36 Topical Maths Problems

Summer Term 2021
Suitable for Key Stage 2

36 real world maths investigations to practise reasoning and problem solving

Passover Plagues

In the story of the Passover the Lord sent 10 plagues to the land of Pharaoh and his people to teach them a lesson. The plagues ranged from frogs and lice, to boils and blood. Eventually the Lord sent the Plague of Darkness, and Egypt was plunged into the dark for 3 days. Finally he sent the Plague on the firstborn, and an avenging angel went from house to house, killing every first-born son!

During the plague of frogs, 6 frogs were on rocks in a pond.
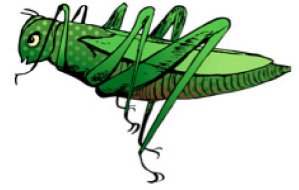
3 dark green frogs were on the left side of the pond (the plague side) and wanted to get to the other side where it was less crowded.

3 bright green frogs were on the right side of the pond and wanted to get to the plague side to join all the other frogs.
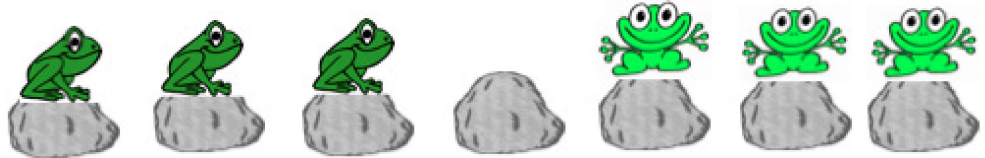
Use these rules to help the frogs swap sides:

- There are 7 rocks which the frogs must use to cross the pond.
- Frogs can only jump to empty rocks.
- Frogs can only jump over one other frog at a time.
- Frogs can't jump backwards.

Work out:
What is the fewest number of moves needed for all the frogs to swap sides?

Recycling facts

Earth Day is an annual event held to demonstrate support for environmental protection. It was first celebrated in 1970 and Earth Day events now take place in more than 193 countries!

- 55% of our rubbish at home could be recycled.
- Recycling one tonne of paper saves 17 trees, 6,000 gallons of water and produces 73% less air pollution than non-recycled paper.
- Plastic bags and rubbish thrown into our oceans kill about 1,200,000 marine mammals, fish and sea creatures every year.
- 1 recycled plastic bottle would save enough energy to power a 60-watt light bulb for 3 hours.
- On average, 16% of the money you spend on a product pays for the packaging, which ultimately ends up as rubbish.
- The average person in the UK gets through 38kg of newspapers per year. It takes 24 trees to make 1 ton of newspaper.
- 275,000 tonnes of plastic are used each year in the UK, that's about 15 million bottles per day.
- Most families throw away about 40kg of plastic per year, which could otherwise be recycled.

Use the facts to answer the following questions:

1. If in a week you save 8 plastic bottles for recycling. How long would the energy saved by recycling them power a 60-watt light bulb for?
2. How many gallons of water could be saved by recycling 250kg of paper?
3. If your house produces 20kg of rubbish in a week, how much of that could be recycled?
4. You buy a drink costing £1.25. How much of that cost pays for the packaging?
5. How many trees are used to make the newspapers thrown away by 100 people in a year?
6. Approximately how many marine animals are killed by the rubbish thrown into the oceans every day?

Flag Fun

St George is the patron saint of England, it is said he fought a dragon! St George's Day is the feast day to celebrate him, on 23rd April. We commemorate him on this day because it is traditionally accepted to be the day he died.

St George is patron saint not only of England but also of Aragon, Catalonia, Georgia, Lithuania, Palestine, Portugal, Germany and Greece; and of Moscow, Istanbul, Genoa and Venice. Here are the flags for some of these countries:

England   Georgia   Portugal

Greece   Istanbul (Turkey)   Palestine

1. Choose one flag and identify all the parallel and perpendicular lines.
2. Choose a different flag and estimate the size of 4 angles. Now measure them and see how accurate your estimates were.
3. Choose a different flag and a colour on it. Calculate the fraction of the flag that is your chosen colour. What is that as a percentage?
4. Choose a different flag and show its lines of symmetry.
5. Choose a different flag. If it has lines of symmetry change the design so that it is no longer symmetrical. If it doesn't have any lines of symmetry, change the design so that it has two lines of symmetry.

Rectangle Riddle

William Shakespeare, a very famous playwright, was born in Stratford-upon-Avon in 1564. He was born in the house pictured opposite! The exact date of his birth is not recorded, but it has been calculated that it is most likely to have been on the 23rd April.

Gent. Mag. July 1769.

How many rectangles can you see in the part of the house outlined in red?

Race Results

The London Marathon is a long-distance running event held in London. The event was first run on 29th March 1981 and has been held in the spring of every year since. The marathon is run over a largely flat course around the River Thames, and spans 42.195 kilometres (26 miles and 385 yards).

Here are the race times for the **top 5 men** in the 2016 London Marathon:

Place overall	Name	HALF	FINISH
1	» Hehir, Sean (IRL)	01:06:35	02:17:20
2	» Martelletti, Paul (GBR)	01:08:29	02:17:26
3	» Frazer, Thomas (IRL)	01:06:54	02:19:17
4	» Scott, Aaron (GBR)	01:09:02	02:19:18
5	» Way, Steven (GBR)	01:09:02	02:20:50

Here are the race times for the **top 5 women** in the 2016 London Marathon:

Place category	Name	HALF	FINISH
1	» Barlow, Tracy (GBR)	01:16:42	02:33:20
2	» Muir, Tina (GBR)	01:18:53	02:37:35
3	» Munn, Hayley (GBR)	01:18:25	02:38:04
4	» Bruinvels, Georgie (GBR)	01:17:32	02:38:13
5	» Hilland, Rebecca (GBR)	01:19:29	02:39:45

1. How much faster was the 1st man than the 5th place man?
2. How much faster was the 1st woman than the 5th place woman?
3. How much slower was the 1st woman than the 1st man?
4. What was the average half marathon time for the top 5 men, rounded to the nearest minute?
5. What was the average marathon finish time for the top 5 women, rounded to the nearest minute?
6. If your teacher can run 5km in 25 minutes, how long would it take them to run a marathon? (You can round the marathon distance to the nearest whole number for your calculation)

The results for yesterday's marathon **can be found here**:
Do questions 1-5 above using the 2017 data.
How do the results for 2016 compare to the results for 2017?

Dance Dilemma

International Dance Day started in 1982 and it celebrates the art of dance around the world. Each year a special committee chooses a personality to create an International Dance Day message to be shared all around the world!

- When they danced in pairs one person was sitting out.
- When they danced in trios two people were sitting out.
- When they danced in quartets three people were sitting out.
- When they danced in groups of five three people were sitting out.

Use the information above to answer this question:

How many people were at the dance?
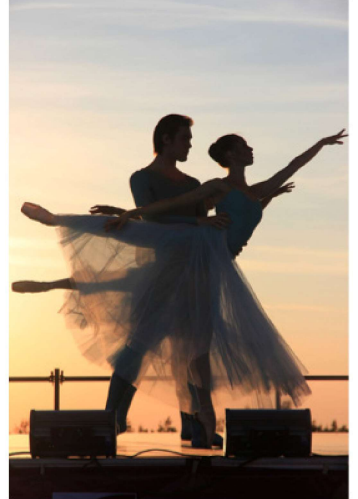
Informative Illustrations

Create your own book of illustrations to help others understand what tricky mathematical words or concepts mean. You can use the ones below or think of some of your own.
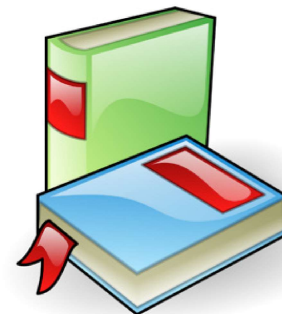
Area	Perimeter	Prime number
Factor	Multiple	Parallel
Perpendicular	Equivalent fractions	Mixed numbers and improper fractions
Negative numbers	Percentages	Rounding
Ratio	Proportion	Properties of shapes

Brainteaser!
Create a booklet or a series of illustrations for younger children to help them understand the four operations, telling the time or fractions.

Hosting a HumaniTea

One way of raising money is to host a HumantiTea event at school. Use the cake recipes and price lists below (or find your own recipes) to plan your event and work out your expected profit.

1. a) If 50 people were going to attend, how much tea and cake do you think they'd need?
   b) How much would they cost?
2. How much would you have to charge for a piece of cake and a cup of tea to cover your costs and raise money for the Red Cross?

Vanilla Cupcakes (makes 10)
- 250g butter
- 110g caster sugar
- 2 eggs
- 1 tsp vanilla extract

Chocolate Brownies (makes 15)
- 180g butter
- 250g caster sugar
- 3 eggs
- 80g plain flour
- 180g dark chocolate
- 50g white chocolate

Price list

80 tea bags £1	500g self-raising flour 40p
200g coffee (makes 100 cups) £2.80	500g plain flour 40p
1l milk 75p	1kg icing sugar £1.70
500g granulated sugar 70p	150g dark chocolate 75p
250g butter £1.20	150g white chocolate 75p
1kg caster sugar £1.60	150g milk chocolate 75p
6 eggs 90p	250g cocoa powder £2

Sunscreen Statistics

National Sun Awareness Week is part of the British Association of Dermatologists' annual campaign to raise awareness of skin cancer. Skin cancer can make you really ill, and can even kill. This is why you should always wear sunscreen when it's very sunny!

1. After applying sunscreen, you should wait 20 minutes before going outside. How many seconds is this?
2. Most sunscreens don't go out of date for approximately 2 years. How many months is this?
3. Waterproof sunscreens lose some of their effectiveness after 40 minutes in the water. What fraction of an hour is this?
4. 80% of people don't apply sunscreen before going outside. In an office with 60 workers, how many would not apply sunscreen before going outside?

Brainteaser!

A sunscreen's Sun Protection Factor (SPF) number refers to the factor by which it enhances a person's natural sun protection. If someone normally burns in 20 minutes, then a sunscreen with an SPF of 15 would protect them for 300 minutes (SPF 15 x 20 minutes = 300 minutes).

If a person normally burns in 15 minutes, how long would a sunscreen with an SPF of 30 protect them for? Give your answer in hours and minutes.

Code Cracker

Complete these calculations and find the corresponding letters in the code cracker grid to find out the aim of the Schuman declaration.

1) 3275 + 330 = _____
2) 8 squared = _____
3) 40 x 60 = _____
4) 30,000 ÷ 10 = _____
5) 9 x 8 = _____
6) 30 x 4 = _____ x 2
7) ¾ of 200 = _____
8) 0.2 = _____%

9) 7.2 x 5 = _____
10) 15% of 40 = _____
11) 2.5 hours = _____minutes
12) A straight line = _____°
13) 36 x 100 = _____
14) 10,000 − 8420 = _____
15) 4.2 litres = _____ml
16) 420 ÷ _____ = 0.6 x 10

A	B	C	D	E	F	G	H	I	J	K	L	M
3000	36	90	3710	60	63	19	4200	1580	450	72	70	2400
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6	64	180	42	20	3600	3605	150	9	150	240	360	27

Aim: __ __ / __ __ __ __ / __ __ __ / __ __ __ __ __ __ __ /
     (1) (2)   (3) (4) (5) (6)   (7) (4) (8)   (9) (6) (1) (7) (6) (6) (10)

__ __ __ __ __ __ __ `__ / __ __ __ __ __ __ __ /
(6) (11) (8) (2) (12) (6) (13)   (10) (4) (1) (14) (2) (10) (13)

__ __ __ __ __ __ __ __ __ __ __ .
(11) (10) (1) (15) (14) (10) (5) (4) (9) (16) (6)

*The numbers in brackets are the question numbers.

Letter Sort

Florence Nightingale was a trailblazing figure in nursing who greatly affected 19th and 20th century policies around proper care. She was known for her night rounds to aid the wounded during the Crimean War and was called the 'Lady with the Lamp'.

F L O R E N C E N I G H T I N G A L E

Use the diagrams below to find different ways to sort the letters in Florence Nightingale's name.
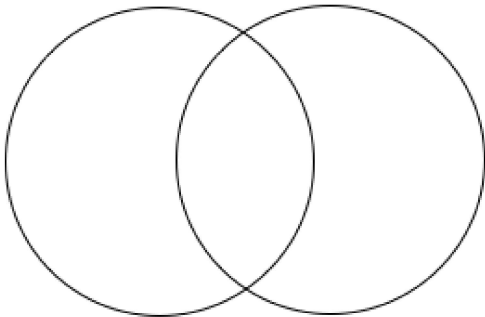
Coin Challenge

Christian Aid Week was set up 60 years ago to support the charity's work with refugees in Europe following the Second World War. Christian Aid now works with 700 local organisations across 50 developing countries.
Working with poor communities, it trains people to deal with the effects of climate change and prepares them for the threat of natural disasters. They also help people become more educated, and spread peace around the globe.

You will need one 10p coin and one 5p coin.

Two classes decided to have a competition to see who could raise the most money for Christian Aid Week by creating coin lines.

Class 5B collected 10p pieces and put them edge to edge to make a long line. The completed line was 25m long.

Class 5S collected 5p pieces and put them edge to edge to make a long line. Their completed line was 30m long.

Work out:
Which class collected the most money?

Football Fractions

The FA Cup (or the Football Association Challenge Cup) is a football competition that happens each year. You've probably heard of it! It was first played during the 1871-72 season and is actually the oldest football competition in the world!

Try one of these football fractions games:

Fractions of amounts
http://www.bbc.co.uk/guides/zyrj7ty

http://primarygamesarena.com/Play/Football-Maths-Penalty-Shootout-3770

Simplifying fractions
http://www.math4children.com/Grade4/games/fractions-football.html

http://www.math-play.com/simplifying-fractions-game/simplifying-fractions-soccer-game.html

Adding fractions
http://www.fractions4kids.com/add-fractions-horizontal-arrangement-football-games/

Converting fractions to decimals
http://www.fractions4kids.com/convert-fractions-to-decimals-football-games/

Average Analysis

The FA Cup (or the Football Association Challenge Cup) is a football competition that happens each year. You've probably heard of it! It was first played during the 1871-72 season and is actually the oldest football competition in the world!

Here are the results from the 2017 FA Cup 1/8-finals and Quarter-finals:

🏴󠁧󠁢󠁥󠁮󠁧󠁿 ENGLAND: FA Cup				Draw
Quarter-finals				
	13.03. 19:45	**Chelsea** ⊡	Manchester United 🟥	**1 : 0**
	12.03. 14:00	**Tottenham** ⊡	Millwall	**6 : 0**
	11.03. 17:30	**Arsenal** ⊡	Lincoln City	**5 : 0**
	11.03. 12:15	Middlesbrough	**Manchester City** ⊡	**0 : 2**
1/8-finals				
	01.03. 19:45	**Manchester City** ⊡	Huddersfield	**5 : 1**
	20.02. 19:55	Sutton	**Arsenal** ⊡	**0 : 2**
	19.02. 16:15	Blackburn	**Manchester United** ⊡	**1 : 2**
	19.02. 14:00	Fulham	**Tottenham** ⊡	**0 : 3**
	18.02. 17:30	Wolves	**Chelsea** ⊡	**0 : 2**
	18.02. 15:00	Huddersfield	Manchester City	**0 : 0**
	18.02. 15:00	**Middlesbrough** ⊡	Oxford Utd	**3 : 2**
	18.02. 15:00	**Millwall** 🟥 ⊡	Leicester	**1 : 0**
	18.02. 12:30	Burnley	**Lincoln City** ⊡	**0 : 1**

Using the image above, work out the answers to the following questions:

1. How many goals were scored in total?
2. Which team scored the highest number of goals in both rounds?
3. Which teams scored 3 goals in both rounds?
4. Which match had the largest goal difference?
5. Which match resulted in a draw?
6. Calculate the mean, mode and median number of goals scored. Round any decimal numbers to 1 decimal place.

Vesak kuudu

Millions of Buddhists celebrate Vesak Day, on the birthday of Gautama Buddha, the founder of Buddhism. Temples are covered with decorations and flowers and some community groups organise acts of charity.

In Sri Lanka colourful lanterns called Vesak kuudu are hung along streets and in front of homes on Vesak Day.

What do you notice about the lanterns?
What shapes can you see?
Can you see symmetry or repeating patterns?

Practise drawing some of the shapes you can see accurately - you will need a **ruler** and a **protractor**.

1. Can you calculate the area and perimeter of the shapes you have drawn?
2. Design or make your own Vesak kuudu, using symmetry and repeating patterns.

Magic Maths

This year on the Tuesday of Walk to School Week, pupils, parents, and teachers everywhere can raise money by wearing their happy shoes (e.g. gorilla feet, or shiny shoes)!

Impress your friends with this maths magic trick that lets you work out their shoe size and age!

Give your friend a piece of paper and a pencil and ask them to do the following calculations without showing you:

1. Write down your age.
2. Multiply it by one-fifth of 100.
3. Add on today's date (e.g. 16 if it's the 16th of the month).
4. Multiply by 20% of 25.
5. Now add on your shoe size (if it's a half size round to the next whole number).
6. Finally subtract 5 times today's date.
7. Show me your final answer!

Now look at their answer. If, for example, somebody shows you 1105, that means there are 11 hundreds. This is their age. The remaining digits 05 (or 5) show their shoe size.

Brainteaser!
Can you explain why this trick works?
Can you show how it works algebraically?

Tricky Timelines

Local History and Community month aims to increase awareness of local history, promote history in general to the local community and encourage all members of the community to get involved in history! Activities happen across the UK and include trips, library exhibitions and local lectures.

This timeline shows some of the main events in WW2:

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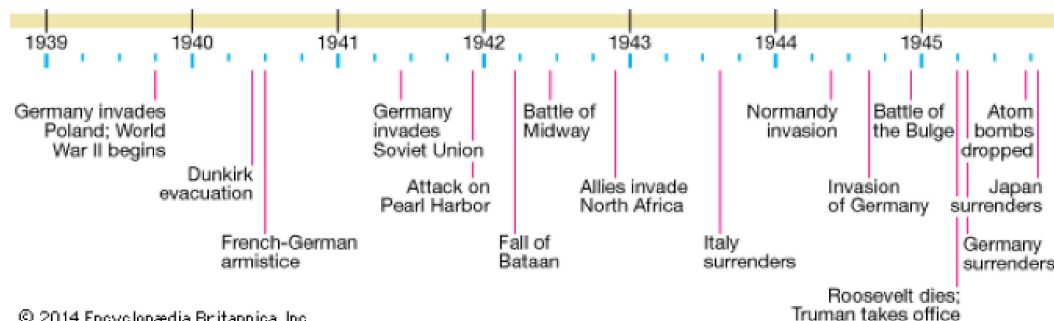
Use the timeline to answer the questions below:

1. In which year did Germany invade Poland? (Give the month and year)
2. How long was it between the French-German armistice and the Fall of Bataan?
3. Use the timeline to write your own questions for a friend to answer

Fasting Times

Ramadan is the ninth month of the Islamic lunar calendar. Every day during this month, Muslims around the world spend the daylight hours in a complete fast. Ramadan is much more than just not eating and drinking; it is a time to purify the soul, refocus attention on God, and practise self-discipline and sacrifice.

1. a) How many days does Ramadan last?
   b) How many hours is this?

2. If daylight hours are from 04:45 to 21:15, how many hours are spent fasting each day?
   a) Each week?
   b) For the whole of Ramadan?

3. Give the answers to question 2 in days (rounded to the nearest whole day).
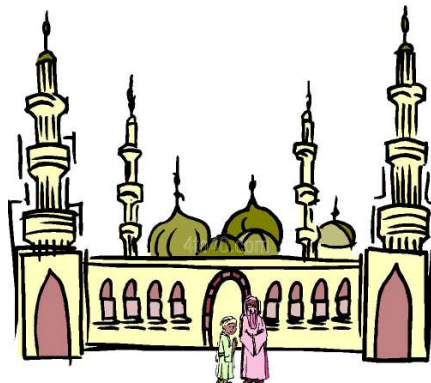
A Cake Sale to be Proud of!

To celebrate Pride Month, some Year 3 pupils raised money for an LGBT Charity by selling cupcakes with rainbow designs on the icing. Have a look at the table below and answer some questions about the money they raised. Each strike in the Tally column represents £2.50.

Pupil	Tally (£2.50)
Naomi	IIII IIII IIII II
Tharani	IIII IIII I
Fred	IIII IIII IIII IIII III
Reshawn	IIII II

1. How much more money did Fred raise than Tharani?
2. What is the difference between the amounts raised by Naomi and Reshawn?
3. How much money was raised altogether?
4. Can you represent the pupils' sales in a bar chart?

Accident Arithmetic

The theme of this year's Child Safety Week is "Safe children: together we've got this." Friends, families, and communities are being asked to show they care by playing their part in keeping children safe. As well as sharing their experience and knowledge, about accidentals and the really practical, simple things they do to prevent them.

1. 30,000 children go to A&E every year with signs of poisoning. How many children is this each month?

2. 130,000 children are injured in the garden every year. How many children is this each week?

3. One million children aged 14 and under go to Accident and Emergency every year following an injury in the home. How many children is this each month? Round your answer to the nearest whole number.

4. 39% of all children's accidents in the home are from falling. How many children are injured in a fall each year?

Distance Dilemma

Anjali and Sam live in different towns.

Both towns are 8 kilometres away from the nearest cinema.

Anjali rides her bike at 6 kilometres per hour and Sam rides his at 5 kilometres an hour.

They both want to arrive at the cinema at 1pm.

**What time should each of them start riding?**

What time should each of them start riding?

Line Art

Children's Art Week is a growing campaign to encourage children's creativity. A number of organisations will be holding events to engage, inspire and excite children, in galleries, arts centres, museums, libraries, schools, and community or youth centres across the country.

To create your art work choose 6 coloured pencils or pens and give each of them a number from 1 to 6.

Number	Colour
1	
2	
3	
4	
5	
6	

1. Roll a dice to decide which colour your first line will be.
2. Roll two dice to give you the co-ordinate of the starting point of your line. Mark this point on the co-ordinate grid.
3. Roll both dice again to tell you where to draw your line to.
4. Draw your line with a ruler.
5. Repeat until you are happy with your art work.

Example:
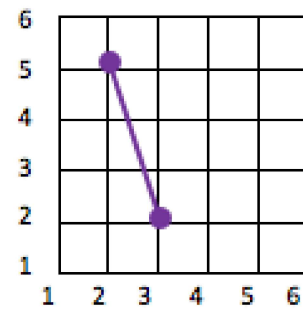
1. Throw one dice: 3 = purple
2. Throw two dice: 2 and 5. You can start your line at (2,5) or (5,2)
3. Throw two dice: 1 and 3.
4. You can end your line at (1,3) or (3,1)
5. Draw the line with a ruler
6. Repeat
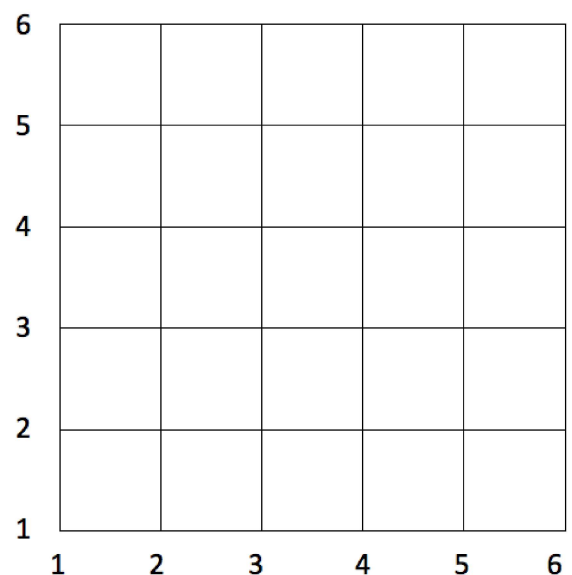
Digit Dilemmas

The Queen celebrates two birthdays every year: her actual birthday on 21st April and her official birthday on a Saturday in June. The official birthday is held in the summer as it means there's a better chance of good weather for the ceremony.
The Queen's official birthday is celebrated with the Birthday Parade, which is also known as Trooping the Colour.

The Queen was born in

| 1 | 9 | 2 | 6 |
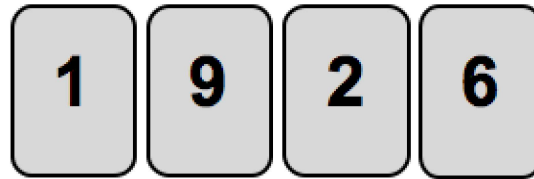
1. What is the largest number you can make using these digits? What is the smallest number you can make?
2. What is the nearest number you can make to 200? You do not have to use all the digits.
3. How many different 4-digit numbers can you make using these digits?
4. Order the numbers you made in Q3, starting with the smallest.
5. Use all 4 digits to make this number sentence correct:

☐☐ + ☐☐ = 90

6. Make as many 3-digit numbers as you can that round to 200 when rounded to the nearest 100.

Piechart Problems

Food Safety Week promotes good food hygiene behaviours. It is important to take care with food and hygiene to make sure you don't get sick!

These pie charts show how many people were made ill, were hospitalised or died due to food poisoning caused by Campylobacter and Salmonella in one month.

Illnesses	Hospitalisations	Deaths
Campylobacter 47%	Campylobacter 29%	Campylobacter 8%
Salmonella 32%	Salmonella 43%	Salmonella 43%
Other Foodborne Bacteria 21%	Other Foodborne Bacteria 28%	Other Foodborne Bacteria 50%
Total: 450,000	Total: 6000	Total: 500
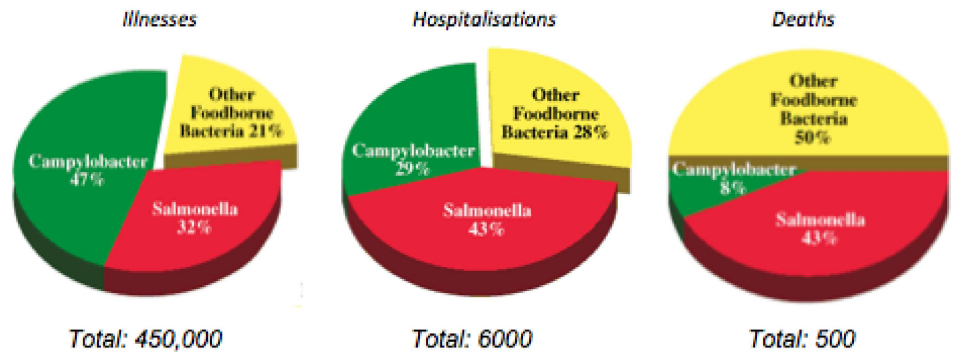
Use the pie charts to answer the questions below:
1. How many people were made ill by Salmonella bacteria?
2. How many more people were hospitalised by food poisoning caused by Salmonella or Campylobacter, than by food poisoning caused by other foodborne bacteria?
3. How many more people were hospitalised by Campylobacter food poisoning than died from it?
4. How many people would be hospitalised due to Salmonella food poisoning in 1 year?

Recipe Ratios

Many Muslims in the UK celebrate Eid ul-Fitr (also known as Id al-Fitr or Eid al-Fitr) on the first day of Shawwal in the Islamic calendar. It marks the end of the month-long fast of Ramadan and the start of a feast that lasts up to three days. People dress in their finest clothes and adorn their homes with lights and other decorations.

Pumpkin halwa is a popular sweet dish that is made for special occasions such as Eid.

This recipe makes enough pumpkin halwa for 4 people:

- 450g pumpkin
- 550ml milk
- 1 teaspoon cardamom seeds, crushed
- 1 tablespoon sultanas
- 28g unsalted butter
- 115g sugar
- 42g flaked almonds

Now rewrite the recipe for:

1. 12 people.
2. 6 people.
3. 9 people.

Merchandise Maths

In the UK, Refugee Week is a nationwide programme of arts, cultural and educational events that celebrate the contribution of refugees to the UK, and encourages a better understanding between communities and people.

These Refugee Week items are sold online to raise money:
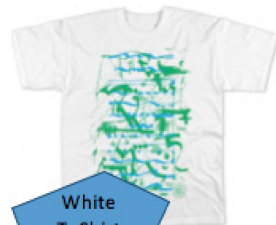
White T- Shirt £30

Grey T- Shirt £10

20 Balloons £2.50

Badge £2.50

1. Mrs George buys some Refugee Week merchandise for her class. She buys a white t-shirt for herself, two grey ones for her teaching assistants, 30 balloons and 30 badges. How much does she spend?
2. Alana spent £35 on Refugee Week items. She bought 4 packets of balloons. What else could she have bought?
3. What fraction of the cost of a grey t-shirt is the cost of a badge?
4. What fraction of the cost of a white t-shirt is the cost of a badge?
5. After Refugee Week the items are reduced by 15%. How much does each item cost in the sale?
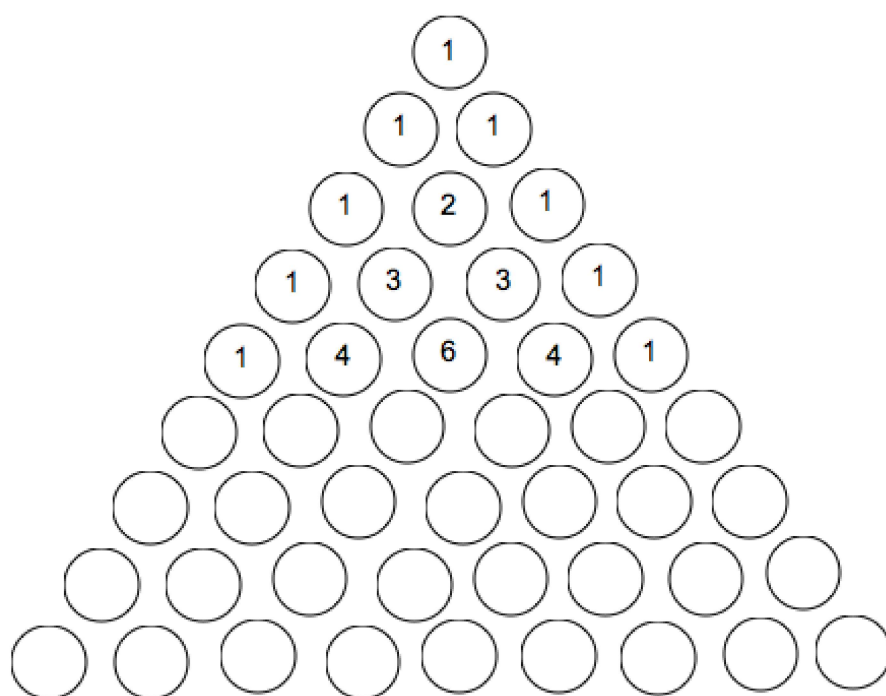6. What is the mean price of all the items?

Pascal's Triangle

Blaise Pascal was a French mathematician, physicist, inventor, writer and Christian philosopher. He was a child prodigy who was educated by his father, a tax collector in Rouen.

This is Pascal's Triangle:

1. How is the triangle made?
2. Complete the next 4 rows of the triangle.
3. Find the sum of each row. Can you see a pattern?
4. Can you see any other number patterns in the triangle?

Sunrise and Sunset Statistics

Summer officially begins in the Northern Hemisphere on 21st June, on a day referred to as the summer solstice. The summer solstice marks the point when the sun reaches its highest point in the sky. This is the longest day of the year, after this the days get shorter until the winter solstice which occurs around 22nd December.

Complete this table to show how the length of the day changes through the year:

	Sunrise	Sunset	Day Length (in hours and minutes)	Day Length (in minutes)
January 21st	07:53	16:31		
February 21st	07:02	17:27		
March 21st	06:01	18:15		
April 21st	05:52	20:07		
May 21st	05:00	20:55		
June 21st	04:43	21:21		
July 21st	05:09	21:04		
August 21st	05:56	20:10		
September 21st	06:45	19:01		
October 21st	07:35	17:54		
November 21st	07:29	16:04		
December 21st	08:04	15:54		

Sports Day Data

At the school sports day, some children took part in a long jump competition.

- Jo jumped 1.57m
- Ali jumped ½ m further than Mark.
- Pippa jumped 12cm further than Jo.
- Mauro jumped 0.3m further than Evie.
- Timo jumped 27cm further than Pippa.
- Jack jumped ¼ m less than the 2nd place child.
- Timo jumped ¾m less than Amelia.
- Shane jumped 0.6m further than Timo.
- Mark jumped 0.21m less than Mauro.
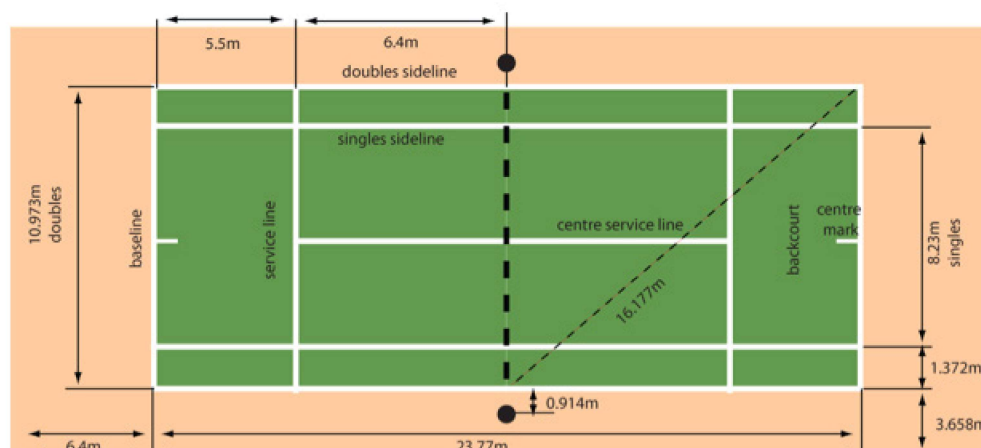- Evie jumped 70mm less than Shane.

Who won the competition?

Court Calculations

This diagram shows the dimensions of a tennis court:

1. How much wider is the doubles court than the single court?
2. What is the perimeter of the doubles court?
3. What is the area of the doubles tennis court? (Round each length measurement to the nearest whole number before you do the calculation)
4. How much larger is the area of the doubles court than the area of the singles court? (Round each length measurement to the nearest whole number before you do the calculation
5. How many rectangles can you count within the large green rectangle?

Fireworks Fun

Independence Day is the most significant national holiday in the United States. It celebrates the Declaration of Independence, adopted on 4th July 1776, when the thirteen colonies of America declared themselves to be states and no longer part of the British Empire.

Firework displays and parties are the most popular activities that take place to celebrate Independence Day.
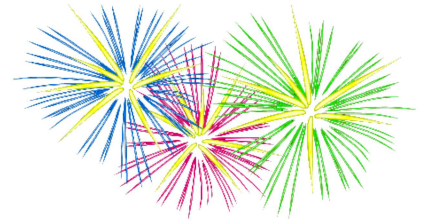
On Independence Day, Joel bought some fireworks to celebrate. Some of the fireworks made 9 bangs, some of them made 7 bangs. When the fireworks were set off they made 87 bangs together.

How many of them made 7 bangs?

Cycling Calculations

The Tour de France is an annual long-distance race for professional cyclists first held in 1903. It takes place primarily on the roads of France, over a period of about three weeks. There are multiple stages which are separately timed and several of these stages encompass mountainous terrain in the Alps and the Pyrenees.

The 2018 Tour de France cyclists will each cover a distance of 2082 miles.

1. How many kilometres does each cyclist ride? (1 mile = approximately 1.6km)
2. The race takes 21 days. How many miles are ridden per day?
3. 198 riders start the Tour de France. If they all make it to the end, how much distance would be covered in total, in miles?
4. If a cyclist travels at an average speed of 25mph, how long would it take them to complete the Tour de France?
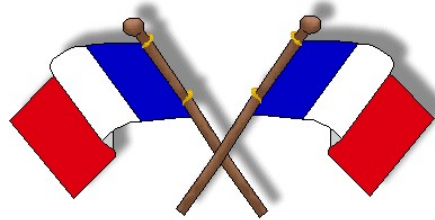
Training Timetable

Armed Forces Day is held annually to honour the work and dedication of our brave Servicemen and women.

This is the training routine for a soldier:

- 6:15am — Get up
- 6:30am — Physical training
- 7:15am — Breakfast
- 8:00am — Morning parade
- 8:45am — Manoeuvres
- 11:00am — Swedish drill
- 12:45pm — Lunch
- 2:00pm — Rifle drill
- 3:00pm — Lecture
- 5:00pm — Dinner
- 6:00pm — Free time
- 10:00pm — Bed

Draw a timeline from 6am to midnight and mark each of these events on it.

Now answer the following questions:

1. How long to trainee soldiers get for breakfast?
2. How much time is spent doing Swedish drill?
3. How much longer is spent at a lecture than at morning parade?
4. How long after lunch is dinner?
5. What time is rifle drill? Write your answer using 24 hour clock notation.
6. How long is spent doing physical training? Give your answer in seconds.
7. What fraction of a day is for free time?

Ice Cream Combinations

In the UK schools are closed for the summer for approximately 6 weeks, from mid-July until the start of September. People traditionally go on holiday during this time and go for day trips to places such as theme parks and beaches.

Ice creams are a popular treat during the holidays.

You can have 3 different flavours of ice cream on your cone.

1. Which 3 flavours would you choose?
2. How many different combinations could you have with those 3 flavours?

Seaside Logic Puzzle

In the UK schools are closed for the summer for approximately 6 weeks, from mid-July until the start of September. People traditionally go on holiday during this time and go for day trips to places such as theme parks and beaches.

Work out the missing total in the logic puzzle below:

🦀	🪣	🪣	9.1
🦀	🦀	🪣	7.7
🦀	🕶	🕶	5.3
6.3		8.6	

Theme Park Design

In the UK schools are closed for the summer for approximately 6 weeks, from mid-July until the start of September. People traditionally go on holiday during this time and go for day trips to places such as theme parks and beaches.

Your team has £600,000 to build your own theme park. Your theme park must have rides, a car park, toilets, cafes, shops and paths.

Design your theme park on squared paper, using the following information:

Item	Number of squares	Cost
Large ride	8	£50,000
Small ride	5	£24,000
Cafe	5	£11,000
Shop	4	£6,000
Toilets	3	£2,000
Paths		£150 per square
Car park		£400 per square
Boating lake (optional)		£3,000 per square
Splash park (optional)		£2,000 per square
Crazy golf (optional)		£2,000 per square
Adventure playground (optional)		£1,500 per square
Indoor soft play (optional)		£3,000 per square
4D cinema (optional)	6	£32,000