SHAWLANDS
PRIMARY SCHOOL

BETTER TOGETHER

# Family Maths Activities

## Year 4

**About this booklet:**

You can make a huge difference to your children's maths learning! This booklet aims to promote enjoyment of maths through discussion and working together on everyday maths!

It contains short, fun, 'real-life' activities for families to do together.

They are aligned to the English National Curriculum, with a strong focus on problem solving and reasoning.

The activities can be spread out across the year (as suggested on the following page) or at your own leisure in any order.

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

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

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?
- What could we do differently next time?

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.

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# Y4 Long Term Plan – Curriculum Overview

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---|---|---|---|---|---|---|
| **Year 3** | Number and Place Value<br><br>Addition and Subtraction | Multiplication and Division | Measurement – Lengths, Perimeter<br><br>Fractions | Fractions<br><br>Measurement – Mass, kilograms, capacity | Statistics – Pictograms, Bar Charts, Tables<br><br>Geometry / Shape – position and direction | Measurement – Money & Time |

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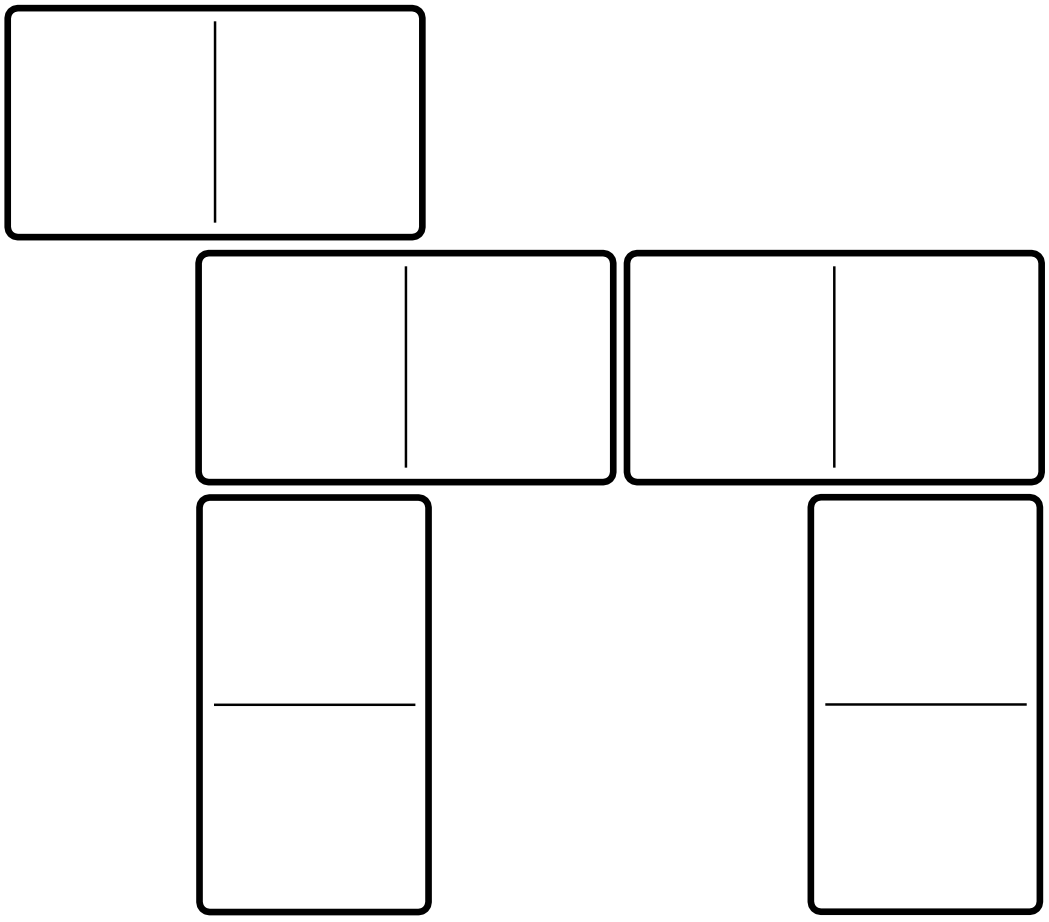
# Suggested Delivery of Challenges

| Challenge | Term | National Curriculum Link |
|---|---|---|
| Trooping the Colour | Autumn 1 | Number and Place Value / Multiplication and Division |
| Ancient Greek Sea Monster | Autumn 1 | Number and Place Value |
| Crossword Activity | Autumn 1 | Addition and Subtraction |
| Domino Animal | Autumn 1 | Addition and Subtraction |
| Roman Clock Face | Autumn 1 | Number and Place Value |
| Chocolate Bar Pizza | Autumn 2 | Multiplication and Division |
| Bug Football | Autumn 2 | Multiplication and Division |
| Decorations Light Box | Autumn 2 | Consolidation |
| Christmas Tree | Autumn 2 | Consolidation |
| Times Table Puzzle | Spring 1 / Autumn 2 | Multiplication and Division |
| St Valentine's Day | Spring 1 / Autumn 2 | Multiplication and Division |
| Human Anatomy Facts | Spring 1 | Measurement – Lengths / Perimeter |
| Rooms – Right Angles and Rectangles | Spring 1 / Summer 1 | Spring 1 – Lengths / Perimeter |
| Jungle Expedition | Spring 2 | Measurement – Mass / Capacity |
| Weight of Fruit | Spring 2 | Measurement – Mass / Capacity |
| A Year of Drinks | Spring 2 | Measurement – Mass / Capacity |
| Cupcakes Recipe | Spring 2 | Measurement – Mass / Capacity |
| What Volumes Can You Find? | Spring 2 | Measurement – Mass / Capacity |
| Half Shape Challenge | Spring 2 / Summer 1 | Fractions / Geometry / Shape |
| Fireworks Show | Summer 1 | Statistics |
| Rangoli Pattern | Summer 1 | Geometry / Shape |
| Right Angles | Summer 1 | Geometry / Shape |
| Snowflakes | Summer 1 /Spring 1 | Geometry / Shape |
| Shapes of Boxes | Summer 1 | Geometry / Shape |
| Triangle Test | Summer 1 | Geometry / Shape |
| Parking Meters | Summer 2 | Measurement – Money |
| Planning a Trip | Summer 2 | Measurement – Money |
| At the Vets | Summer 2 | Measurement – Money |
| | | |
| TV Time Task | Summer 2 | Measurement – Time |
| In a Year | Summer 2 | Measurement – Time |

# Domino animal

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**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?

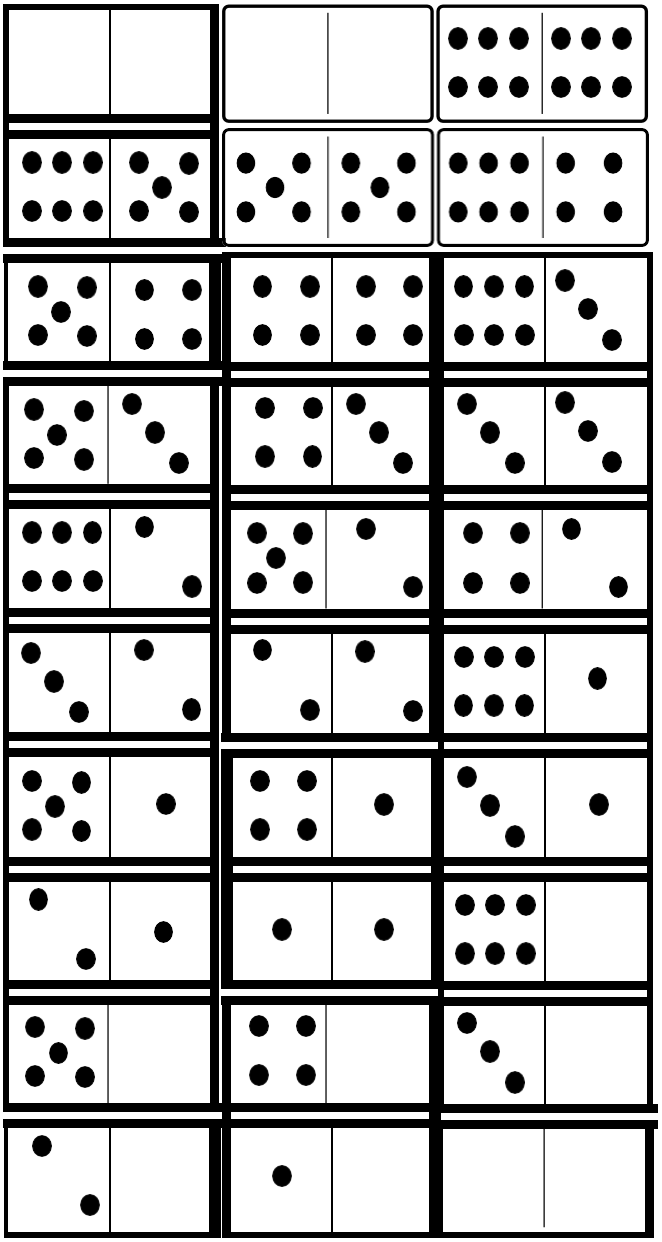
Can you use dominoes to design a house for your dog – what does it add up to?



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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.



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# Bug football

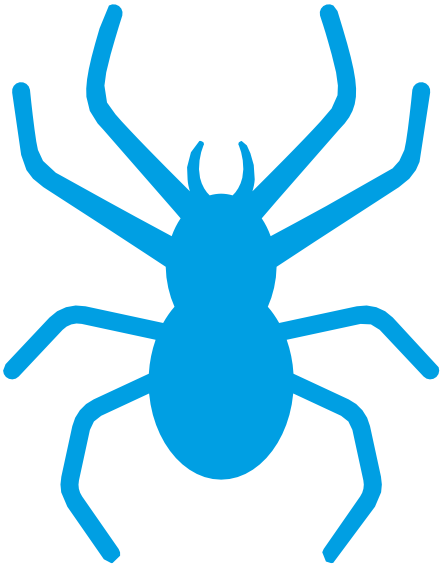
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**The first ever mini beast 5-a-side football tournament is being held.**

**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.



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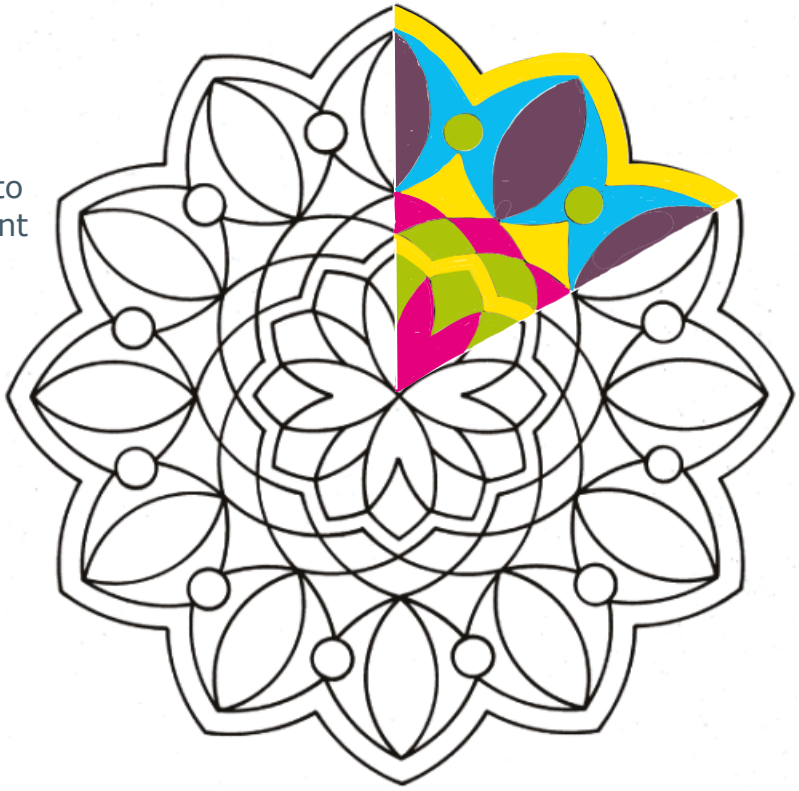
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# Rangoli pattern

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## 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.



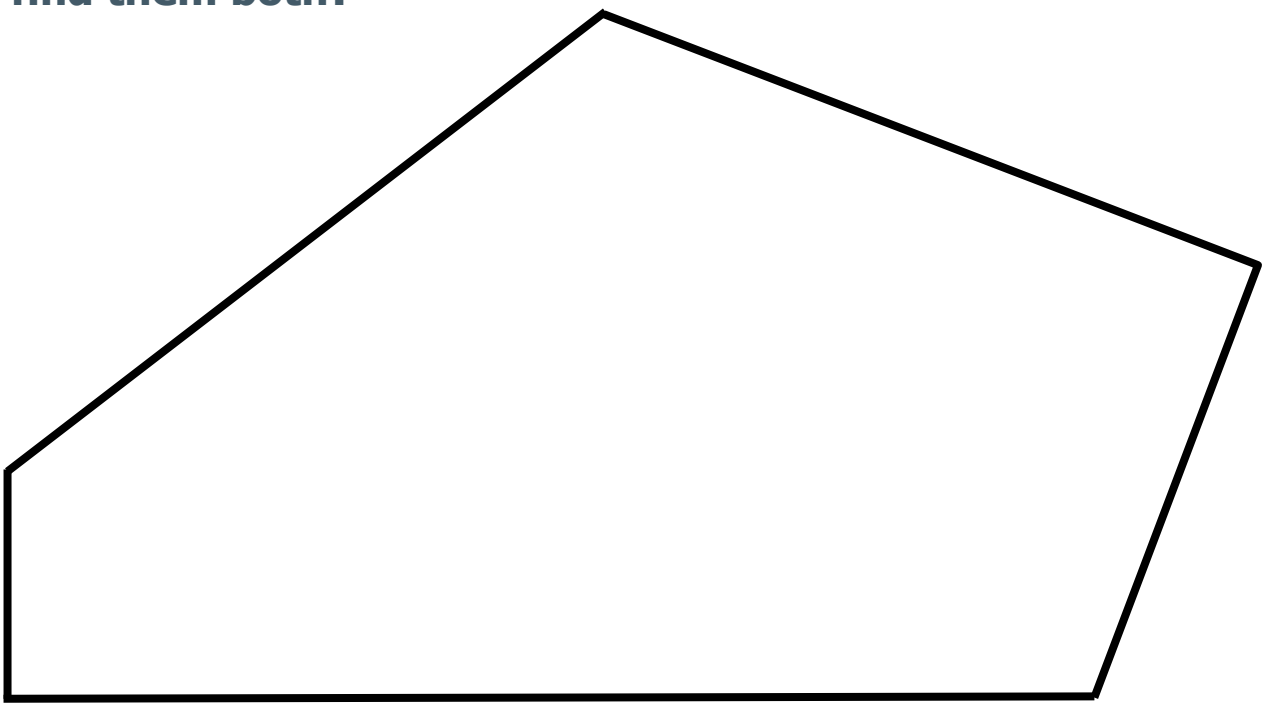
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# Right angles

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**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.



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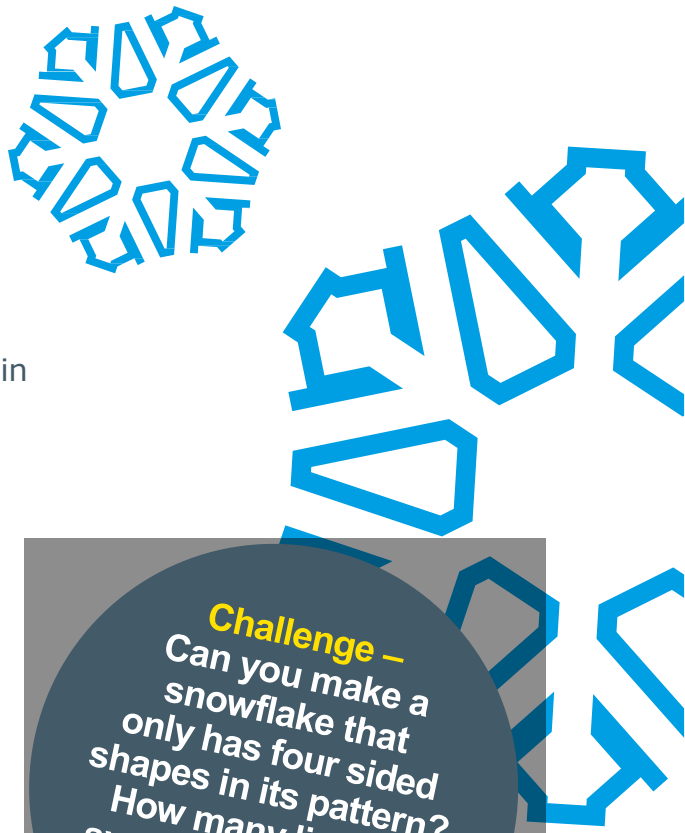
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# Snowflakes

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## 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.



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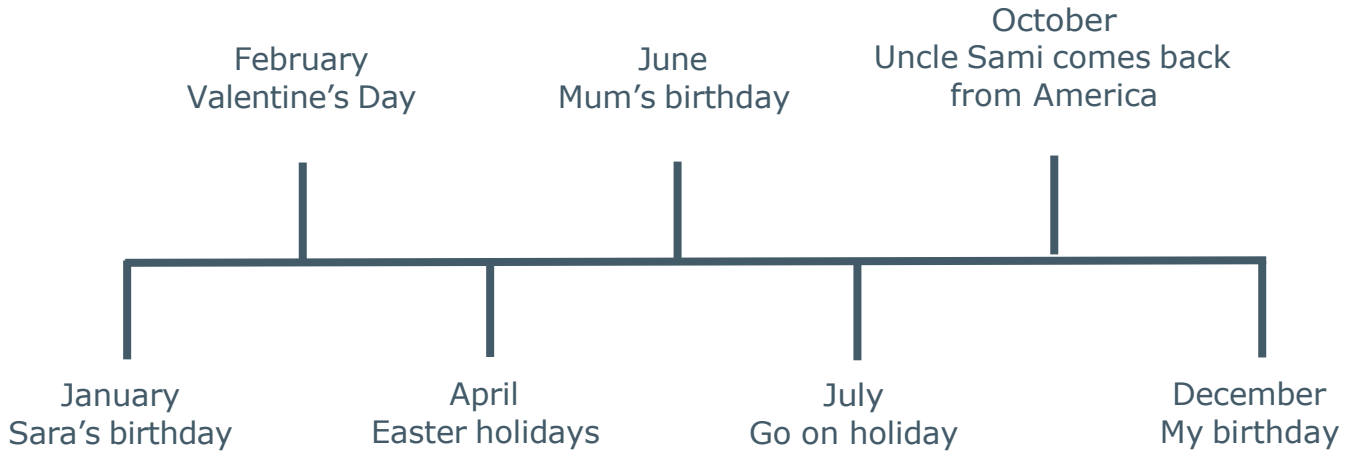
# In a year

Family Maths Toolkit

## 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.



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# Jungle expedition

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**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.



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# Fireworks show

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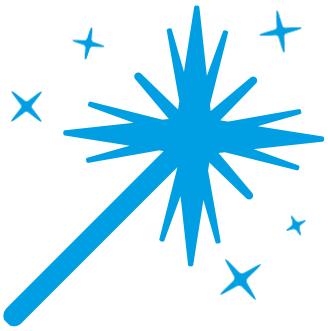
**Jessica and Gurmit both want to let off some fireworks but they only have three so they agree that they will work out how many different ways they could share.**

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.



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# Decorations light box

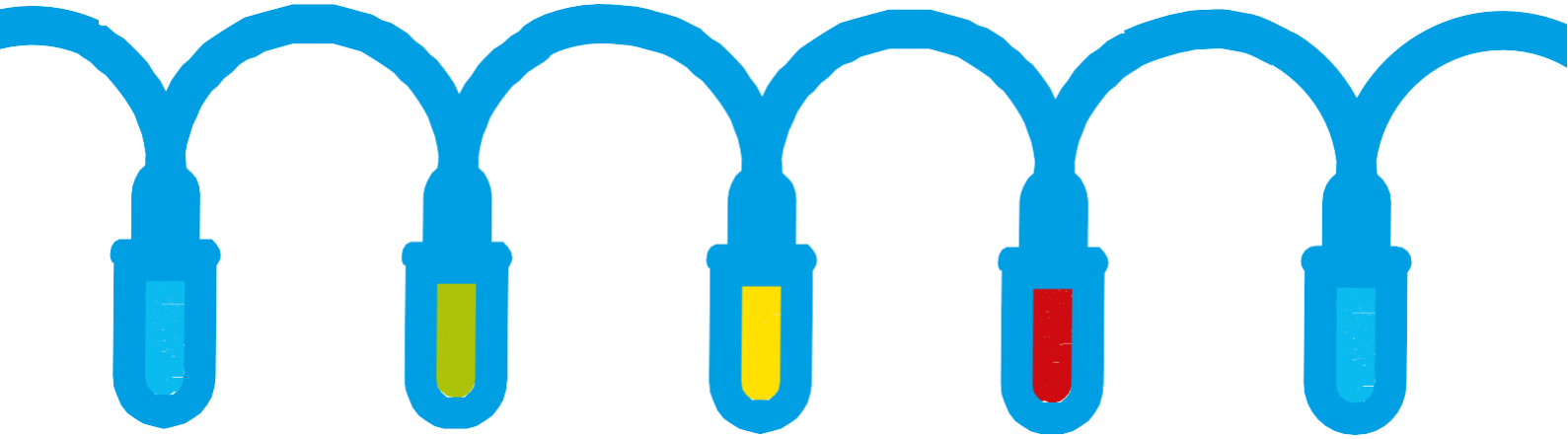
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**The shop wants to design a new box for 36 Christmas lights – it will be a flat box. However only 4 colour lights will be used – red, gold, green and blue.**

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.



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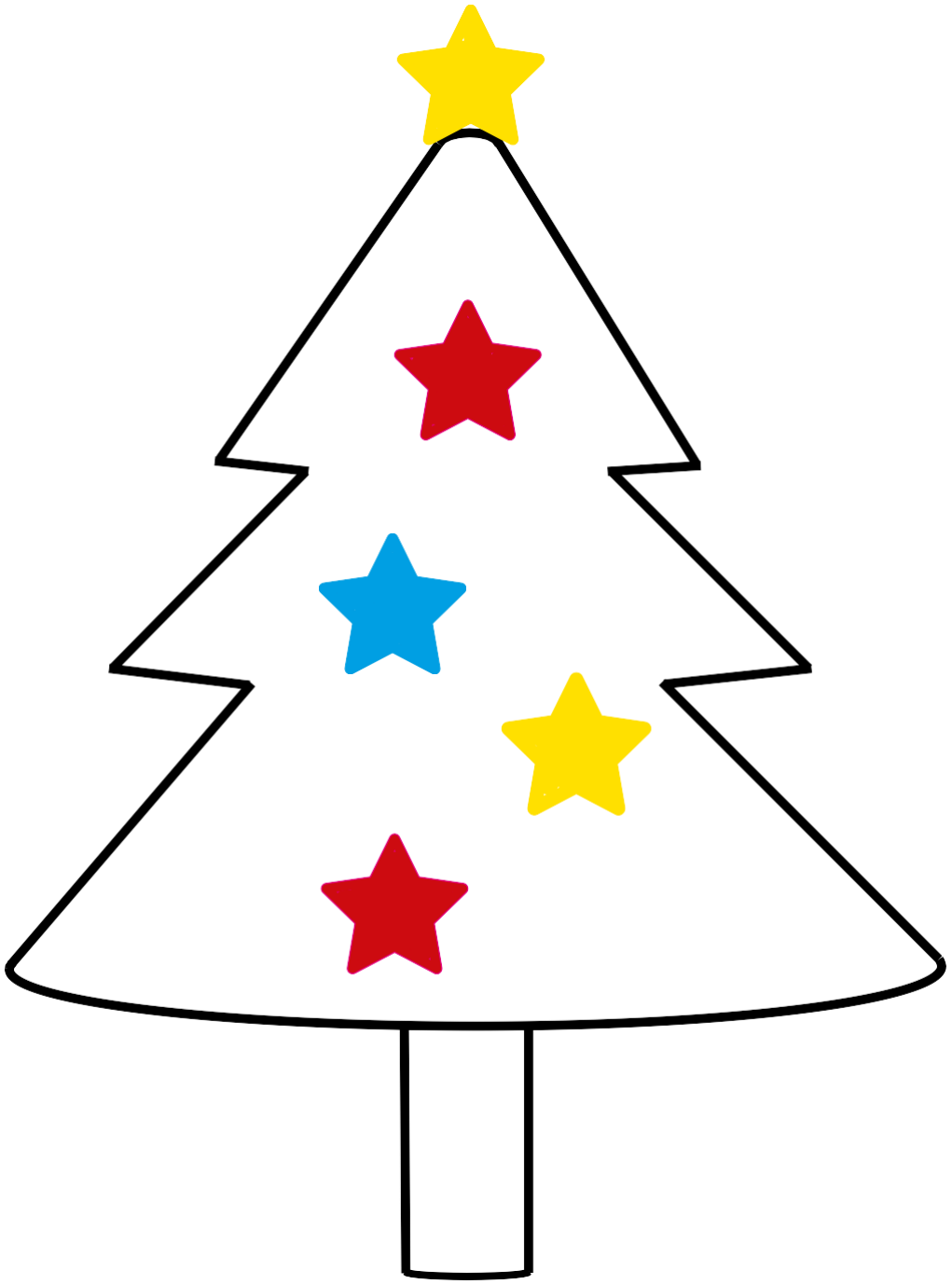
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# Christmas tree!

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**Rudolph the Red Nosed Reindeer put 5 stars on a Christmas tree.**

**He coloured each star red, yellow or blue.**

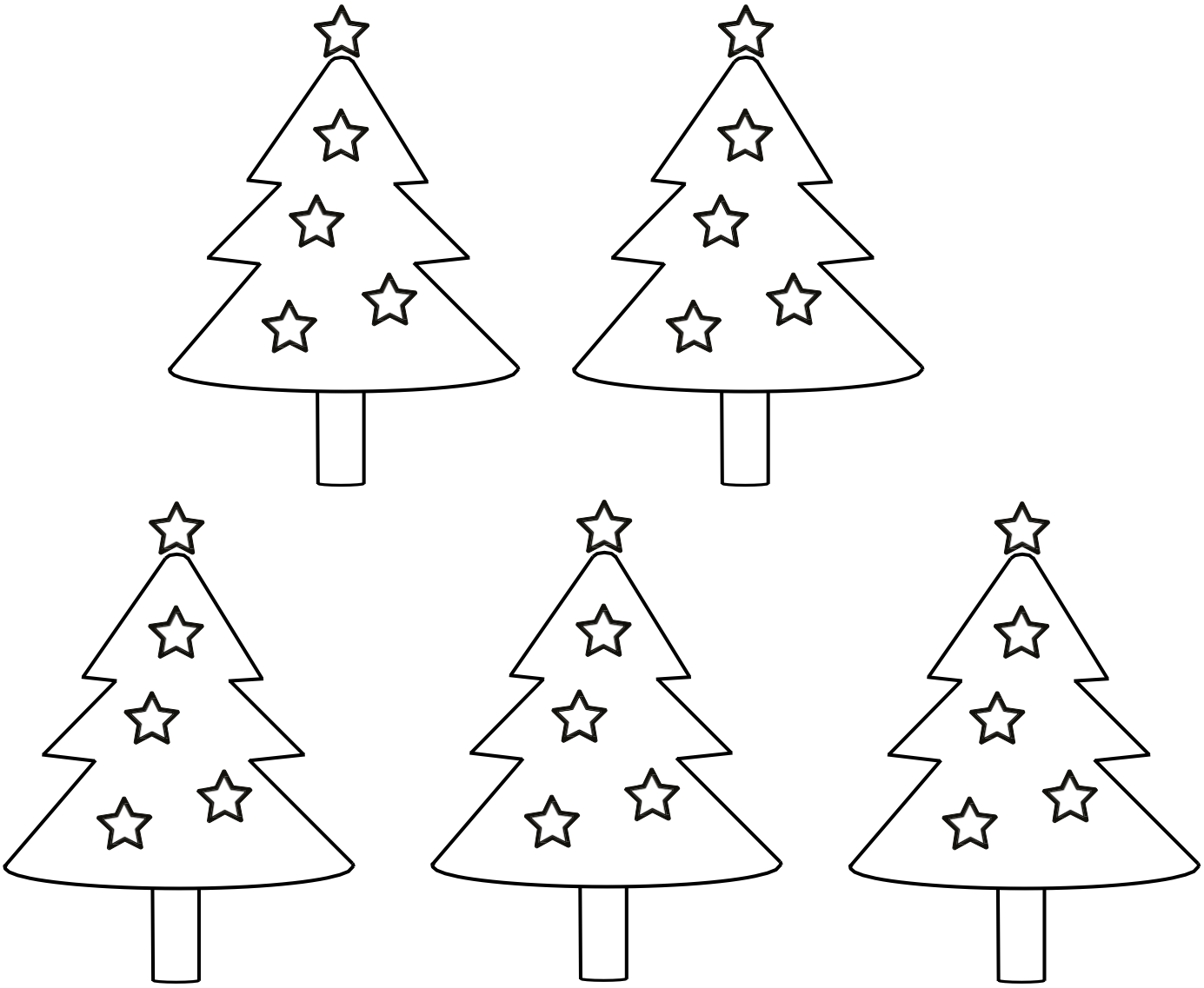




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Colouring the stars, how many different combinations can Rudolph make?



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.



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# Ancient Greek sea monster

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**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.**

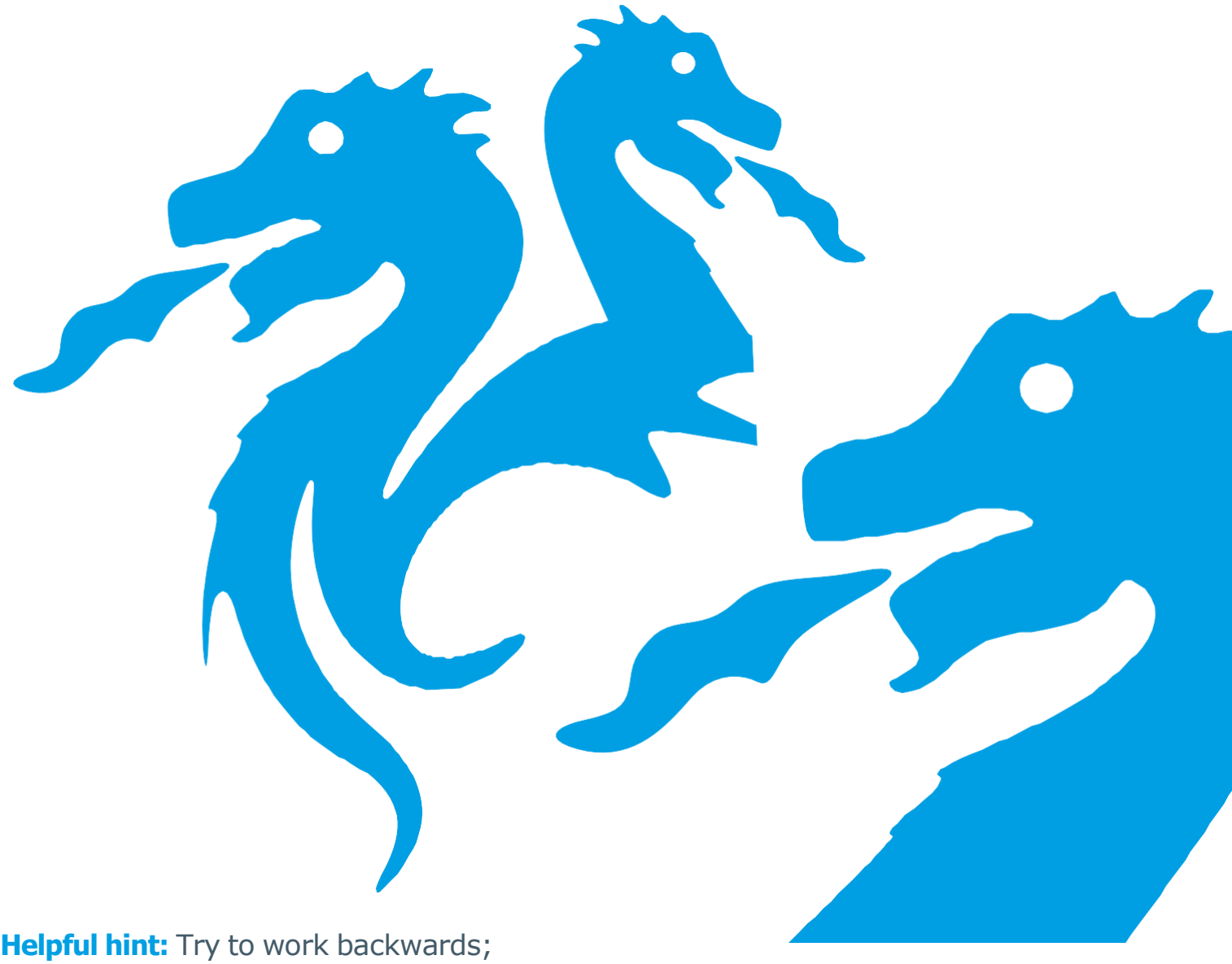
**Then he cut off one head from a neck and finally he pulled out one tongue from a head.**

How many tongues were left on the monster then?





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**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.



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# Chocolate bar puzzle

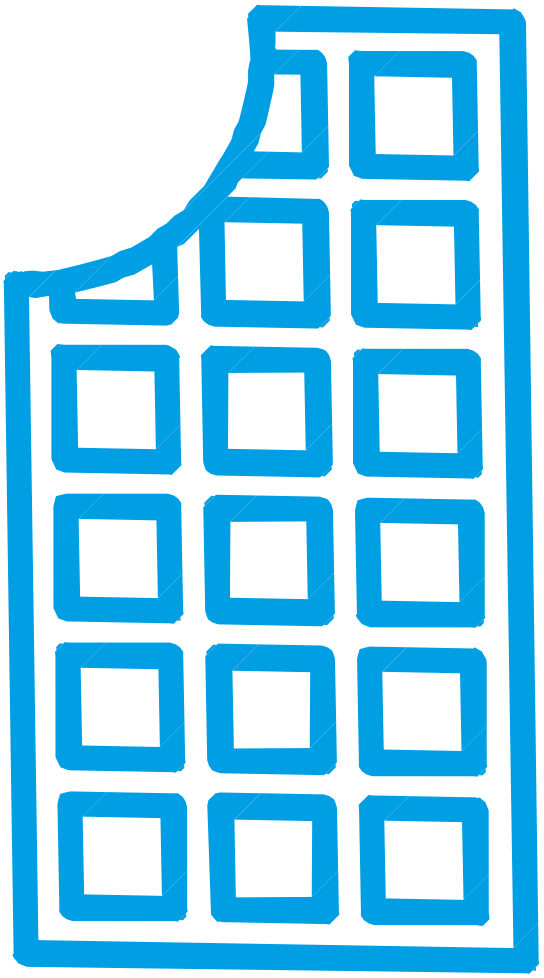
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## What are your favourite chocolate bars or sweets?

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.



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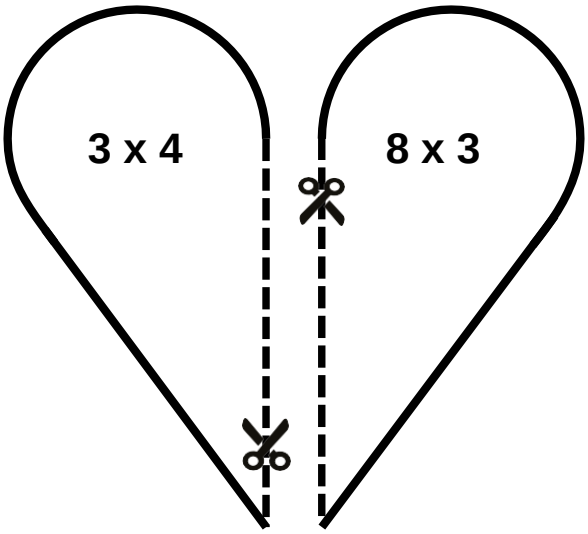
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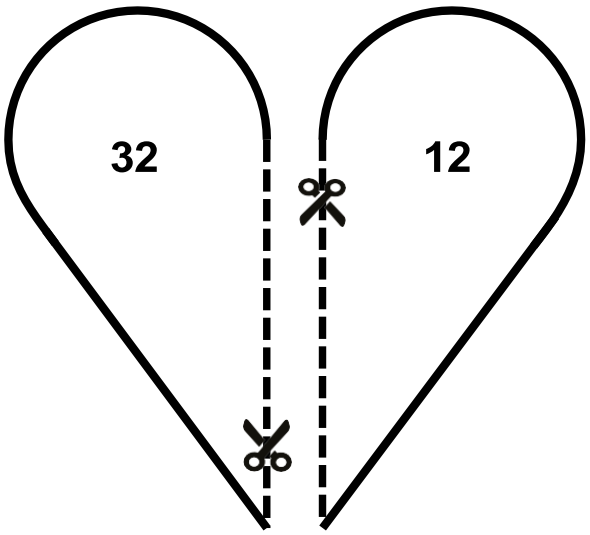
# St Valentine's Day

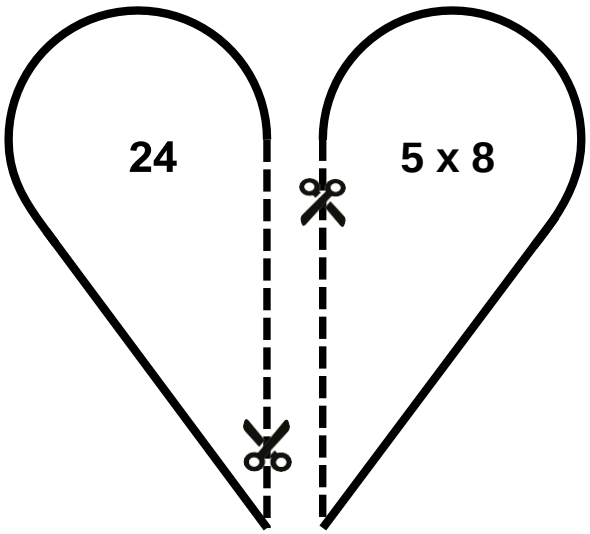
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## On St Valentine's Day, some people send cards. They often have hearts on them.

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

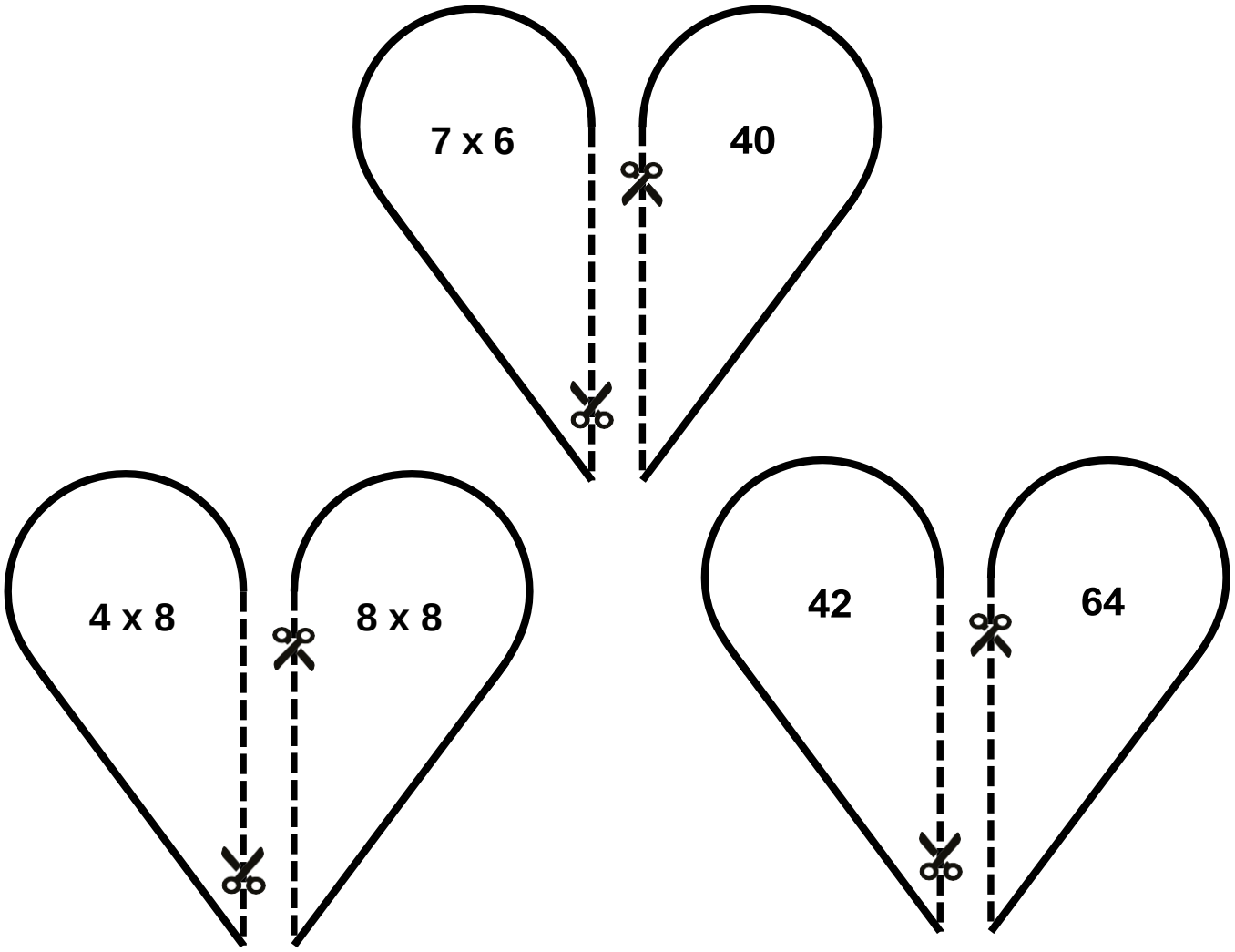





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When you have matched them up, can you make some of your own using the 3, 4 and 8 times tables.

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.



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# 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.



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# Human anatomy facts

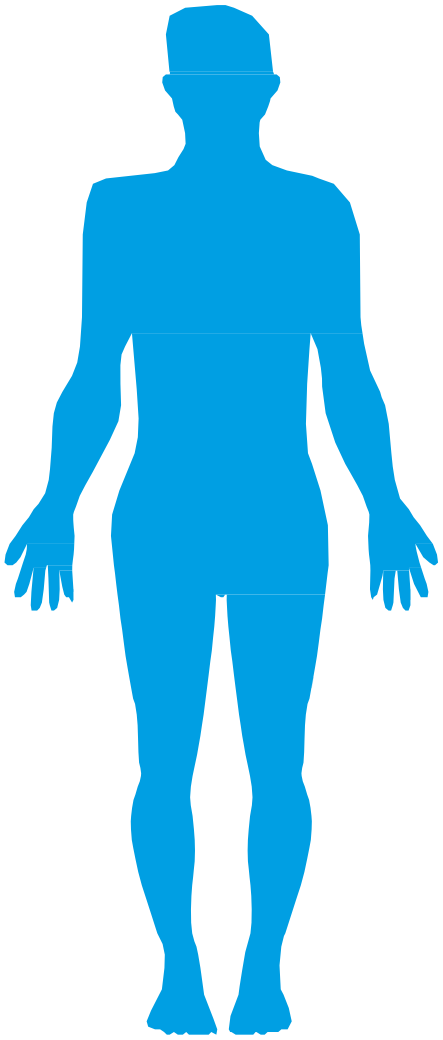
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## Facts about humans:

- 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.



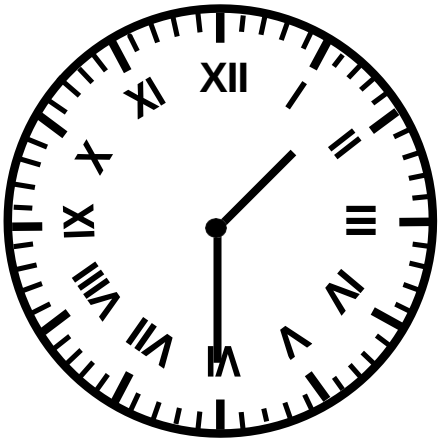
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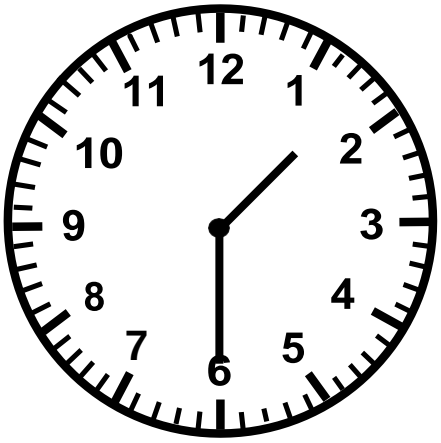
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# Roman clock face

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**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 X11.

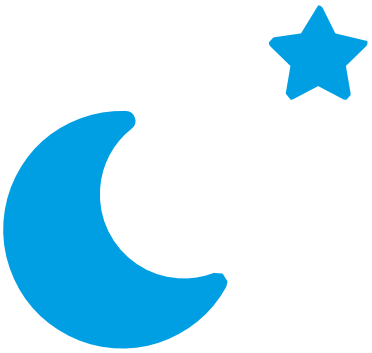


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# TV time task

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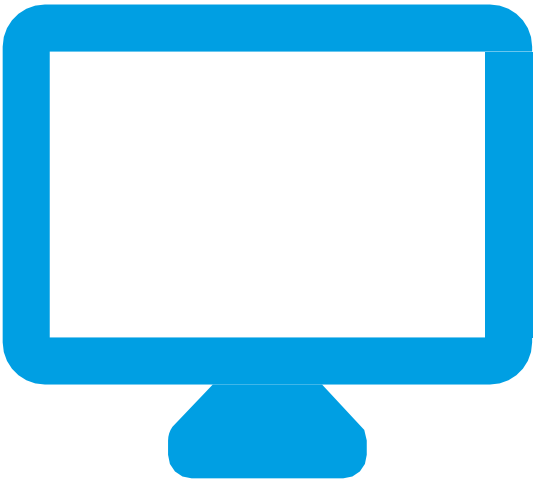
**Do you have favourite television programmes? How long are they? Imagine you could have the television to yourself for one whole day - starting from when you get up to when you go to bed.**



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.



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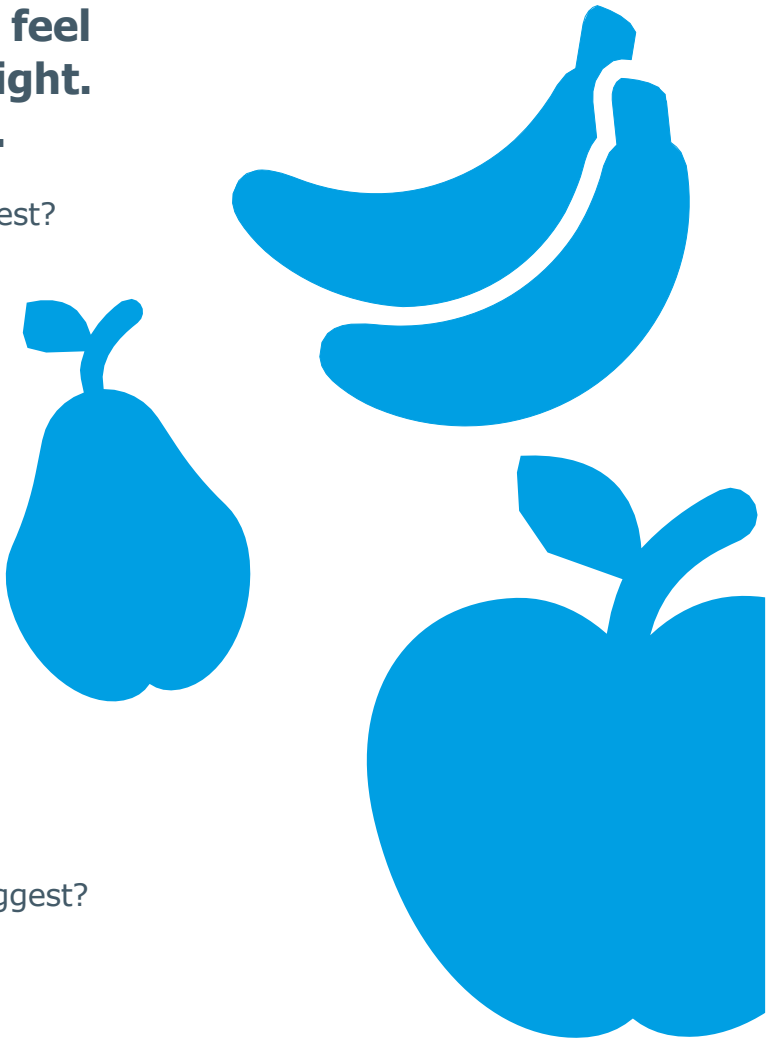
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# Weight of fruit

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**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.



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# Shapes of boxes

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**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.

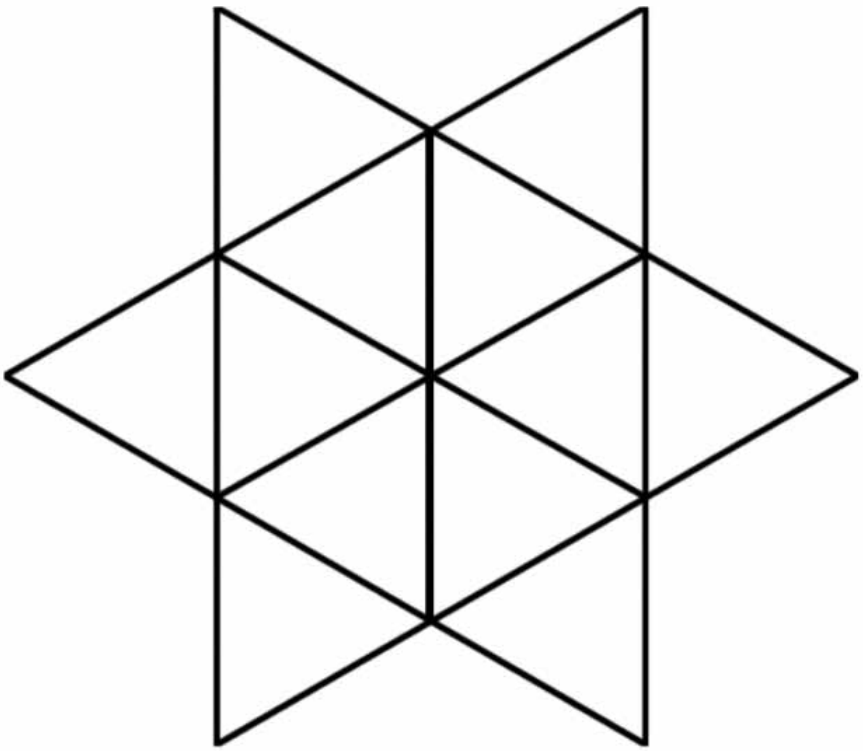


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# Triangle test

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## 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.



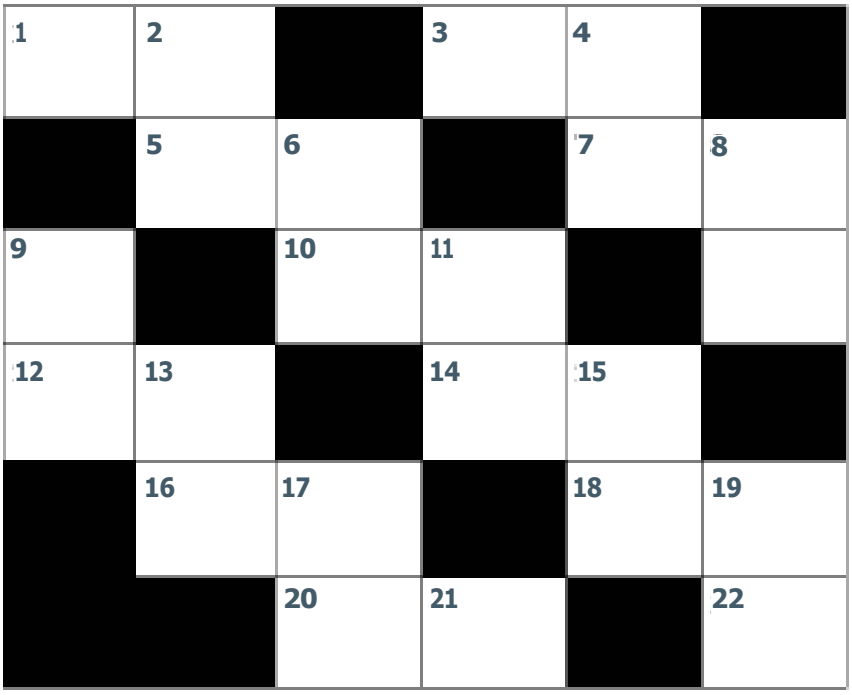
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# Crossword activity
# Part one

Family Maths Toolkit

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




**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

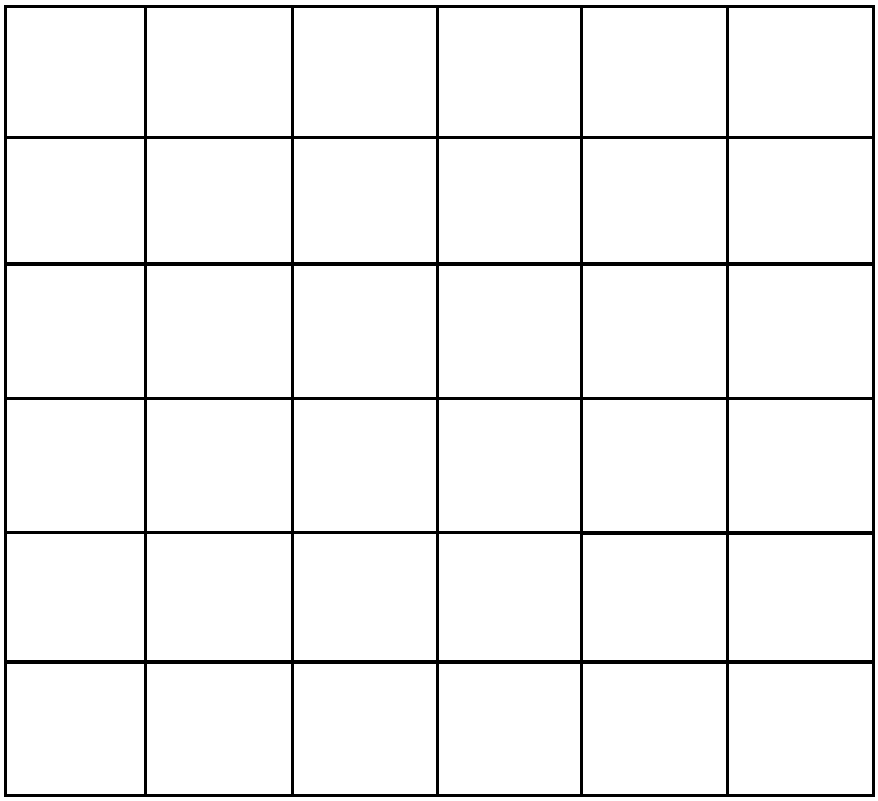
Now, can you and your family make up another for your friends to solve, for an extra challenge?!



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# 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**:

**Child comments**:

**Curriculum Link**

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



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# 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.



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# Times table puzzle

Family Maths Toolkit

## Which times table is this?

**F x C = C**

**K x C = G**

**D x C = FK**

**C x C = FJ**

**H x C = KE**

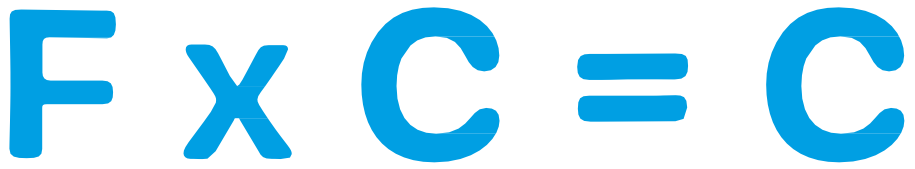
**J x C = KC**

**B x C = KG**

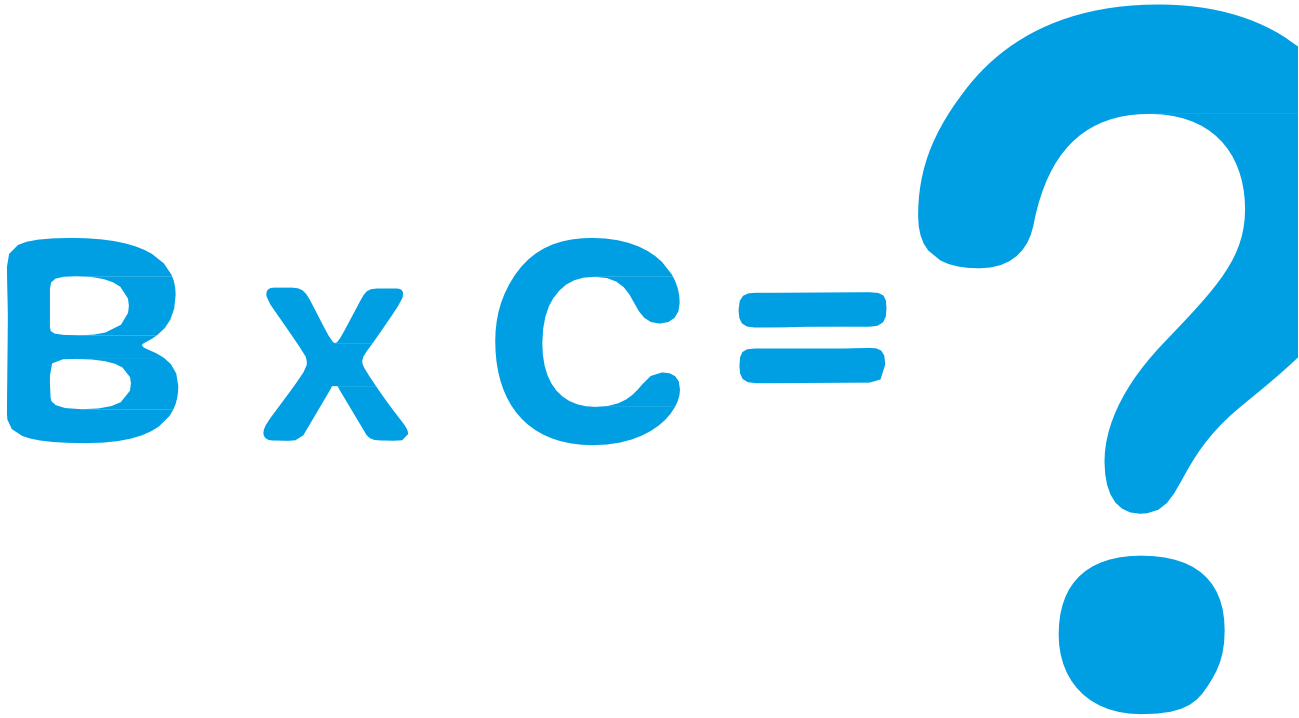
**G x C = DK**

**A x C = DJ**

**FE x C = CE**




Can you make up another times table?






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**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.

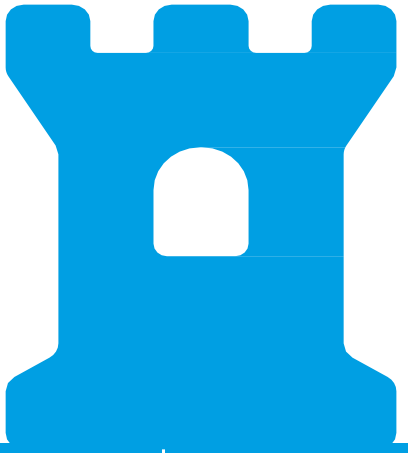


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# Planning a trip

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<br>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<br>Children £6.00 each | £42.00 |
| Ice skating | 1 adult and 4 children | Adult £10<br>Children £4 each | £26.00 |

**Family comments**:

**Child comments**:

**Curriculum Link**

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

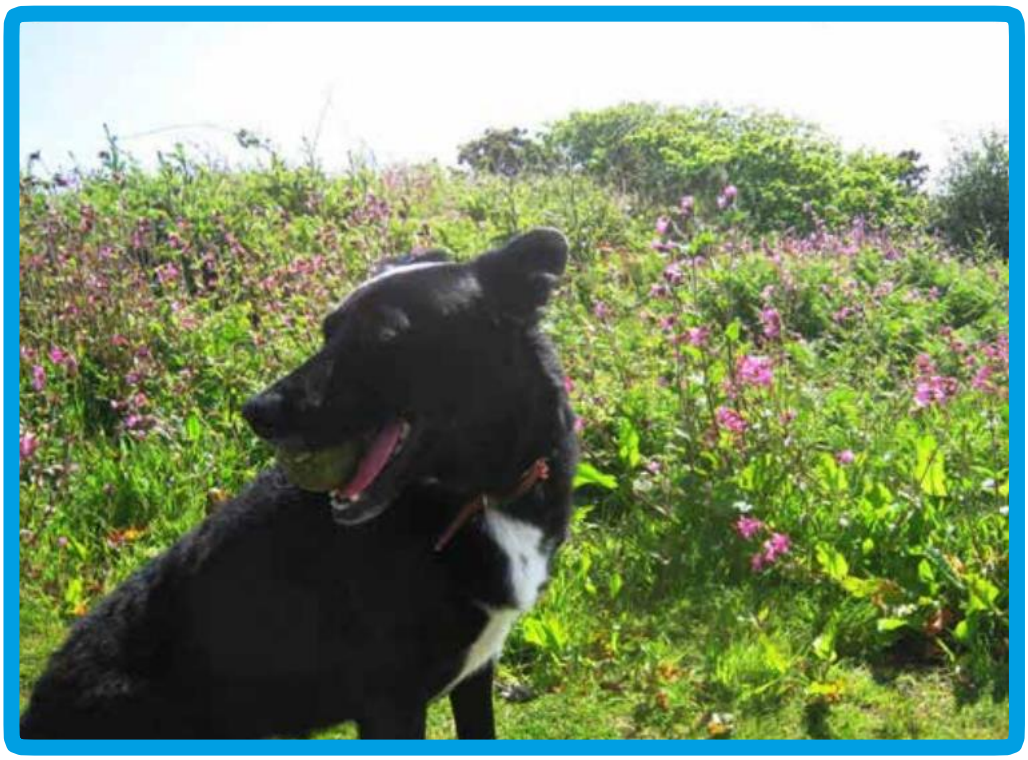


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# At the vet's

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 |





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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.



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# 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.



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# 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.



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# 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).



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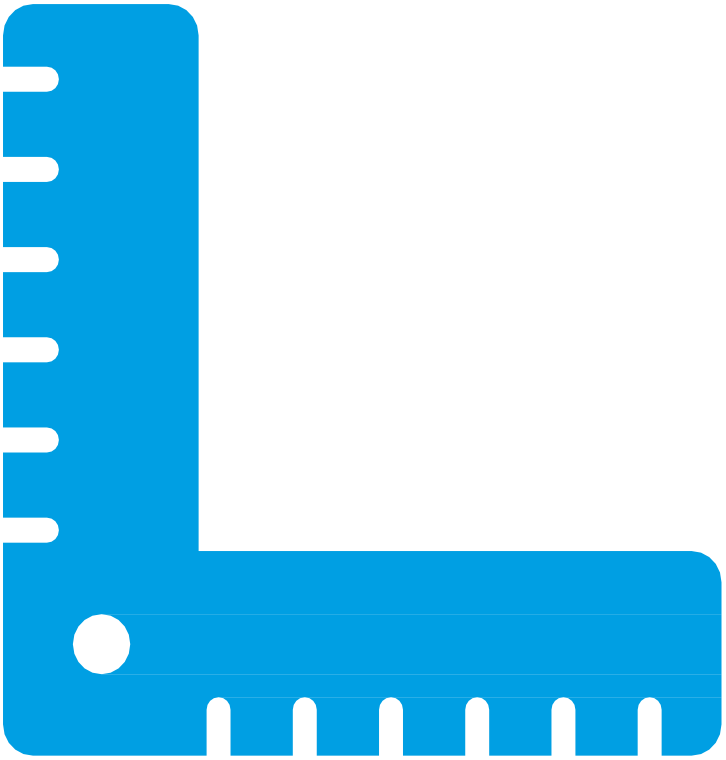
# Rooms - right angles and rectangles

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.

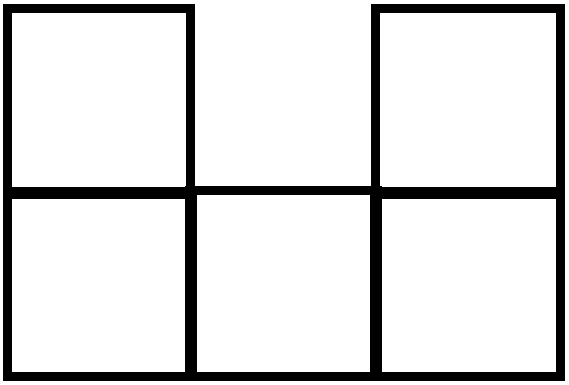


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# Half shape challenge

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.



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# 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









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# Y3 Spring activities answers

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## Ancient Greek sea monster

- There are 10 tongues per head
- There are 10 heads per neck
- 10 tongues x 10 heads = 100 tongues per neck
- There are 10 necks per body
- 100 tongues x 10 necks = 1000 tongues per body
- Cut off one neck: 1000 - 100 = 900 tongues left
- Cut off one head: 900 - 10 = 890 tongues left
- Pull out one tongue: 890 - 1 = 889 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.



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# 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





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