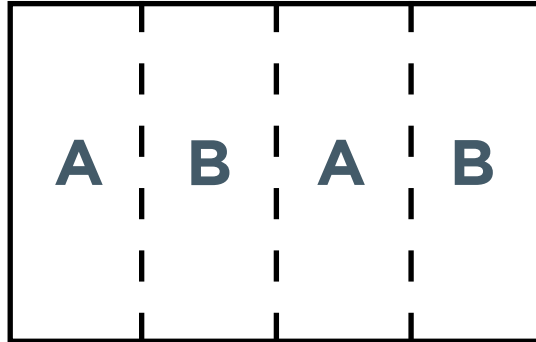
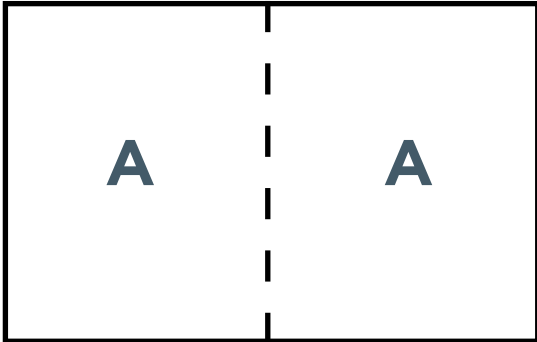


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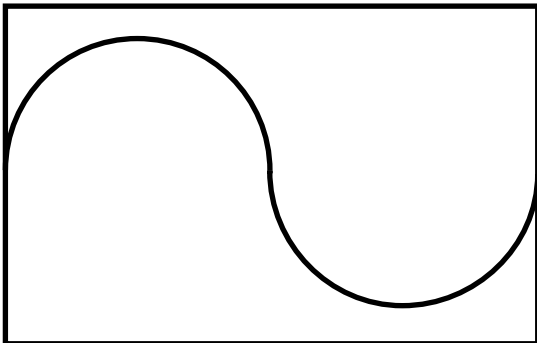
Estimation, problem solving using multiplication and division facts from 2, 5 and 10 times tables (beginning to use 3, 4, 6 and 8).

Can you make folds in a piece of paper to show different halves?

Here are two examples to get you going:



Talk about why these show halves:



Can you draw any curly halves?

Family comments:

Child comments:



Curriculum Link

Solving problems using shape and recognising half and its equivalents.

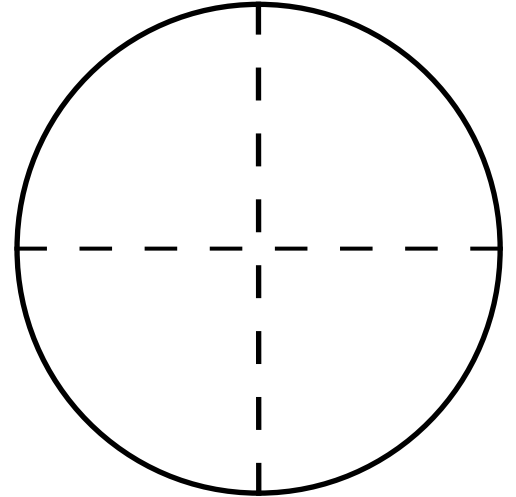
Quarters of circles



Family Maths
Toolkit

Find paper circles of different sizes (you could draw around things like cans or lids and cut them out).

1. Fold to find a quarter ($\frac{1}{4}$) of circles of different sizes.
2. What is the same? What is different?
3. How could you find three quarters ($\frac{3}{4}$)?
4. What would 5 quarters ($\frac{5}{4}$) look like?
5. How would you find $\frac{1}{4}$ of a piece of string?



Challenge –
What about
 $\frac{1}{4}$ of 2 pieces
of string?

Family comments:

Child comments:



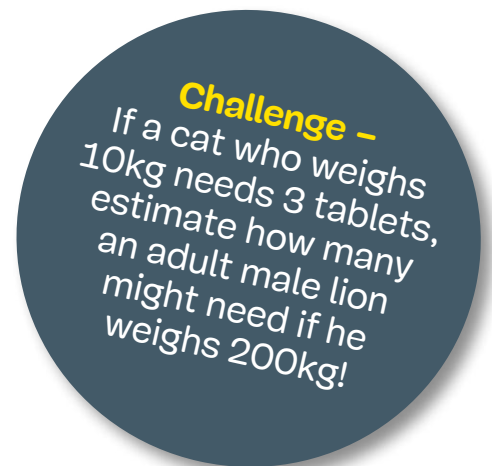
Curriculum Link

Find fractions of shapes and measures; meet $\frac{3}{4}$ as a non-unit fraction; begin to count in fraction quantities.

A vet has a problem - he finds it hard to work out halves - can you help?

He has 3 packets of 5 cat tablets. He does not know if he has enough for the cats in his surgery today. Cats have tablets to match their weight. Use this table to help you work it out:

Cat weighs	Number of cats	Number of tablets each
0.5kg - 0.9kg	2	$\frac{1}{2}$
1kg - 1.4kg	3	1
1.5kg - 2.9kg	1	$1\frac{1}{2}$
3kg - 4.9kg	2	2
5kg - 5.9kg	3	$2\frac{1}{2}$



How many packets does he need? Does he have enough?
Do you know any animals who have tablets?
How many do they have to take?

Helpful hint: Cut out small paper circles to represent tablets - these can then be cut in half to make calculating easier.

Family comments:

Child comments:



Curriculum Link

Using appropriate standard measurements to compare and order weight (g/kg); solve problems involving halves; refining estimation skills.

Which of these dogs is the heaviest?

Which is the lightest?

Do you weigh more than the lightest?

Which dog are you closest to in weight?

Can you put the dogs in order starting with the youngest?

Which dogs are older than you?



German Shepherd

3yrs 2mths

36kg



Red Setter

5yrs 8mths

24kg



Labrador puppy

0yrs 2mths

4kg



Boxer

8yrs 11mths

30kg



Jack Russell

12yrs 9mths

6kg



If you have pets, can you put them in age order? If not, give your soft toys a birthday and put them in age order.



Adapted from the Dogs Trust 'Real life problems for 7-11 year olds'.

Family comments:

Child comments:



Curriculum Link

.....
Compare and order mass using appropriate standard units; compare intervals of time.

A bottle of medicine holds 50 ml.

A cat needs 5 ml each day, a rabbit needs 4 ml, a dog needs 20 ml, a horse needs 30 ml, a guinea pig needs

3 ml, a goat needs 25 ml, a lizard needs 2 ml.

How long would a bottle last for each animal?

Imagine you are a vet, which animals do you have in your surgery at the moment? How much medicine will you need?

Can you find a bottle in your house which has 200 ml or close? What is it used for?

Use $<$ (less than); $>$ (more than) or $=$ (equal).

For example; a bottle of tomato sauce $>$ 200 ml.

How long do you think it will last for your family?



Family comments:

Child comments:



Curriculum Link

Use appropriate standard units to estimate, measure, compare and order capacity (l/ml); use $<$, $>$ and $=$

The Pillars of Islam



Family Maths
Toolkit

This is a picture of The Pillars of Islam which Muslims believe gives them rules for how to behave in life (like the 10 Commandments in Christianity and Judaism).

Using recycled paper (cardboard tubes, empty cartons or newspapers are good) or kitchen rolls or similar, try to create the five pillars. They all need to be the same height - what height are yours?

How far apart can you make them stand so they support a kitchen roll as shown in the picture?

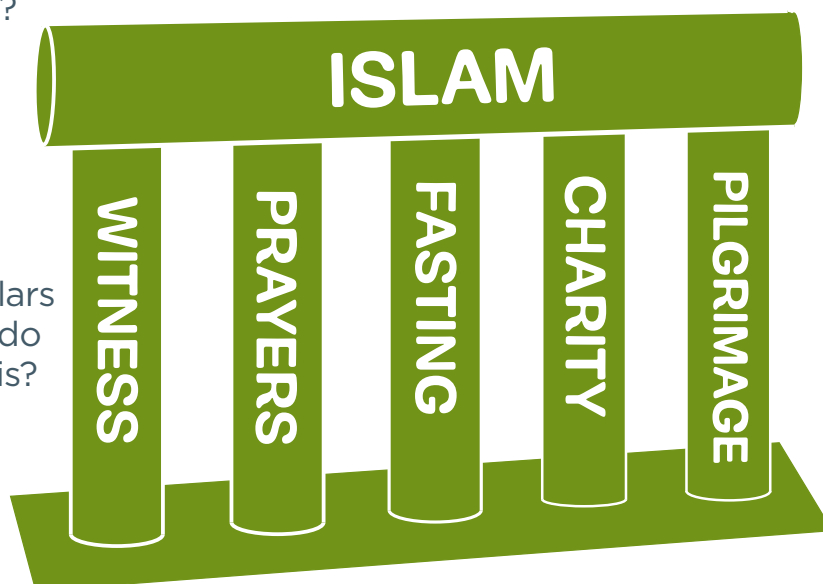
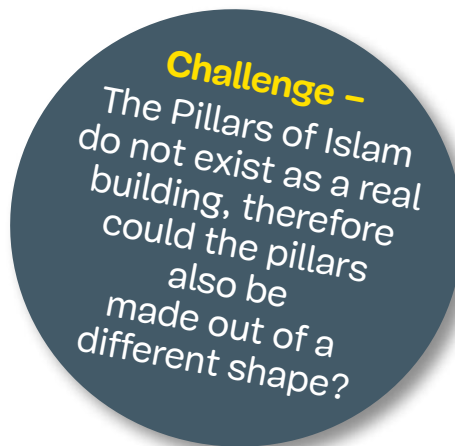
How tall can you make another pillar (it must stand up!)?

Can you find different pictures of pillars or columns in buildings? Which one do you like and how tall do you think it is?

To find out more, look at:
<http://resources.woodlands-junior.kent.sch.uk/customs/questions/calendar/>

Family comments:

Child comments:



Curriculum Link

Handle a variety of common shapes and be able to talk about their properties; using measurements.

If everyone in your family shakes hands with everyone else – once and only once – how many handshakes would there be?

If there are not many people in your home, maybe let a teddy bear (or two) join in?

How could you show this?



Family comments:

Child comments:



Curriculum Link

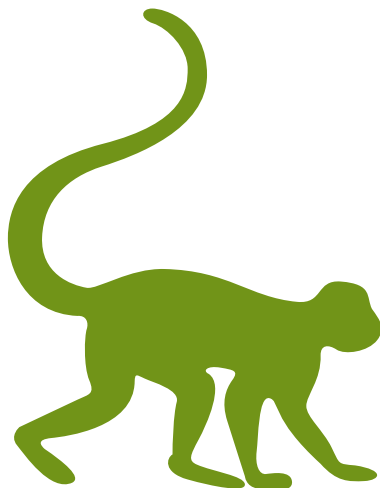
Ask and answer simple questions by counting and sorting; organise and record the information.

At the zoo, there are many different types of animals. Some have 2 legs, some have 4 legs, some have more than 4 legs and some have none at all!

Can you and your family think of all the zoo animals you like and count how many fit into each group according to how many legs they have?

You could draw a picture, a pictogram, a tally chart, bar charts or a table. Could you think of an animal for each group? Which group had the most?

How many more had 4 legs than had no legs?



Family comments:

Child comments:



Curriculum Link

Collate, organise and compare information using pictograms, tally charts, block diagrams or simple tables.

Y2 Autumn activities answers



Family Maths
Toolkit

Puppy multiplication

- 40 legs
- 10 noses
- 20 ears
- 5 tails
- 20 legs
- 10 eyes
- 40 claws

Xmas elves

27 possibilities

Sharing sweets

- 5 each (mixed) **or** 2 chews, 1 chocolate, 1 lolly each (2 lollies left over) **or** same with $\frac{1}{2}$ lolly each.
- Yes - 3 lollies, 2 chocolates and 5 chews each.

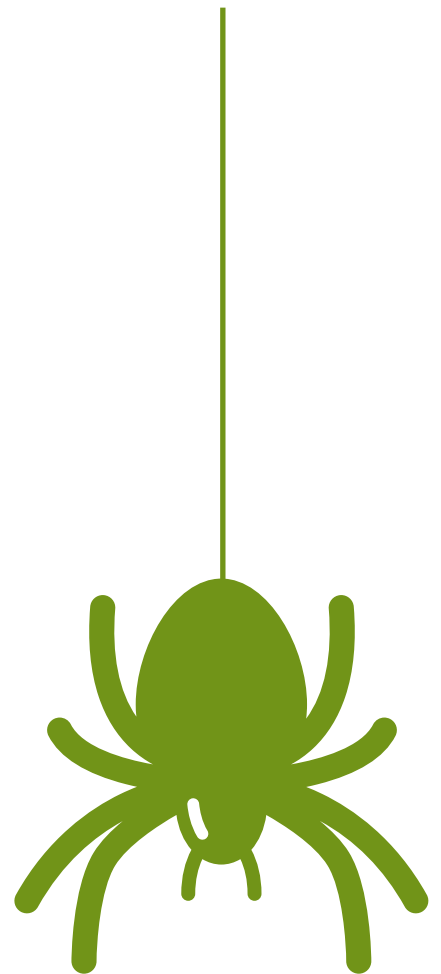
Symmetrical letters

M A T H

Witches spell

16 possibilities:

- 3 S
- 6 L
- 12B
- 2S + 2L
- 2S + 1L + 2B
- 1S + 4L
- 1S + 3L + 2B
- 1S + 2L + 4B
- 1S + 1L + 6B
- 2S + 4B
- 1S + 8B
- 5L + 2B
- 4L + 4B
- 3L + 6B
- 2L + 8B
- 1L + 10B



Y2 Spring activities answers



Family Maths
Toolkit

At the pet shop

- £80
- yes - £105
- options
- £200



Y2 Summer activities answers



Family Maths Toolkit

Dogs

- German Shepherd
- Labrador puppy
- Yes
- Labrador puppy - German Shepherd - Red Setter - Boxer - Jack Russell

Trooping the Colour

- Estimation between 200 and 500 reasonable
- 20
- 30: 3 rows of 10, 10 rows of 3, 6 of 5, 5 of 6, 15 of 2, 2 of 15, 1 of 30 or 30 of 1
- 20: 2 rows of 10, 10 of 2, 4 of 5, 1 of 20 or 20 of 1

Animal tablets

- He needs 4 packets (17 tablets); he does not have enough
- The lion needs 60 tablets

Halves

