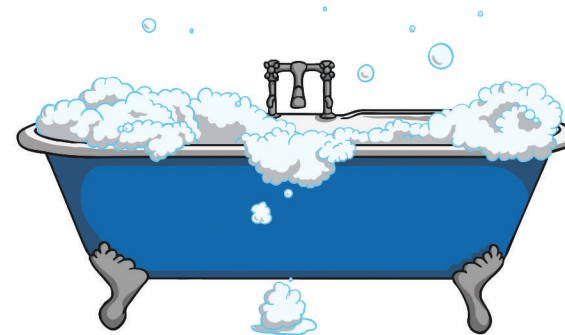


Mixed Maths Challenge Cards

Bath Filling Challenge

A can of pop holds 33 centilitres.

How many cans of pop would it take to fill a bath that measures 1.5 metres long by 60cm wide?



Hint: 1 cubic centimetre is the same as 1 millilitre.

Bicycle and Scooter Challenge

Dan bought a bicycle and scooter for 60 pounds each. He sold them, making a profit of 20% on the bicycle and a loss of 20% on the scooter.



How much money did he get when he sold the bicycle and the scooter?

Book Page Challenge

The pages of this book are numbered starting with the number 1. The pages numbers have a total of 595.

How many pages does the book have?

How many of the page numbers have a 5 in them?



Cafe Challenge

Here is the price list at a cafe:

1 bun and 1 cup of tea = 2 pounds and 50 pence.

2 buns and 2 cups of coffee = 7 pounds.

1 cup of coffee and 2 cups of tea = 4 pounds.

How much do you have to pay in total for 1 bun, 1 coffee and 1 tea?

What does each item cost by itself?



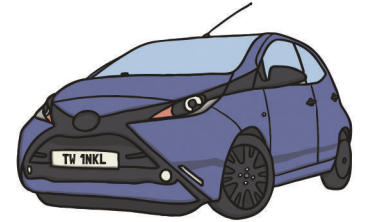
Car Sale Challenge

John bought a car for 200 pounds.

He then sold it for 300 pounds.

He bought it back for 400 pounds.

He sold it again for 500 pounds.



Did John make a profit or loss when he finally sold his car?

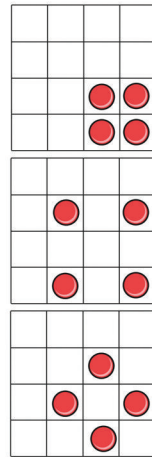
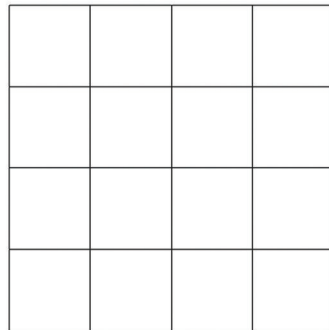
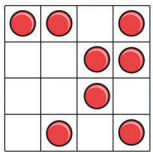
How much did he make or lose?

Counter Square Challenge

On each of these grids, the counters are at the four corners of a square.

What is the greatest number of counters you can put on a grid without making a square?

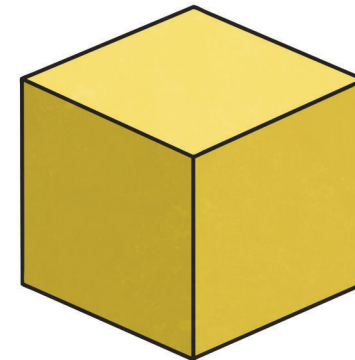
Here is an example:



Cube Challenge

You have a cube and a box which is just the right size to hold the cube.

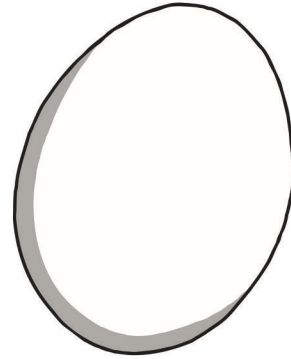
In how many different ways can you fit the cube into the box?





Eggs Challenge

This baker spends 10 pounds on 100 eggs for her bakery.
Small eggs cost her 5p each.
Medium eggs cost her 10p each.
Large eggs cost her 50p each.



She bought the same number of eggs for two of the sizes.
How many of each size did she buy?

Estimating Challenge

Estimate how many sweets there are in this jar.



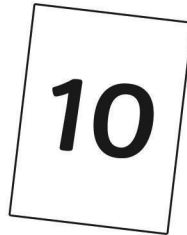
Five Number Challenge

Take 10 cards numbered 0 to 9.
Use all ten cards each time.

Sort the cards to make:

1. five numbers that are multiples of 7
2. five prime numbers
3. five numbers that are multiples of 3

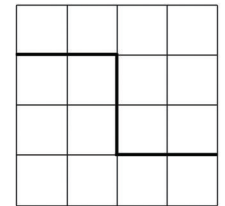
Create more problems to use all ten cards
that make five numbers.



Grid Challenge

This grid is divided into two identical parts.
Each part is exactly the same.

On some squared paper, draw a 4 by 4 grid.



Find five different ways of dividing the grid into two
identical parts by drawing along the lines of the grid.

Rotations and reflections do not count!

Have a go at finding more ways of dividing the grid into
two parts with equal areas but different shapes.

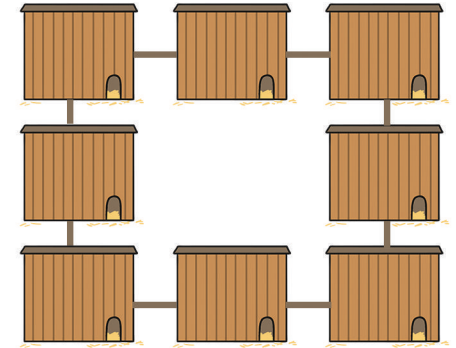
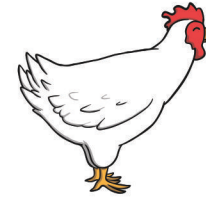
Heads and Tails Challenge

There are some coins on a table.
One half of them are heads up. If two of the coins are turned over, one third of them will be heads up.
How many coins are on the table?



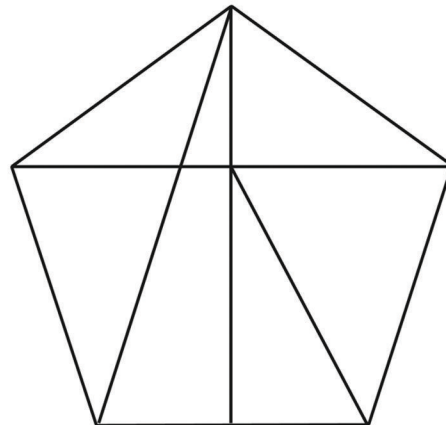
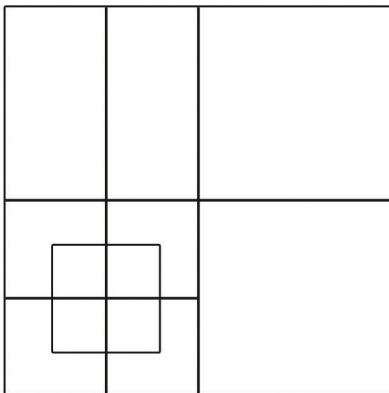
Hen House Challenge

36 hens live in eight hen houses.
Each hen house has a different number of hens in it.
Each line of three hen houses has 15 hens in it.
How many hens live in each house?



Hidden Shapes Challenge

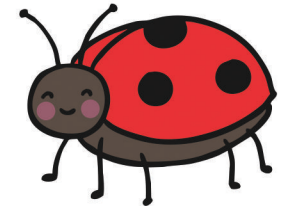
How many squares can you count?



How many triangles can you count?

Ladybird Spot Challenge

The red ladybirds have 3 spots.
The orange ladybirds have 8 spots.
Some red ladybirds and orange ladybirds have 52 spots altogether. How many red ladybirds are there?
How many orange ladybirds are there?



What if the red ladybirds have 4 spots, the orange ladybirds have 5 spots and there are 68 spots altogether?
Find as many solutions as you can.

Lottery Challenge



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Abbie won the lottery.

She spent two thirds of the money buying her mother and father a brand new house.

She then spent two thirds of what she had left on a new boat for her sister.

Then she spent two thirds of what was left on a motorbike for her brother.

She spent the last 15 thousand pounds on a new car.

How much money did Abbie win?



Making 100 Challenge

Choose four of these digits. Each one must be different. Put one digit in each box.

1 2 3 4 5 6 7 9

This makes two 2-digit numbers reading across and two 2-digit numbers reading down.

Add up all four of the numbers.

How many different ways of making 100 can you find?

How many different ways of making 200 can you find?

Millennium Challenge

2000

At what time of what day of what year would it be:

- 2000 seconds after the start of the year 2000?
- 2000 minutes after the start of the year 2000?
- 2000 hours after the start of the year 2000?
- 2000 days after the start of the year 2000?
- 2000 weeks after the start of the year 2000?

Number Linking Challenge

Link up any four numbers and find the total. Links can go up, down or sideways but not diagonally.

The total shown here is $5+4+19+17=45$.

5	18	14	2
4	1	16	17
19	17	12	13
8	5	14	7

Find the highest possible total.

Find the lowest possible total.

Try linking five numbers.

Now try linking five numbers by only using diagonal links.



Number Shape Challenge

Each shape stands for a number.

The numbers shown are the totals of the four numbers in the row or column.

What are the remaining totals?

What numbers do each shape stand for?

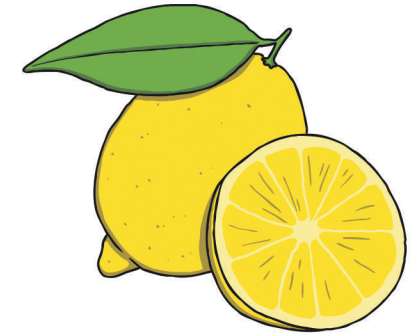
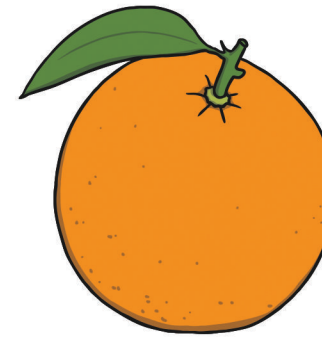


				22
20			28	

Orange and Lemons Challenge

Oranges cost 26p each.

Lemons cost 18p each.



If you spent exactly 5 pounds on a mixture of oranges and lemons, how many of each did you buy?

Path Challenge

4 rows of 3 circles are linked by 17 paths.

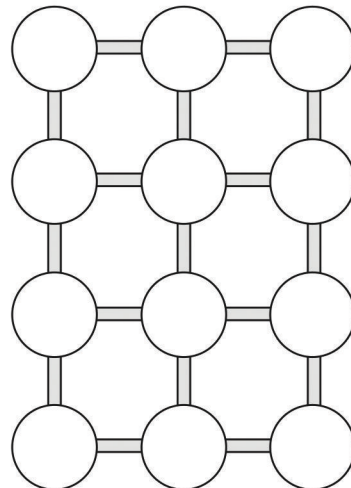
Each path is 10 metres long.

Go along each path at least once.

The route can start and end at any circle.

How long is the shortest route you can take?

What if there are 4 rows of 5 circles?



Penny Challenge

If you divide 15 pennies among four small bags you can pay any sum of money ranging from 1p to 15p using a combination of bags.



How many pennies did you put in each bag?



Pet Shop Challenge

A hamster costs 1 pound and 20 pence.

A guinea pig costs 1 pound and 50 pence.

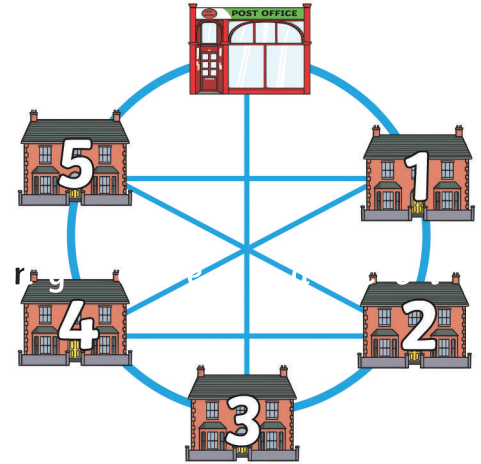


If you have 12 pounds, how many of each kind can you buy?

Post Route Challenge

The postal worker starts at the Post Office and delivers one parcel to each of the numbered houses.

How many different routes can the postal worker take when delivering each of the houses before returning to the Post Office?



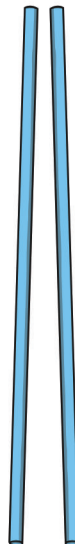
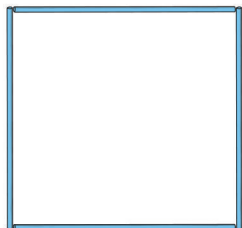
Square Straw Challenge

Take six straws each of equal length. Cut two of them in half.

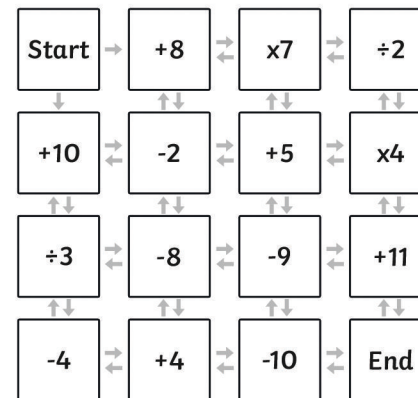
You now have eight straws, four long and four short.

You can make 2 squares from eight straws.

Arrange your eight straws to make 3 squares, all the same size.



Sun Maze Challenge



Start with zero.

Can you find a route from 'Start' to 'End' that comes to a total of 100?

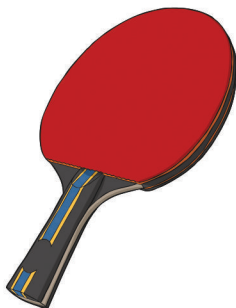
Can you find the route with the highest total?

Can you find the route with the lowest total?

Have a go at starting from different numbers.

Table Tennis Challenge

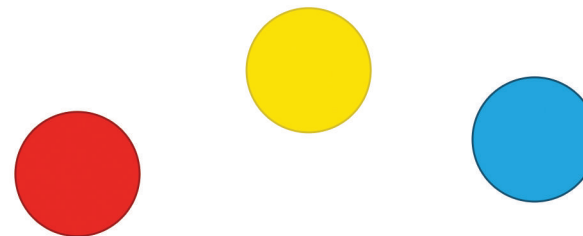
Only two boys and two girls can play table tennis.
 Rachel doesn't mind who she plays with.
 Liam will only play if Rachel plays.
 Jon won't play if Lauren or Liam plays.
 Sarah won't play if Jon is playing.
 James will only play if Sarah plays.



Which two boys and which two girls play table tennis?

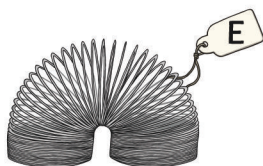
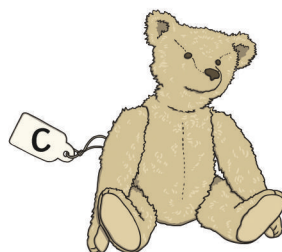
Three-Digit Counter Challenge

Use 25 counters. You have to make a three-digit number by putting the counters into three piles.
 You must use all 25 counters for each three-digit number you make.
 How many different three-digit numbers can you make?
 Write them in order.



Toy Shop Price Challenge

These 5 toys cost 24 pounds altogether.
 Toys A and B cost a total of 7 pounds.
 Toys B and C cost a total of 11 pounds.
 Toys C and D cost a total of 8 pounds.
 Toys D and E cost a total of 10 pounds.
 How much did each toy cost?



What Age Challenge

- My mum is 35 years old.
 9 years ago she was the age I shall be in 13 years' time.
 How old am I now?
- Last year, my age was a square number.
 Next year it will be a cube number.
 How old am I?
- My age next year will be a multiple of 8.
 My age now is a multiple of 7.
 How old am I?



Answers

Bath Filling Challenge

A bath measuring 1.5 metres long by 60cm wide would have an area of approximately 9000cm². If the level of liquid (pop) in the bath was 30cm high, the volume of liquid would be about 270 000 cm³ or 270 000ml. This would require approximately 810 cans of pop.

Bicycle and Scooter Challenge

Dan made £12 profit on the bicycle and £12 loss on the scooter.

$$60 + 12 = \text{£}72$$

$$60 - 12 = \text{£}48$$

$$72 + 48 = \text{£}120.$$

Book Page Challenge

There are 34 pages in the book. 3 of the pages have a number 5.

Café Challenge

A bun costs £1.50.

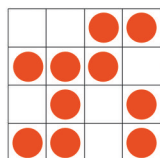
A cup of tea costs £1.00.

A cup of coffee costs £2.00.

Car Sale Challenge

John made a profit of £ 2 0

Counter Square Challenge



Cube Challenge

A dice has 6 faces and each face could be rotated 4 different ways, so $6 \times 4 = 24$. You could fit a cube into a box 24 different ways.

Egg Challenge

The baker buys:

10 large eggs

10 medium eggs

80 small eggs

Estimating Challenge

A logical answer might be approximately 100.

Five Number Challenge

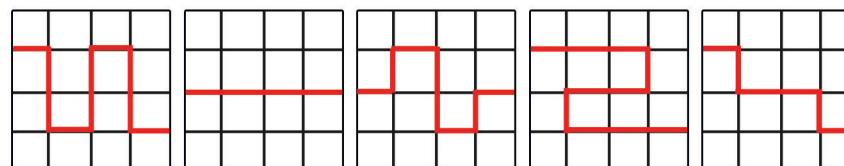
There are many different possibilities for each problem. Here is an example for each one:

a) Five numbers that are multiples of 7 - 7, 42, 63, 98, 105.

b) Five prime numbers - 5, 23, 67, 89, 401.

c) Five numbers that are multiples of 3 - 12, 39, 45, 60, 78.

Grid Challenge



Heads and Tails Challenge

12 coins were on the table.

Hen House Challenge

These are different possibilities. Here is one example:

3	5	7
4		2
8	1	6

Answers

Hidden Shapes Challenge

14 Squares and 11 Triangles

Ladybird Spot Challenge

Part One

There could be:

- a) 5 orange ladybirds and 4 red ladybirds
- b) 2 orange ladybirds and 12 red ladybirds.

Part Two

There could be:

- a) 12 orange ladybirds and 2 red ladybirds
- b) 8 orange ladybirds and 7 red ladybirds
- c) 4 orange ladybirds and 12 red ladybirds.

Lottery Challenge

She spent £270,000 on a house for her mum and dad.

She spent £90,000 on a boat for her sister.

She spent £30,000 on a motorbike for her brother.

She spent £15,000 on a new car.

Abbie won £405,000 on the lottery.

Making 100 Challenge

Part One - There are many different ways of making 100, for example:

2	1
3	8

$$21 + 23 + 18 + 38$$

Part Two - There are many different ways of making 200, for example:

6	2
4	7

$$62 + 64 + 18 + 38$$

Millenium Challenge

00:33:20 1st January 2000

09:20:00 2nd January 2000

08:00 23rd March 2000

00:00 23rd June 2005

00:00 1st May 2038

Number Linking Challenge

Part One - Using 4 numbers, here are the numbers you can make:

Highest number: $18 + 14 + 16 + 17 = 65$

Lowest number: $5 + 4 + 1 + 16 = 26$

Part Two - Using 5 numbers, here are the numbers you can make:

Highest number: $19 + 17 + 12 + 16 + 17 = 83$

Lowest number: $5 + 4 + 1 + 17 + 5 = 31$

Part Three - Using 5 numbers joined diagonally, here are the numbers you can make:

Lowest number: $5 + 1 + 19 + 5 + 12 = 42$

Highest number: $18 + 16 + 13 + 14 + 17 = 78$

Number Shape Challenge

○	△	○	★	20
★	△	○	★	23
○	○	★	★	22
△	★	△	★	24
20	21	20	28	

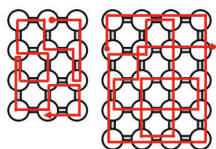
Star = 7, Circle = 4, Triangle = 5.

Oranges and Lemons Challenge

You could buy 13 oranges and 9 lemons or 4 oranges and 22 lemons.

Answers

Path Challenge



Pet Shop Challenge

You could buy:

10 hamsters

8 guinea pigs

5 hamsters and 4 guinea pigs

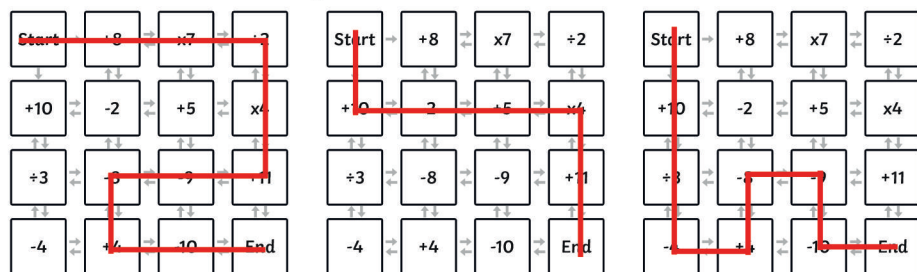
Post Route Challenge

There are multiple possibilities in this problem. How many can you find?

Square Straw Challenge



Sun Maze Challenge



=100

highest total = 31

lowest total = -35

Penny Challenge

Bag 1 has 1p, bag 2 has 2p, bag 3 has 4p and bag 4 has 8p.

Table Tennis Challenge

The two boys are James and Liam.

The two girls are Rachel and Sarah.

Three Digit Counter Challenge

It is possible to make six different numbers.

799, 889, 898, 979, 988 and 997.

Toy Shop Price Challenge

A costs £3

B costs £4

C costs £7

D costs £1

E costs £9

What Age Challenge

1. 13 years old

2. 26 years old

3. 47 years old