



Family Maths Toolkit

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Family Maths Scrapbook Activities Year 3

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



Family Maths Toolkit

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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.

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

Y3 Overview and Curriculum links

Term	Topic	Activities	Main Curriculum link	Also covers
Autumn	Number - addition and subtraction	Domino animals	Add and subtract numbers with up to 3 digits.	Solve a range of problems and develop mathematical thinking and reasoning skills.
	Number - multiplication and division	Bug football	Using times tables facts to solve problems.	
	Geometry - properties of shape	Rangoli pattern*	Extend use of the properties of shapes, recognise shapes in different orientations, extend understanding of symmetry.	
	Measurement	Right angles	Identify right angles.	Develop mathematical reasoning.
		Snowflakes	Lines of symmetry in a variety of shapes.	
		In a year	Know the number of days in a month and months in a year.	
	Statistics	Jungle expedition	Add and compare, add and subtract mass (g/kg).	
		Fireworks show*	Solve a given problem by organising and interpreting data in a simple table. Explain methods and reasoning.	
	Problem solving	Decorations light box*	Problem solving and working systematically.	
		Christmas tree	Develop mathematical thinking, working systematically and checking all possibilities.	

*Needs to be printed in colour

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Y3 Overview and Curriculum links

Term	Topic	Activities	Main Curriculum link	Also covers
Spring	Number and place value	Ancient Greek monster	Place value introducing or using numbers greater than 1000.	Addition and subtraction using 4 digit numbers.
	Number - multiplication and division	Chocolate bar puzzle	Using 3 and 5 times tables to solve problems, working systematically.	
		Valentine's multiplication	Recall and use the 3, 4 and 8 multiplication tables.	Solve a range of problems, checking all possibilities, presenting data.
	Measurements	Parking meters	Add and subtract money in context.	
		Human anatomy facts	Measure and compare lengths (m, cm, mm).	
		Roman clock face	Tell and write the time from an analogue clock, including using Roman numerals from 1 to X11.	
		TV time task	Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight.	Interpret and present data.
		Weight of fruit	Estimate, measure, compare mass.	
	Geometry - properties of shape	Shapes of boxes	Recognise 3D shapes.	
		Triangle test	To visualise and describe properties of 2D shapes and use mathematical vocabulary to describe positions and orientation.	

Y3 Overview and Curriculum links



**Family Maths
Toolkit**

Term	Topic	Activities	Main Curriculum link	Also covers
Summer	Number - addition and subtraction	Crossword	Add and subtract numbers with up to 3 digits, solve a range of problems and develop mathematical thinking.	Solve a range of problems and develop mathematical thinking and reasoning skills.
	Number - multiplication and division	Trooping the colour*	Estimation, calculating multiples of 10 and problem solving.	
		Times tables puzzle	Recall and use multiplication facts for this table.	
	Measurement	Planning a trip	Add and subtract amounts of money using both £ and p in practical contexts.	
		At the vets	Addition of money using £ and p.	Intervals of time.
		A year of drinks	Measure and compare mass and/or capacity, solve a range of problems and develop mathematical thinking.	
	Geometry - properties of shape	Cupcakes recipe	Measure, compare, add and subtract mass (g/kg); the comparison of measures including simple scaling eg 2 times as much, connecting to multiplication.	Measure the perimeter of simple shapes.
		What volumes can you find	Measure, compare, add and subtract volume/capacity (l, ml).	
		Rooms - right angles and rectangles	Measure and compare, add and subtract lengths (m, cm, mm); identify right angles.	
		Half shape challenge	Extending knowledge of shape; symmetrical and non-symmetrical polygons.	

*Needs to be printed in colour

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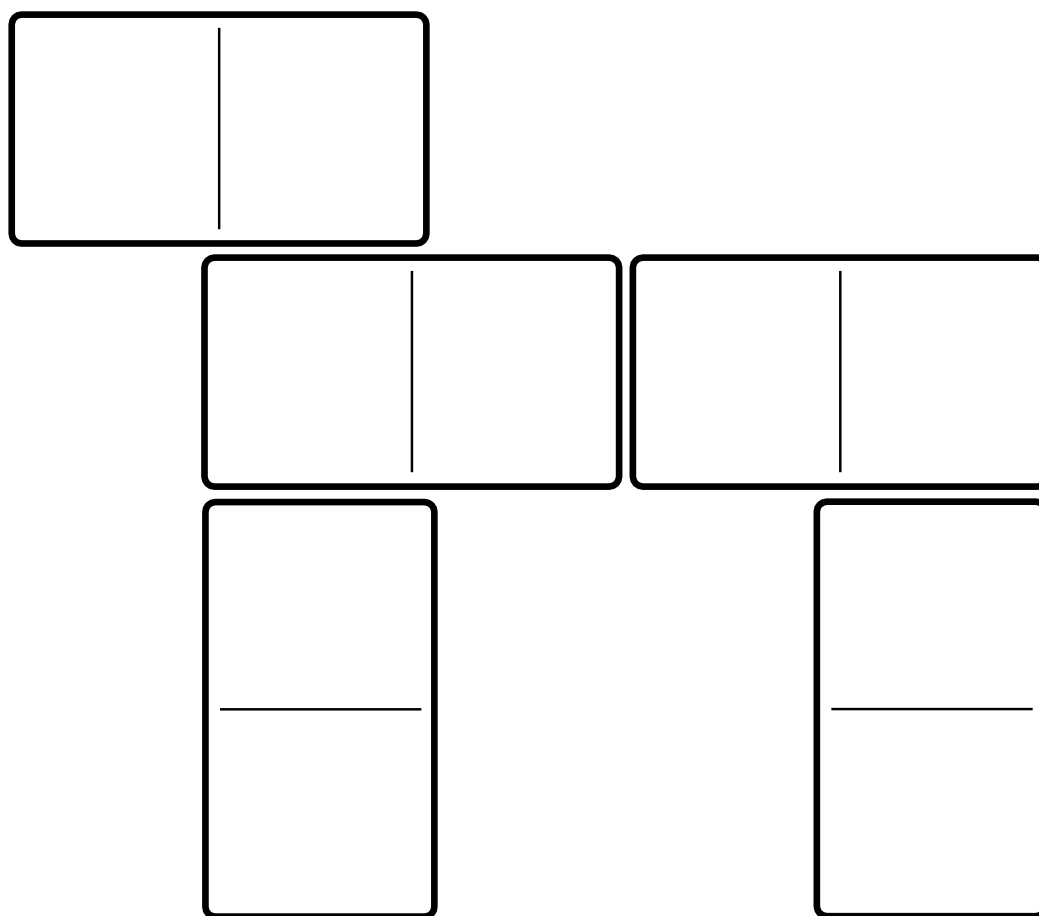
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Domino animal



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Toolkit

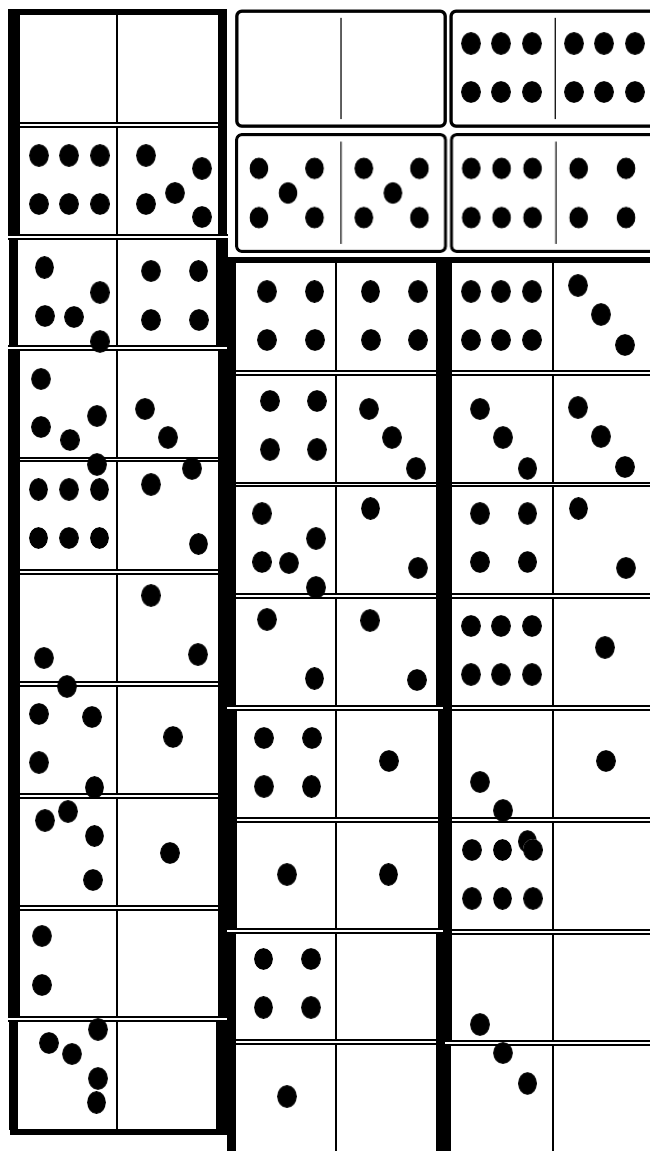
Using 5 dominoes, can you make a dog shape where all the dots add up to 31?



Can you make a dog with the smallest number of dots possible? What does it add up to?

Can you use dominoes to design a house for your dog – what does it add up to?

Can you design a giraffe with 7 dominoes, add up the dots and challenge one of your family to make it?



Family comments:

Child comments:



Curriculum Link

Add and subtract numbers with up to 3 digits, solve a range of problems and develop mathematical thinking and reasoning skills.

Bug football



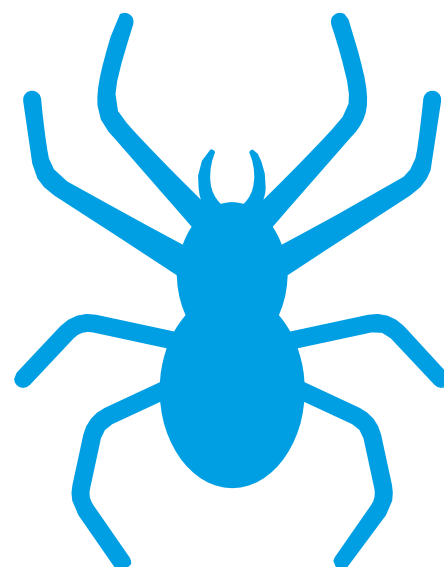
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The first ever mini beast 5-a-side football tournament is being held.

There are 4 teams – beetles, spiders, woodlice and centipedes.

Beetles have 6 legs; spiders have 8 legs; woodlice have 10 legs; centipedes have 40 legs.

1. How many legs on the pitch when the beetles play the spiders?
2. How many boots do the woodlice team need?
3. Which two teams playing each other would make a total of 250 legs on the pitch?
4. How many legs altogether in the beetles team?
5. The spiders have been sponsored for new boots which cost £20 a pair – how much will this cost for the team?
6. Can you make up another bug team – how many legs in their team?
7. Your team reaches the football final and play the woodlice. How many legs on the pitch?



Family comments:

Child comments:



Curriculum Link

Using times tables facts to solve problems.

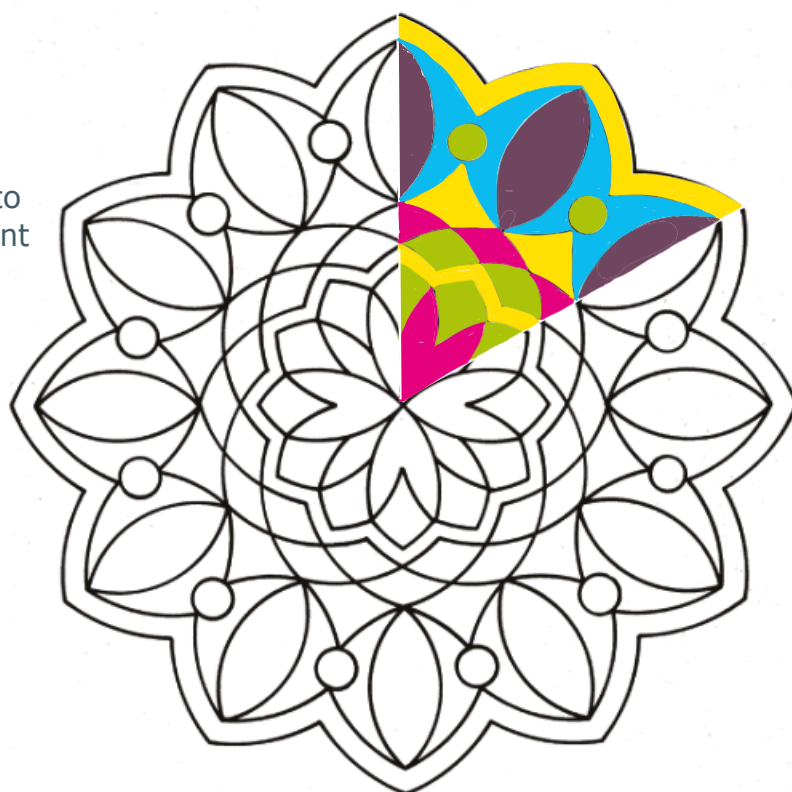
Rangoli pattern



Family Maths
Toolkit

These patterns are used during Diwali – the colours follow a strict pattern. Can you finish this one? Is it symmetrical? Can you design one?

A Rangoli is a colourful design made on the floor near the entrance to a house to welcome guests. At Diwali, Hindus draw them to encourage the goddess Lakshmi to enter their homes. Use the coloured segment as a guide to complete the pattern.



Family comments:

Child comments:



Curriculum Link

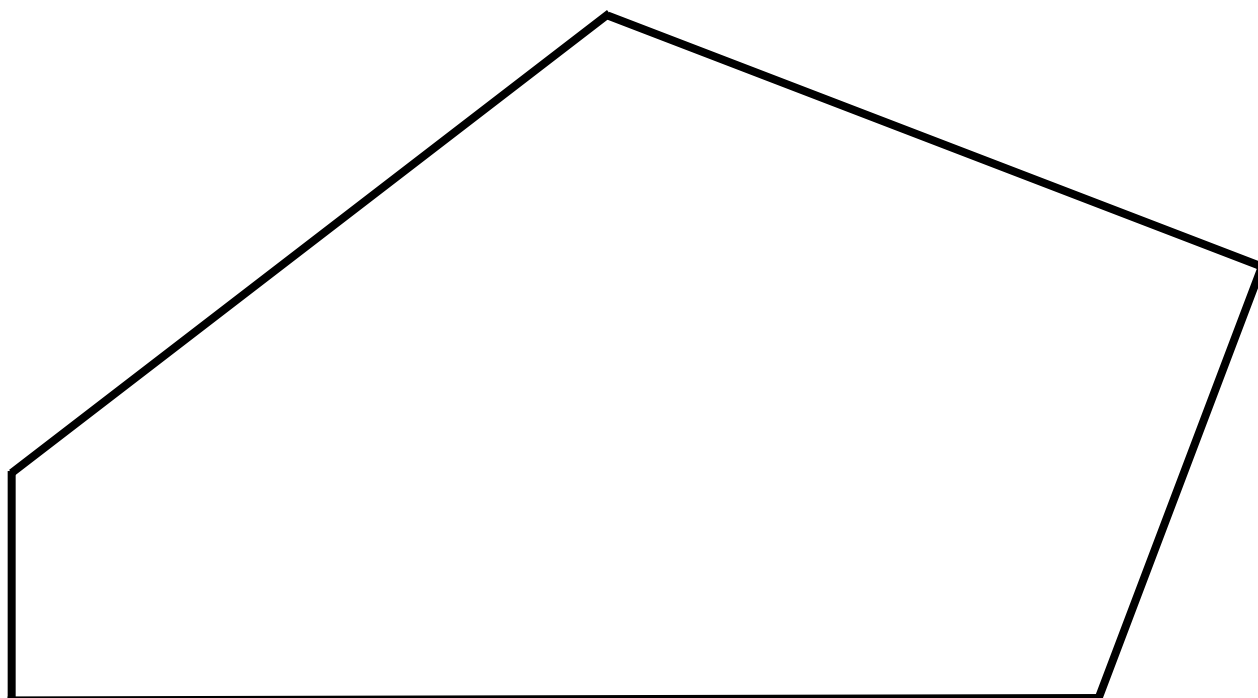
Extend use of the properties of shapes, recognise shapes in different orientations, extend understanding of symmetry.

Right angles



Family Maths
Toolkit

**This pentagon has two right angles.
Can you find them both?**



Helpful tip: If you are not sure, use the corner of a piece of paper to check.

Can you draw other shapes with right angles?
A 5 sided shape (pentagon)? A 6 sided shape (hexagon)? Any others? Can you name them?

Family comments:

Child comments:

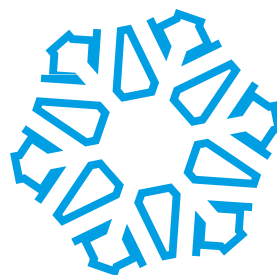


Curriculum Link

Identify right angles.

Some years we are lucky and have snow instead of rain!

1. Using a square piece of paper, fold it in half once and then in half again – into quarters.
2. Cut out half of some shapes from the edges of the paper. Cut different shapes, making sure you don't cut all along the fold.
3. Unfold the paper so you have a flat, whole piece again
4. What different shapes can you see in the pattern of your snowflake? Count how many you have of each shape you have? Can you draw your pattern?
5. Try this again but fold the paper into eighths and cut smaller shapes – how does this change your pattern when you open it out?



Challenge –
Can you make a snowflake that only has four sided shapes in its pattern? How many lines of symmetry does your snowflake have?

Family comments:

Child comments:



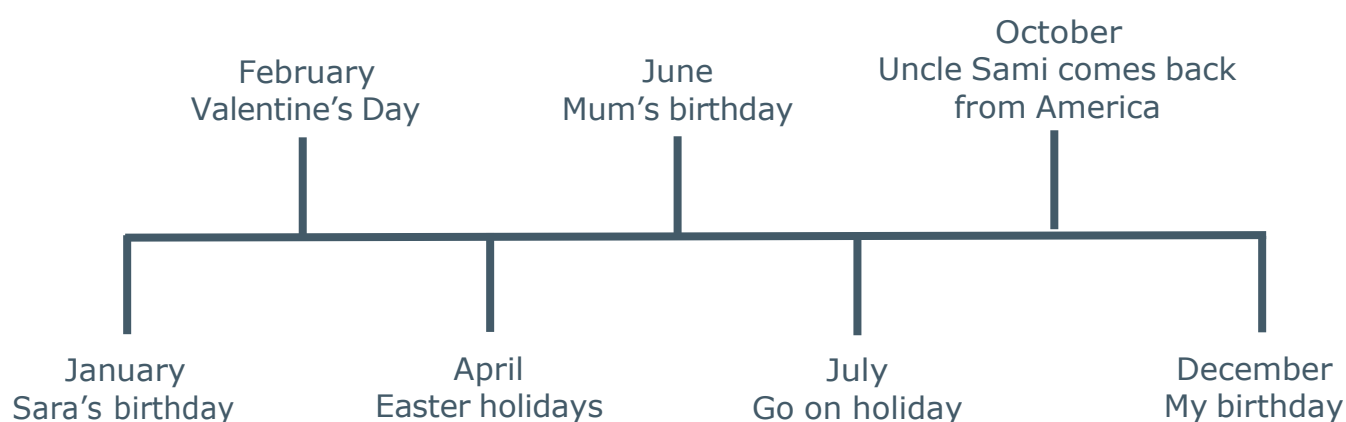
Curriculum Link

Lines of symmetry in a variety of shapes.

How many months are in a year? Which are the longest months?

Can you draw a year timeline and put in important dates for your family or school? If you put in a holiday or school holiday, how many days will it need?

Here is an example of someone's timeline:



Ask someone older in your family to make their year timelines with you.

Family comments:

Child comments:



Curriculum Link

Know the number of days in a month and months in a year.

Jungle expedition



Family Maths
Toolkit

Imagine you are on an expedition to the jungle. You come across a river which you have to cross. You and your friends swim across but you don't want to get your stuff wet. You set up a pull-line to get things over the river, but it will only take 5 kilograms of weight. You have to choose what food or drink you can pack into a bag which must weigh no more than 5 kg.

Look around your house and cupboards and decide what you would take – it cannot only be chocolate because you are in a jungle and must keep strong! What would other members of your family take?



Family comments:

Child comments:



Curriculum Link

Add and compare, add and subtract mass (g/kg); develop mathematical reasoning and ability to solve a range of problems.

Fireworks show

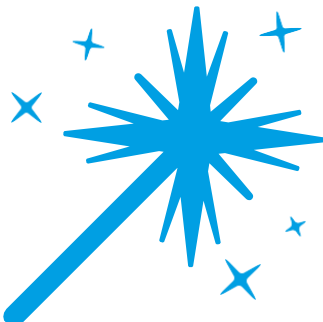


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Toolkit

Jessica and Gurmit both want to let off some fireworks but they only have three so they agree that they will work out how many different ways they could share.

They have a fountain (F), a sparkler (S) and a rocket (R).
Can you help them complete this table:

Jessica	R							
Gurmit	S F							



Family comments:

Child comments:



Curriculum Link

Solve a given problem by organising and interpreting data in a simple table. Explain methods and reasoning.

Decorations light box



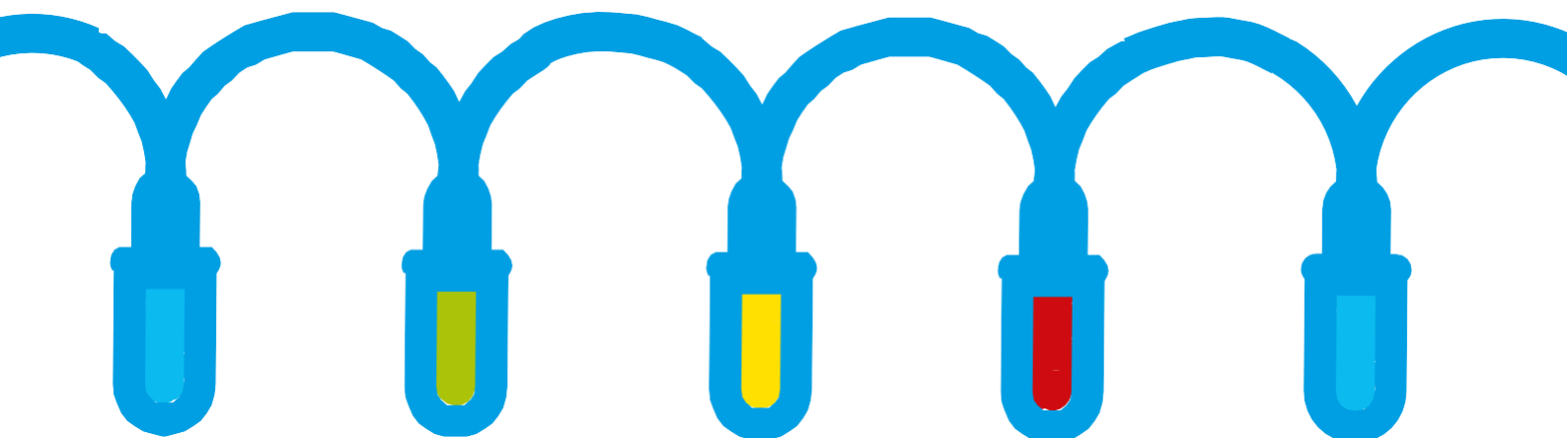
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Toolkit

The shop wants to design a new box for 36 Christmas lights – it will be a flat box. However only 4 colour lights will be used – red, gold, green and blue.

Can you design a flat box and arrange the lights so that no light of the same colour is adjacent to each other in any direction?

How many different designs can you find?

Can you try this for 24 lights?? Is it harder or easier?



Family comments:

Child comments:



Curriculum Link

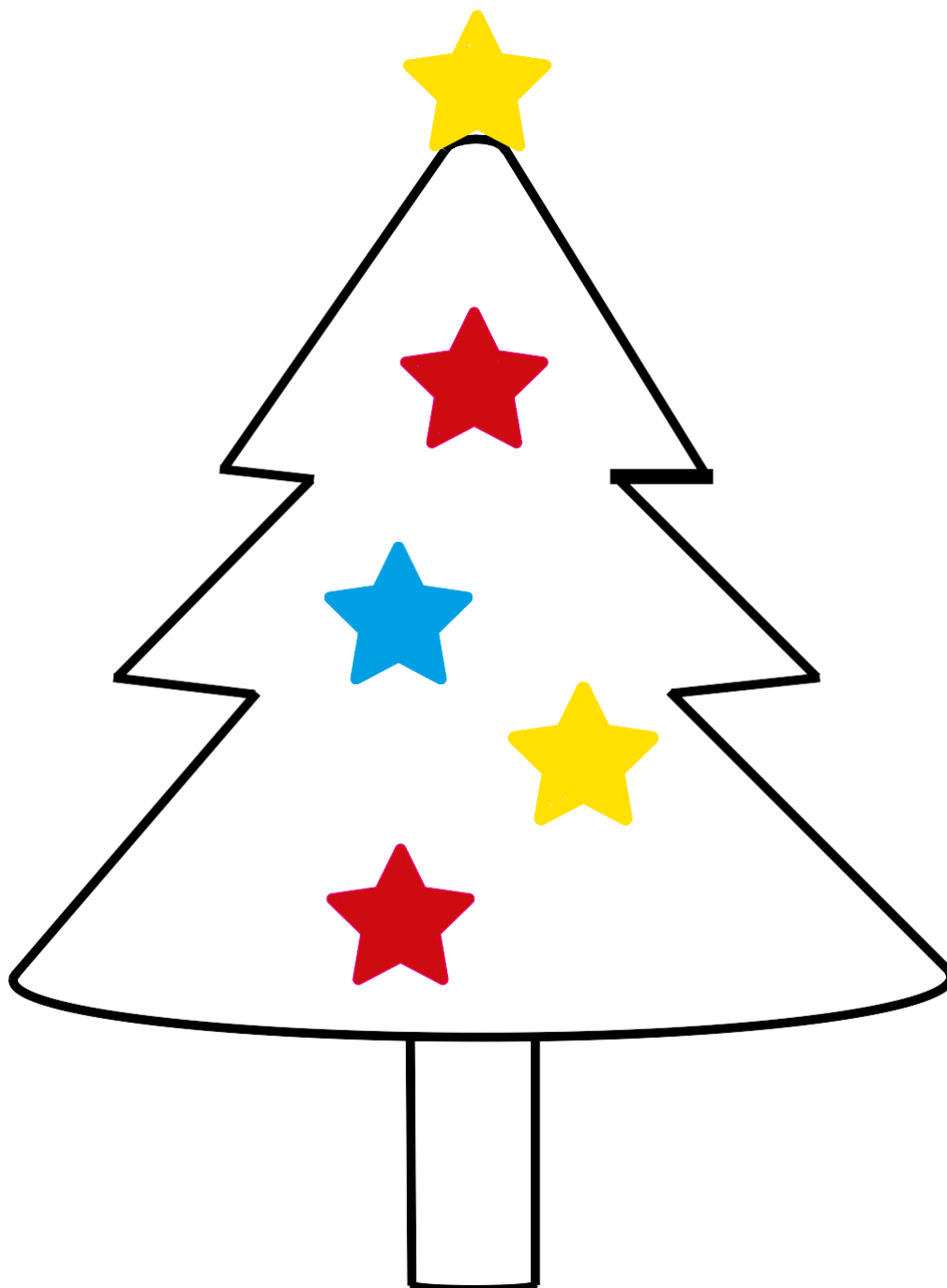
Problem solving
and working
systematically.

Christmas tree!

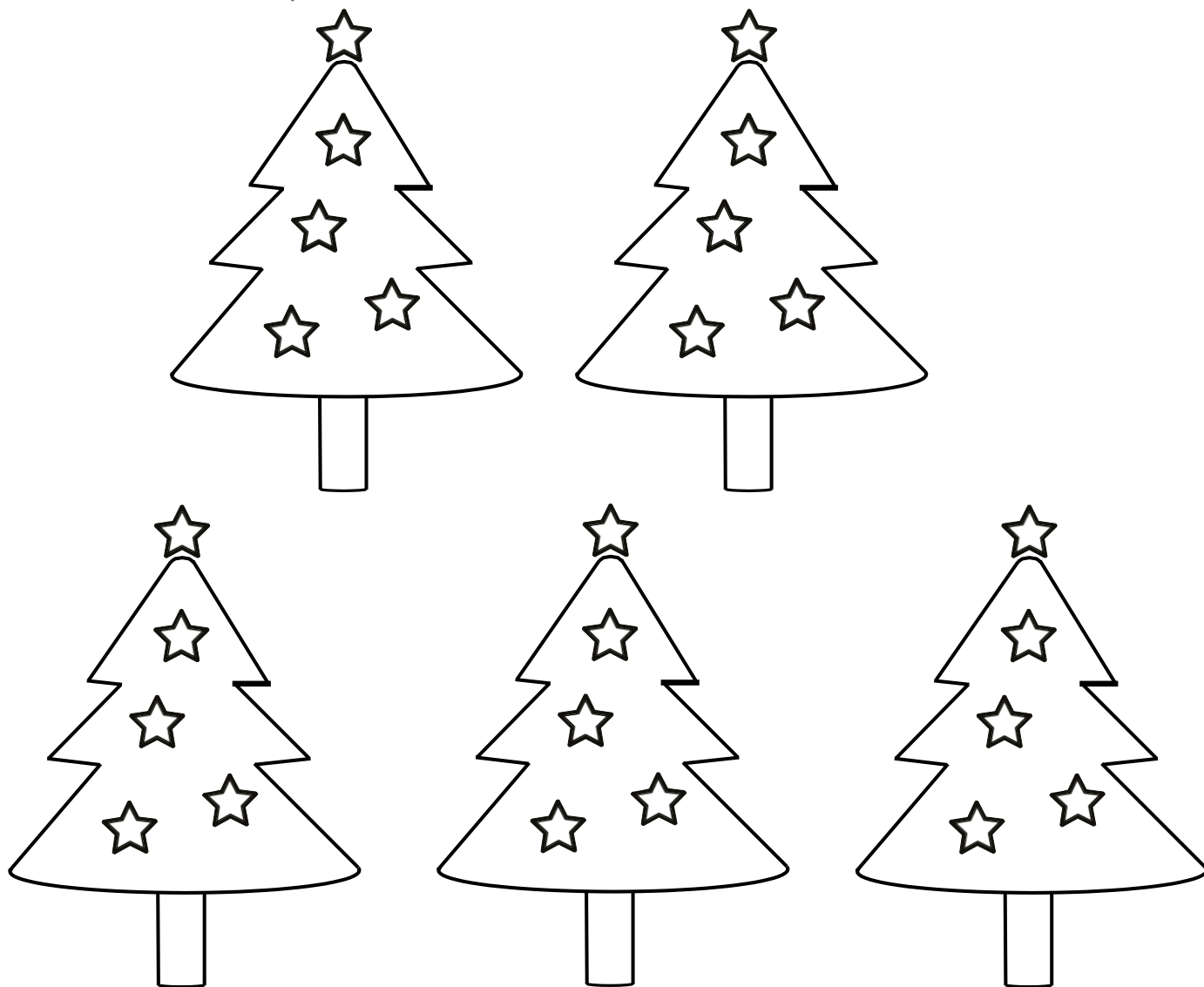


Family Maths
Toolkit

**Rudolph the Red Nosed Reindeer
put 5 stars on a Christmas tree.
He coloured each star red, yellow or blue.**



Colouring the stars, how many different combinations can Rudolph make?



Can you make up a puzzle like this for your friends? (You need to work out the answer!)

Family comments:

Child comments:



Curriculum Link

Develop mathematical thinking, working systematically and checking all possibilities.

Ancient Greek sea monster



Family Maths
Toolkit

In Ancient Greek mythology, there were some scary creatures.

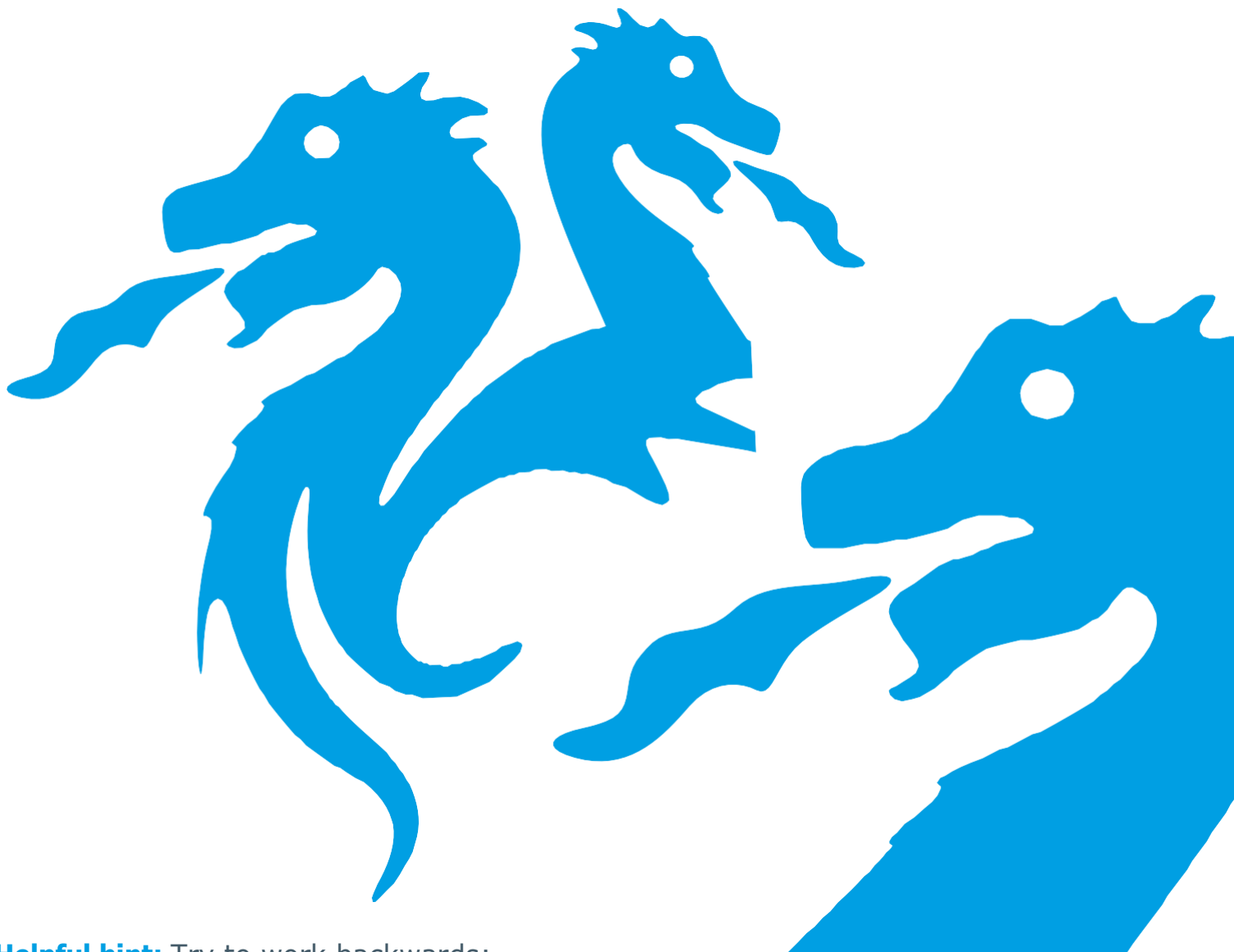
In the sea there is a monster - it has 1 body and on the body there are 10 necks. Each neck has 10 heads and each head has 10 tongues.

One day a brave warrior fought the monster and cut off one neck from its body.

Then he cut off one head from a neck and finally he pulled out one tongue from a head.

How many tongues were left on the monster then?





Helpful hint: Try to work backwards;
there are 10 tongues per head...

Family comments:

Child comments:



Curriculum Link

Place value
introducing or using
numbers greater
than 1000.

Chocolate bar puzzle



Family Maths
Toolkit

What are your favourite chocolate bars or sweets?

Milk Treats are sold in packs of 3.
Fruit Fudge are sold in packs of 5.

At a party, a mix of 62 bars are needed for prizes. How many packs of Milk Treats and how many packs of Fruit Fudge have to be bought?

Find as many different ways as you can.



Family comments:

Child comments:



Curriculum Link

Using 3 and 5 times tables to solve problems, working systematically.

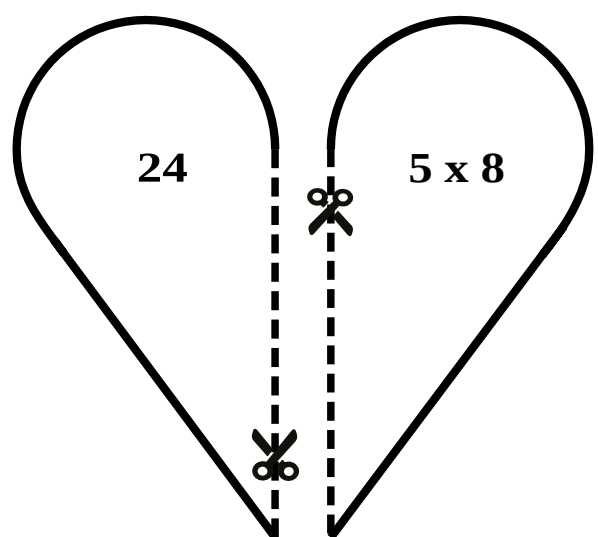
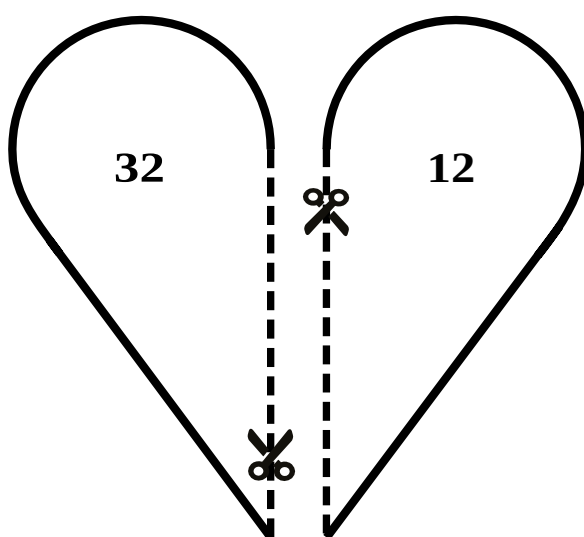
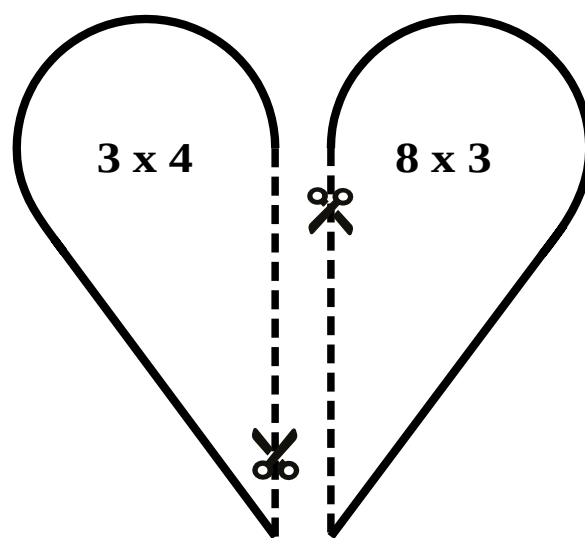
St Valentine's Day

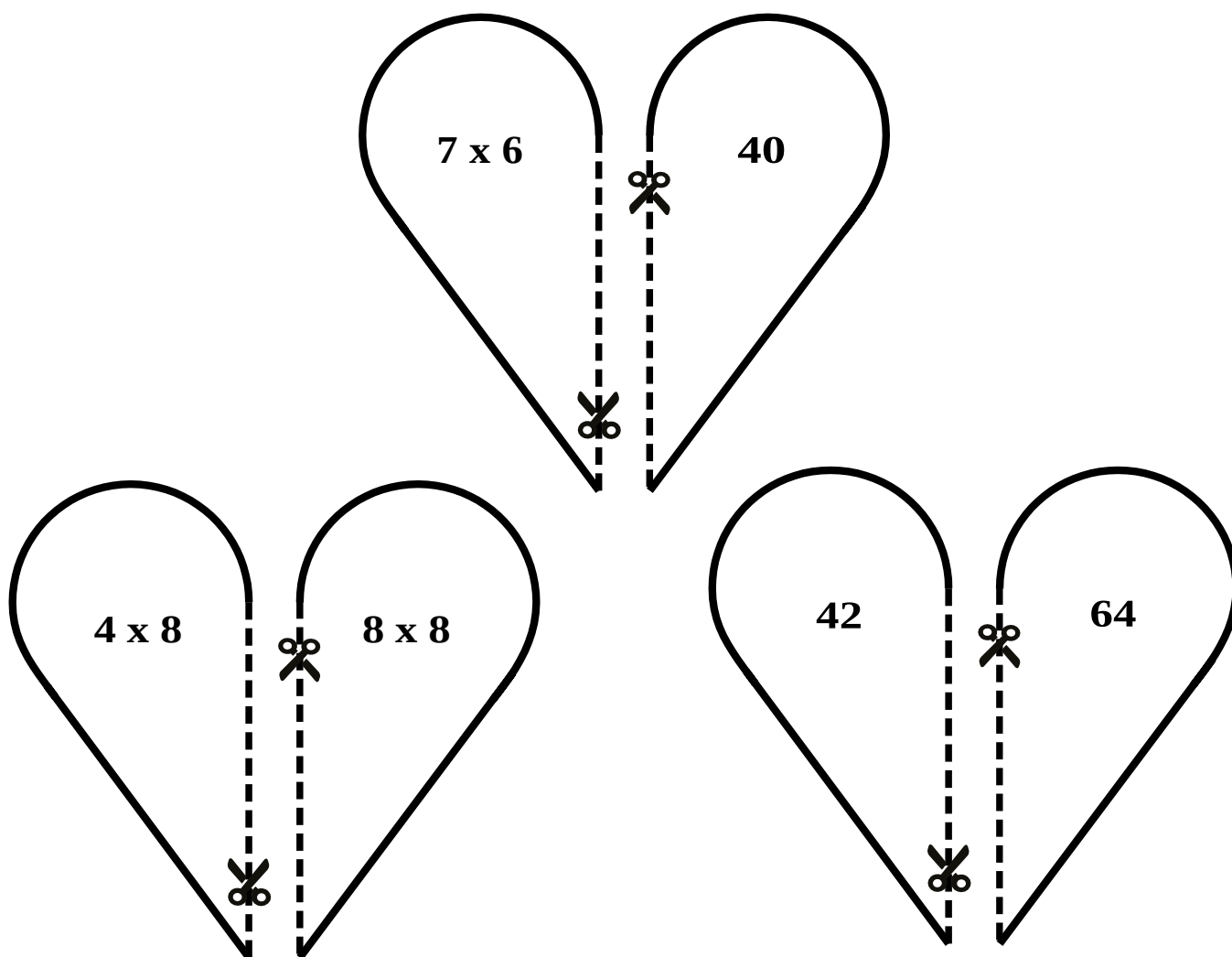


Family Maths
Toolkit

On St Valentine's Day, some people send cards. They often have hearts on them.

These hearts have been broken – can you mend them by cutting them out and matching the halves so each half has the same answer.





When you have matched them up, can you make some of your own using the 3, 4 and 8 times tables.

Then cut them all out and turn over face down. Take it in turns to see who can find a matching pair.

Family comments:

Child comments:



Curriculum Link

Recall and use the 3, 4 and 8 multiplication tables.

Parking meters



Family Maths
Toolkit

Do you have parking meters in your town?

The coins you can use to pay at a parking meter are 5p; 10p; 20p; 50p; £1.

A meter charges 30p per hour.

It does not give change.

How many different ways can you pay for one hour? ...and for two hours? Would your answers be different if the parking meter gave change?



Family comments:

Child comments:



Curriculum Link

Add and subtract money in context, solve a range of problems, checking all possibilities, presenting data.

Human anatomy facts



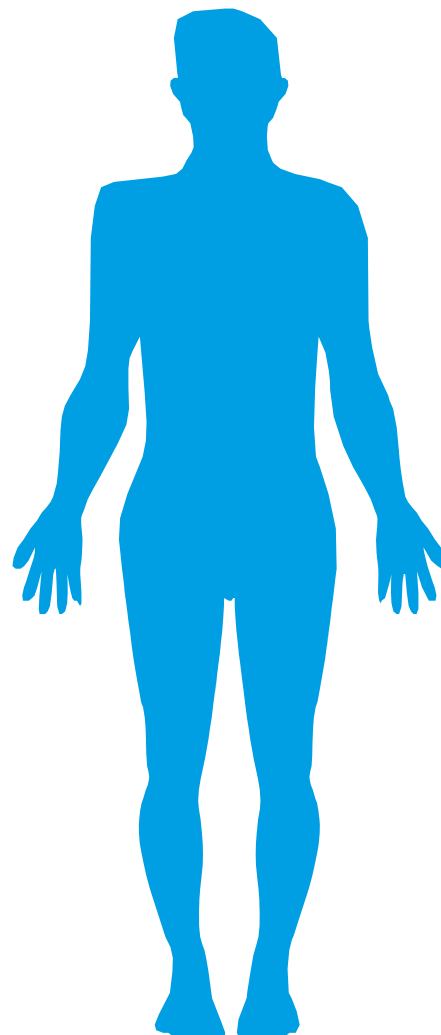
Family Maths
Toolkit

Facts about humans:

- Humans' arm spans (finger-tip to finger-tip) are about the same length as their height.
- There are about 8 head-lengths to a person's height.

Can you check these facts on you and your family? Is it the same for everyone?

If you have teddies, dolls or adventure figures - see if they have been made to match human shapes!



Family comments:

Child comments:



Curriculum Link

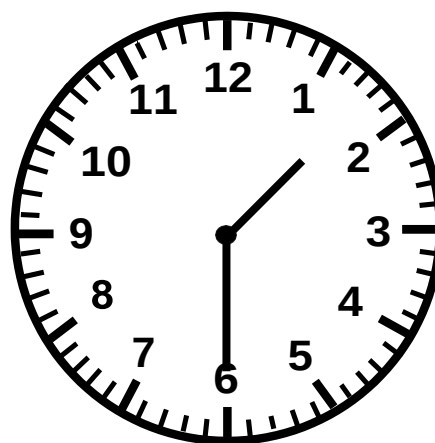
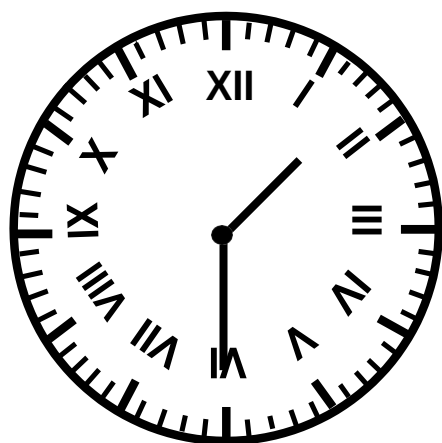
Measure and compare lengths (m, cm, mm); interpret and present data.

Roman clock face



Family Maths
Toolkit

Clock faces often have Roman numerals on – here are two examples of clocks – one has Roman numerals, one does not.



Can you draw a clock face and place all the Roman numerals in the correct place?

Make your clock face show a different time to the one above.

Make your clock hands tell a time and write it here -

Look for a clock which has Roman numerals, and draw it here or stick in a photo of it.

Family comments:

Child comments:



Curriculum Link

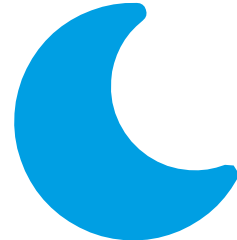
Tell and write the time from an analogue clock, including using Roman numerals from 1 to XII.

TV time task



Family Maths
Toolkit

Do you have favourite television programmes? How long are they? Imagine you could have the television to yourself for one whole day - starting from when you get up to when you go to bed.



Write a timetable of what you would watch.

Would you let one or two of your family have one programme each?

Where would their choices fit in your timetable?



Family comments:

Child comments:



Curriculum Link

Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight.

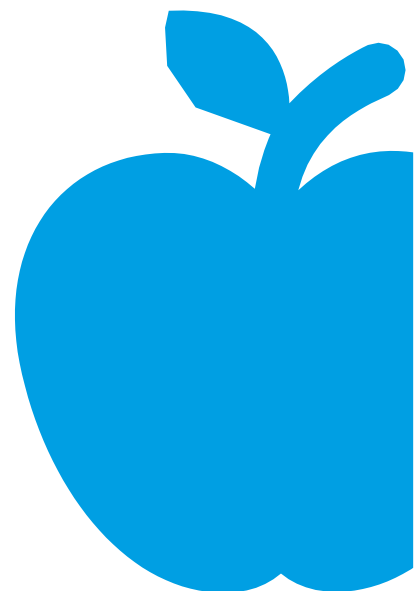
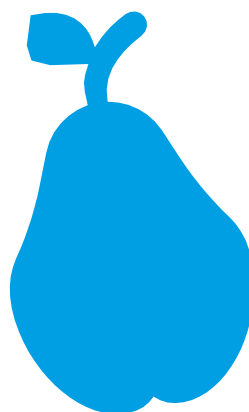
Weight of fruit



Family Maths
Toolkit

Find an apple (or potato or similar), feel it in your hand and estimate its weight. Ask your family for their estimates.

Now weigh it – how close were you? Who was closest?



How many apples would weigh a kilogram?

What other fruit or vegetables can you find that weigh the same (or close) as an apple? Test them in your hand to compare to the apple.

Which is the heaviest you can find? Is it also the biggest?

Can you estimate how much an egg weighs?

Carefully weigh it – were you surprised?

Family comments:

Child comments:



Curriculum Link

Estimate, measure,
compare mass.

Shapes of boxes



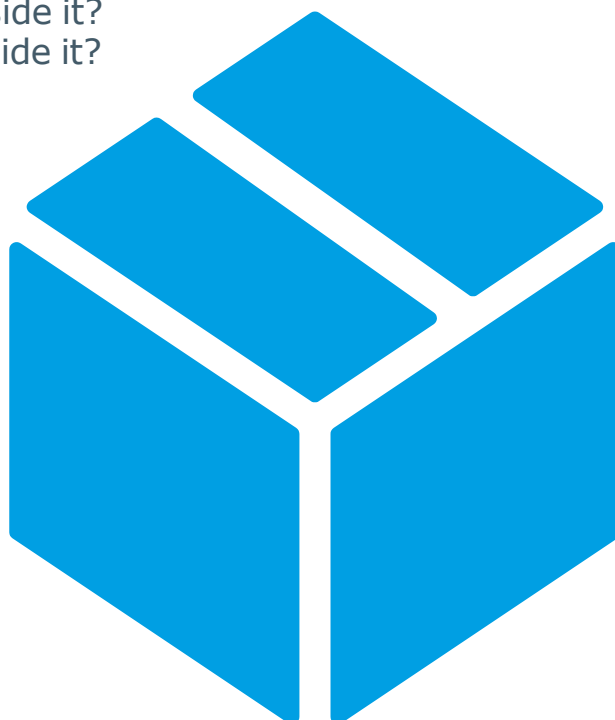
Family Maths
Toolkit

**Presents or food often come in boxes.
Look around your home for boxes and see
how many different shapes you can find.**

What shape are most boxes? Can you find any cubes?
Measure one. Can you find any unusual shapes?

What is the longest box you can find? What is inside it?
What is the smallest box? What could be kept inside it?

Do you have an empty box you could open out
to see the net shape? Can you draw it?



Family comments:

Child comments:



Curriculum Link

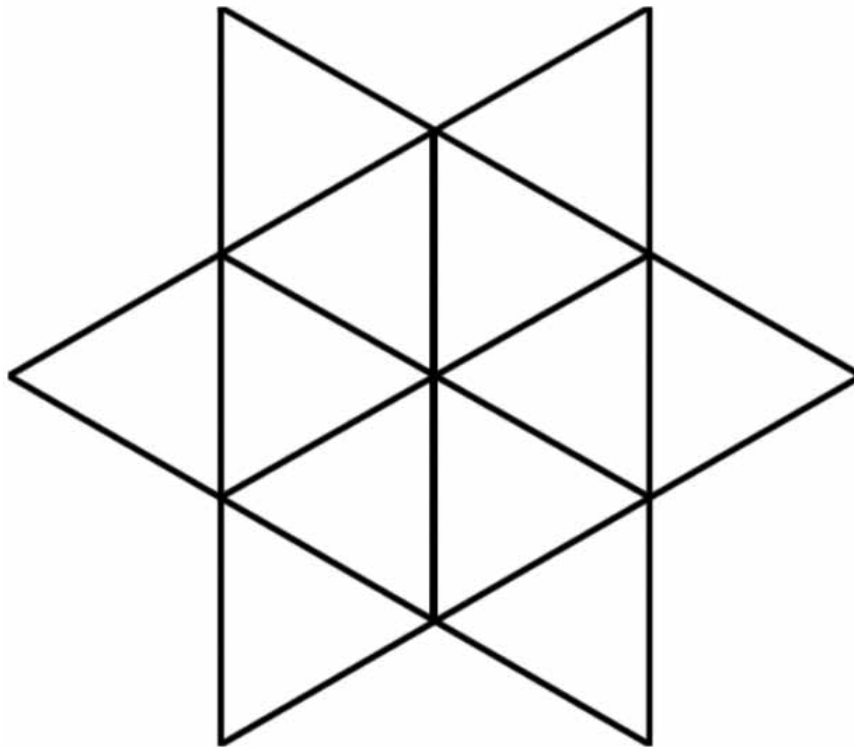
Measure and compare
lengths; recognise 3D
shapes.

Triangle test



Family Maths
Toolkit

How many triangles can you
see in the picture?



Family comments:

Child comments:



Curriculum Link

To visualise and describe properties of 2D shapes and use mathematical vocabulary to describe positions and orientation.

Crossword activity

Part one



Family Maths
Toolkit

Here is an example of a simple number crossword. Can you solve it?

1	2		3	4	
	5	6		7	8
9		10	11		
12	13		14	15	
	16	17		18	19
		20	21		22

Across

1. 100 - 75
3. 100 - 68
5. 100 - 88
7. 100 - 78
10. 100 - 19
12. 100 - 6
14. 100 - 48
16. 100 - 46
18. 100 - 83
20. 100 - 20

Down

2. 100 - 49
4. 100 - 78
6. 100 - 72
8. 100 - 80
9. 100 - 1
11. 100 - 85
13. 100 - 55
15. 100 - 79
17. 100 - 52
19. 100 - 30

Now, can you and your family make up another for your friends to solve, for an extra challenge?!

Crossword activity

Part two

For an additional challenge, design your own grid - choose where to put the black squares (not as easy as it seems).

Family comments:

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Child comments:

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Curriculum Link

Add and subtract numbers with up to 3 digits, solve a range of problems and develop mathematical thinking.

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 20, how many rows would a regiment of 300 soldiers make? The horses also have to be trained. There are 200 horses on parade. How many could be in each row of horses? 400 musicians play. If they split into 8 bands, how many would be in each band?

Using squared paper, design some formations for 30 guardsmen to stand in.

Family comments:

Child comments:



Curriculum Link

Estimation, calculating multiples of 10 and problem solving.

Times table puzzle



Family Maths
Toolkit

Which times table is this?

$$F \times C = C$$

$$K \times C = G$$

$$D \times C = FK$$

$$C \times C = FJ$$

$$H \times C = KE$$

$$J \times C = KC$$

$$B \times C = KG$$

$$G \times C = DK$$

$$A \times C = DJ$$

$$FE \times C = CE$$

$$F \times C = C$$

Can you make up another times table?

$$B \times C = ?$$

Note: If necessary, include the following helpful hints:

- The times table is in order so it starts with 1 x ?
- Substitute a 1 for every F
- The times table is x C so the 4th line is multiplied by itself to give an answer 1J
- Where else in the table does J appear
– 6th line so J must = 6 and FJ = 16

FE x C

x C = KC

G x

Family comments:

Child comments:



Curriculum Link

Recall and use multiplication facts for this table, solve a range of problems and develop mathematical thinking and reasoning skills.

Planning a trip



Family Maths
Toolkit

**You have £100 to spend on a day out.
Where would you go? Would you take any
family members? How much would it cost?
Could you visit more than one place?**

Make up a day's plan of real places to visit and how much it would cost. Here is an example of a day out, but you can go anywhere you like! You don't have to use all your money.



Place	Who	Cost	Total
Castle	2 adults and 2 children	Adults £8.00 each Children £5.00 each	£26.00
Beach	1 adult and 2 children	Only ice-creams £2.00 each	£6.00
Zoo	2 adults and 2 children	Adults £15.00 each Children £6.00 each	£42.00
Ice skating	1 adult and 4 children	Adult £10 Children £4 each	£26.00

Family comments:

Child comments:



Curriculum Link

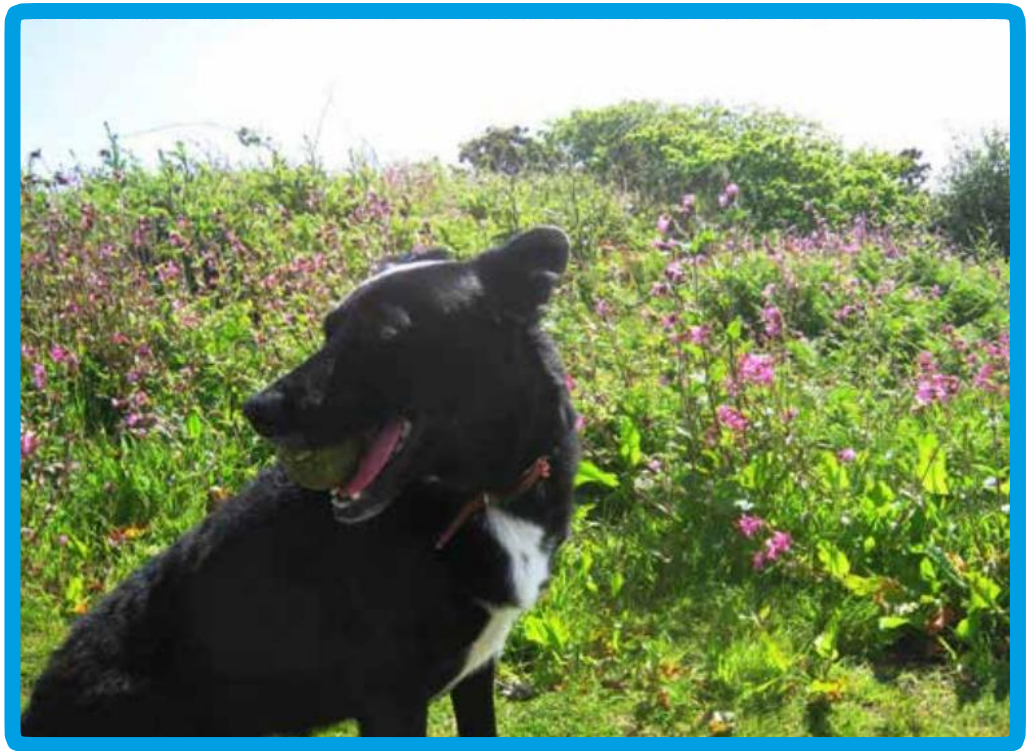
Add and subtract
amounts of money
using both £ and p in
practical contexts.

At the vet's



Family Maths
Toolkit

Paddy is a large dog and needs vaccinations, flea treatment, worming and insurance – how much will this visit to the vet's cost?



At the vets	Microchip	Vaccination	Flea treatment	Wormer	Neutering	Insurance
Large dog	£35.00	£26.00	£7.60	£14.00	£400.00	£120.00
Small dog	£35.00	£15.00	£7.60	£7.00	£150.00	£120.00



His friend Monty is a small puppy – he needs everything – will his visit cost more than Paddy's?



A dog needs to be flea treated every 3 months.
How much will it cost Paddy for a year?

What else do dog owners have to pay for? Can you make a list of what a dog needs and estimate the cost (eg. lead, bowl, toys)?



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

Family comments:

Child comments:



Curriculum Link

.....
Addition of money using £; intervals of time; interpreting information presented in a table.

A year of drinks



Family Maths
Toolkit

Choose a drink that you and your family use a lot of e.g. tea, coffee, squash.

How much do you all use in one day?

Can you estimate how often you need to replace the bottle/box/jar? Can you estimate how much your family spend on this drink in a year?



Family comments:

Child comments:



Curriculum Link

Measure and compare mass and/or capacity, solve a range of problems and develop mathematical thinking.

Cupcakes recipe



Family Maths
Toolkit

Here is a recipe for 12 cupcakes:

Ingredients

- 110g/4oz butter or margarine (softened)
- 110g/4oz caster sugar
- 2 eggs, lightly beaten
- 1 tsp vanilla extract
- 110g/4oz self-raising flour

For the buttercream:

140g /5oz butter, softened; 280g/10oz icing sugar;
1-2 tbsp milk; a few drops of food colouring

Talk about the abbreviations – what does 'g' mean? How many grams in a kilogram? How much does the packet of caster sugar weigh? How much do you think 1 spoon of sugar would weigh? What is the difference between 'tsp' and 'tbsp'? Would it make a difference if you muddled them up?

This recipe makes 12 cupcakes – how many would each member of your family get?

If you wanted to have a party, what would be the ingredients for 24 cakes?

How many cakes could I make if I only had 55g/2oz of butter?

Try the recipe!

Family comments:

Child comments:



Curriculum Link

Measure, compare, add and subtract mass (g/kg); the comparison of measures including simple scaling, eg. 2 times as much, connecting to multiplication.

What volumes can you find?



Family Maths
Toolkit

Can you find things around the house which are measured in millilitres, centilitres and litres?

- Which object has the smallest capacity?
- And the largest?
- Can you choose 5 things to put in capacity order – smallest to largest?



Family comments:

Child comments:



Curriculum Link

Measure, compare, add and subtract volume/capacity (l, ml).

Rooms - right angles and rectangles

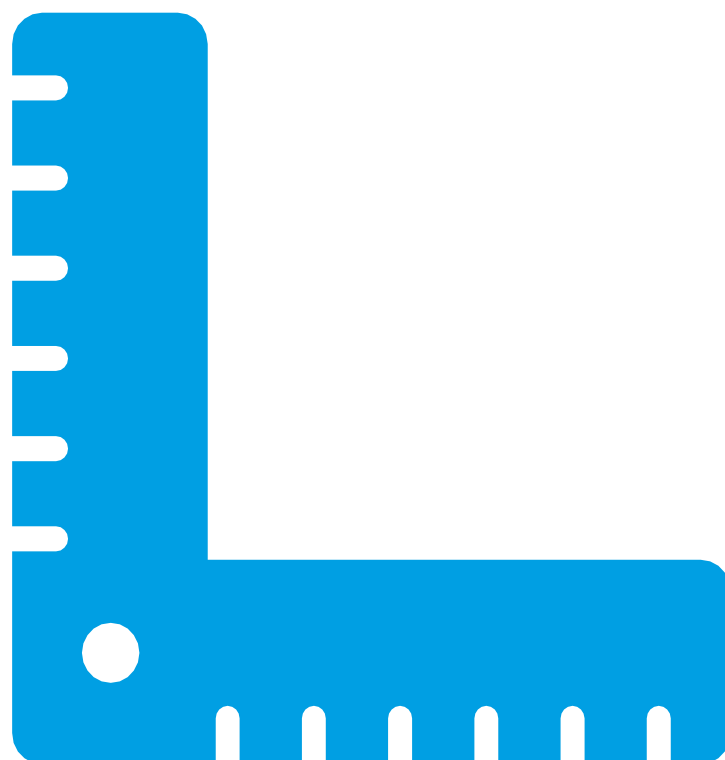


Family Maths
Toolkit

When estate agents sell houses, they show/advertise the sizes of each room. Measure your bedroom to find out the perimeter.

Rooms are often rectangle in shape with 4 right angles.

- Does your home have any rooms which are not rectangle?
- How could you measure them? How many right angles do they have?
- Could you design a room which did not have all right angles? What shape and how big would it be?



Family comments:

Child comments:



Curriculum Link

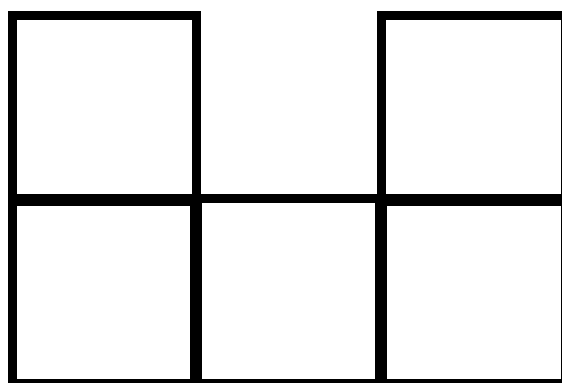
Measure and compare, add and subtract lengths (m, cm, mm); measure the perimeter of simple shapes, identify right angles.

Half shape challenge



Family Maths
Toolkit

This is half a shape:



Draw some of the different shapes the original could have been.

Mark any line of symmetry on your whole shape.

Design another half shape for someone else to finish
– do not make it too complicated! Try it out first!

Family comments:

Child comments:



Curriculum Link

Extending knowledge of shape; symmetrical and non-symmetrical polygons.

Y3 Autumn

activities answers



Family Maths
Toolkit

Bug football

- beetles v spiders 70
- woodlice 50
- woodlice v centipedes
- beetles 30
- spider boots £400

Christmas tree

21 possibilities

Domino animals

eg. dominos with $6 + 7 + 10 + 4 + 4$ dots on each (many answers)

Firework show

8 possibilities



Y3 Spring activities answers



Family Maths
Toolkit

Ancient Greek sea monster

- There are 10 tongues per head
- There are 10 heads per neck
- $10 \text{ tongues} \times 10 \text{ heads} = 100 \text{ tongues per neck}$
- There are 10 necks per body
- $100 \text{ tongues} \times 10 \text{ necks} = 1000 \text{ tongues per body}$
- Cut off one neck: $1000 - 100 = 900 \text{ tongues left}$
- Cut off one head: $900 - 10 = 890 \text{ tongues left}$
- Pull out one tongue: $890 - 1 = 889 \text{ tongues left}$
- There are 889 tongues left on the monster.

Chocolate bar puzzle

- 3 ways
- 4 packs Milk Treats and 10 packs Fruit Fudge
- 9 Milk Treats and 7 Fruit Fudge
- 14 Milk Treats and 4 Fruit Fudge

Triangle test

How many triangles – 20

Parking meters

6 possibilities for a 30p charge and 18 possibilities for a 60p charge.



Y3 Summer activities answers



Family Maths
Toolkit

Crossword puzzle

Across Down

- | | |
|--------|--------|
| 1. 25 | 2. 51 |
| 3. 32 | 4. 22 |
| 5. 12 | 6. 28 |
| 7. 22 | 8. 20 |
| 10. 81 | 9. 99 |
| 12. 94 | 11. 15 |
| 14. 52 | 13. 45 |
| 15. 54 | 15. 21 |
| 18. 17 | 17. 48 |
| 20. 80 | 19. 70 |

At the vets

- £167.60
- £334.60
- £30.40

Trooping the Colour

- Estimate between 200 and 500 reasonable
- 15 rows
- eg. 10 rows of 20
- 8 rows of 25 etc.
- 50 musicians

Times table puzzle

It represents the 4 times table.

Cupcakes

- g = gram
- 1000g = 1 kg
- Packets usually 500g or 1kg
- Varies, estimate and check
- tsp = teaspoon; tbsp. – tablespoon
- 24 cakes = 220g/8oz butter, sugar and flour; 4 eggs; 2 tsp vanilla
- 55g/2oz butter could only make 6 cakes

