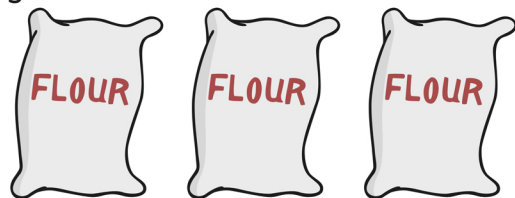


## Baking Challenge

This baker has three bags of flour. Each is a different weight.

The first and third weigh 11kg altogether.  
The first and second weigh 7kg altogether.  
The second and third weigh 8kg altogether.



What is the weight of each bag of flour?

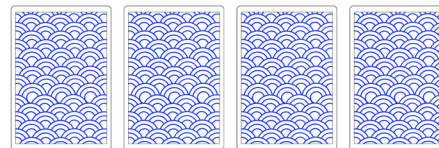


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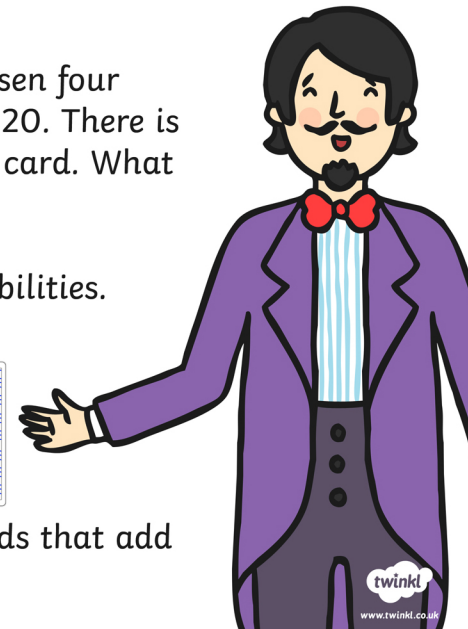
## Card Challenge

Maurice the Magician has chosen four different cards that add up to 20. There is a number from 1 to 8 on each card. What are they?

There are seven different possibilities.  
Try to find them all.



What if Maurice has three cards that add up to 16?



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## Coin Challenge

Use these 5 coins: 1p, 2p, 5p 10p and 20p



Order them by using these clues:

The last coin is double the value of the first coin.  
The total of the first three coins is 27p.  
The total of the last three coins is 31p.



Now use six coins: two 1p's, two 2p's and two 5p's.  
Put them in a row using these clues:



Between the two 2p coins there are two coins.  
Between the two 5p coins there are three coins.  
Between the two 1p coins there is one coin.



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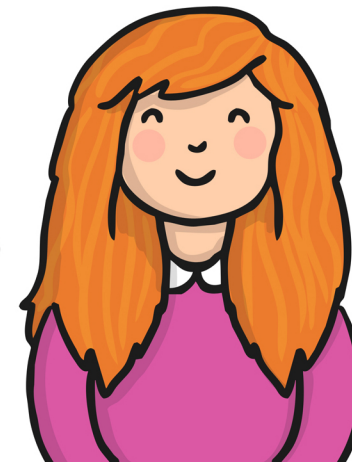
## Counting Beads Challenge

Abbie had between 30 and 50 beads.  
She counted the beads in fours and had 2 left over.

She counted them in fives  
and had 1 left over.



How many beads did  
Abbie have?



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## Detective Challenge

The detective dog looked for a number. He found a two-digit number less than 50. The sum of its digits was 12. Their difference was 4.

What number did Dan find?

The detective dog found a two-digit odd number. One of its digits was half the other. The number was greater than 50.

What number did he find?



## Dice Challenge

The dots on opposite faces of a dice add up to 7.



Imagine rolling one dice. The score is the total number of dots you can see. You score 17. Which number is face down?

Imagine rolling two dice. The score is the total number of dots you can see. The dice do not touch each other. You score 30

Which numbers are face down?



How did you work out your answers?

## Gold Coin Challenge

The King is counting his gold. He put 20 gold coins into four piles.

The first pile had four more coins than the second.

The second pile had one less coin than the third.

The fourth pile had twice as many coins as the second.



How many gold coins did  
The King put in each pile?

## Making Footprints Challenge

Small has size 2 shoes.



Medium has size 3 shoes.

They are one and a half times the length of small shoes.



Large has size 5 shoes.



A small shoe and a medium shoe are the same length as a large shoe.

They start with the heels of their shoe on the same line.

They each walk heel to toe.



When will all three heels be in line again?

## Nickname Challenge

Jack, Billie, Francis and Abbie are cousins. They each have a nick-name. Their nick-names are Bambi, Cheeky, Ducky and Giggles but not in that order. What is the nickname of each of the cousins?

### Clues

Francis plays tennis with Cheeky and goes swimming with Ducky and Bambi

Abbie has been on holiday with Cheeky but travels to school with Giggles and Ducky.

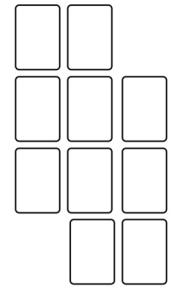
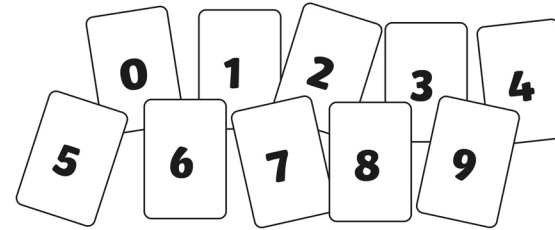
Bambi, Cheeky and Jack play in the football team.

Bambi sometimes goes to tea with Francis.



## Number Neighbour Challenge

Take ten cards numbered 0 to 9 and arrange them like this.



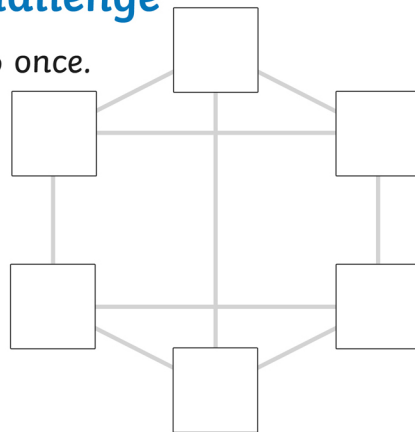
Do it so that no two consecutive numbers are next to each other, horizontally, vertically or diagonally.

There are lots of ways to do it.  
How many ways can you find?

## Number Neighbour Challenge

Use each of the numbers 1 to 6 once.  
Write one in each square.

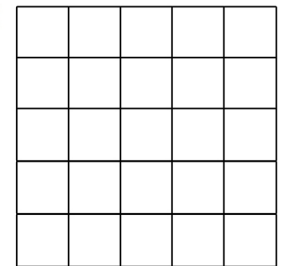
6 5 4  
2 3 1



Numbers next to each other must not be joined.  
For example, 3 must not be joined to 2 or 4.

## Odd and Even Grid Challenge

Draw a 5 by 5 grid like this one.



1. Place 13 counters.  
Get an odd number of them in each row and column and the two main diagonals.

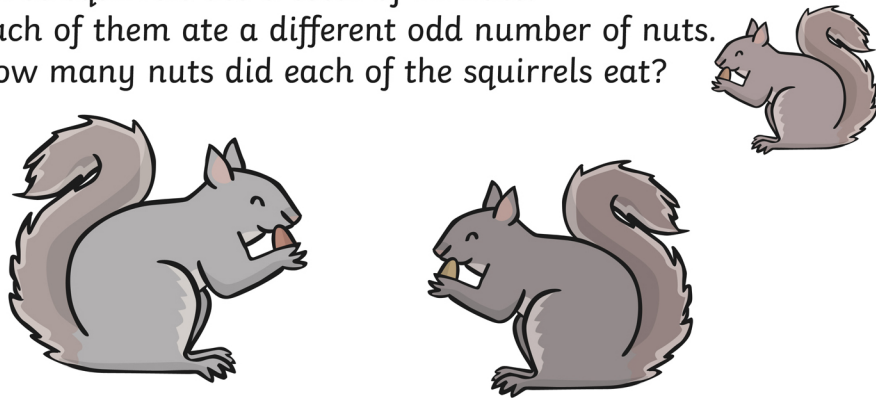
2. Place 10 counters.  
Get an even number of them in each row and column and the two main diagonals



You can put only one counter in each space.

## Odd Nut Challenge

Three squirrels ate a total of 25 nuts.  
Each of them ate a different odd number of nuts.  
How many nuts did each of the squirrels eat?



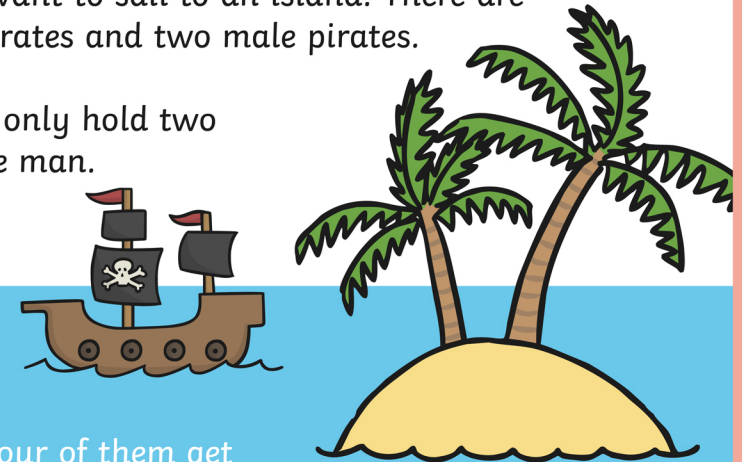
Find as many different ways to do it as you can.



## Pirate Island Challenge

Four pirates want to sail to an island. There are two female pirates and two male pirates.

The boat will only hold two women or one man.



How can all four of them get to the island?



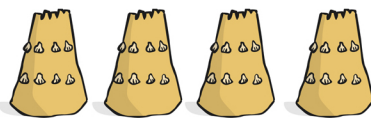
## Sandcastle Challenge

In 5 days Sophie made 80 sandcastles.

Each day she made 4 fewer castles than the day before.  
How many castles did she make each day?

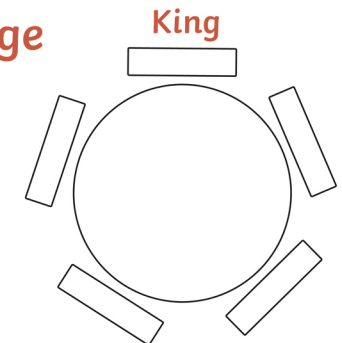
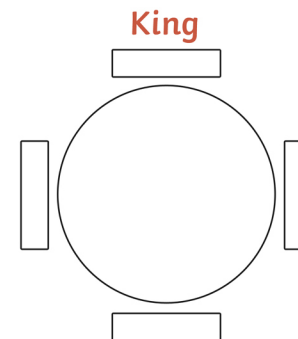


Sophie went on making 4 fewer castles each day.  
How many castles did she make altogether?



## Seating Knights Challenge

The King sits at a Round Table.  
There are 3 empty seats.  
In how many different ways can 3 knights sit in them?



What if there are 4 empty seats?  
In how many different ways can 4 knights sit in them?

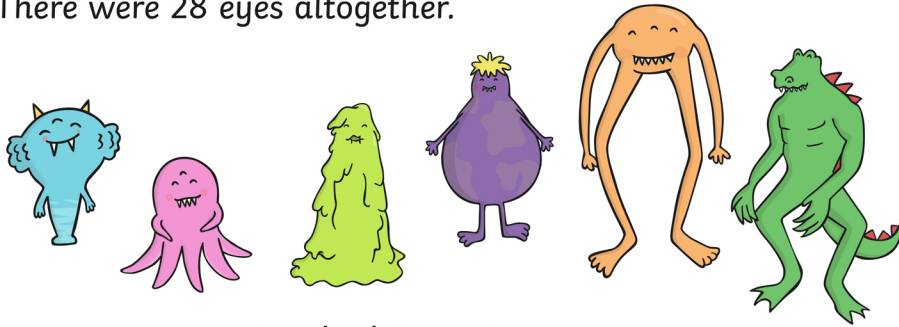


## Space Monster Challenge

Space monsters have landed on our planet!



Some of the monsters have 2 eyes and some have 3 eyes.  
There were 28 eyes altogether.



How many monsters had 3 eyes?  
How many monsters had 2 eyes?

## Stamp Challenge

This parcel cost 55p to post.



10p



5p

If it had eight stamps on it each of which is either 10p or 5p, how many of each stamp is on the parcel?

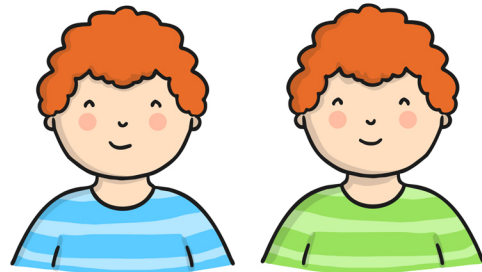
## Stamp Collection Challenge

Edward and Eric collected some stamps.

They each had the same total number.  
Edward had 3 full sheets and 4 loose stamps.  
Eric had 2 full sheets and 12 loose stamps.

Every full sheet has the same number of stamps.

How many stickers are there in a full sheet?



## Stamp Price Challenge

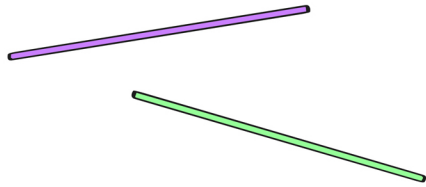
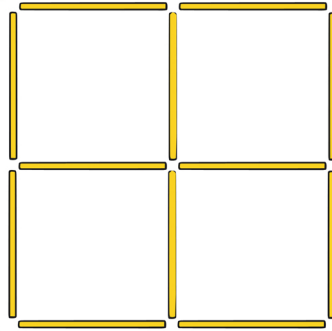
Rachel spent 2 pounds on stamps that cost 10p and 20p.



She bought three times as many 10p stamps as 20p stamps.  
How many of each stamp did she buy?

## Straw Square Challenge

There are 12 straws in this pattern of 5 squares.



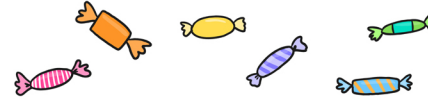
Take 20 straws of the same length. Arrange them to make as many squares as you can. Don't bend or break the straws!



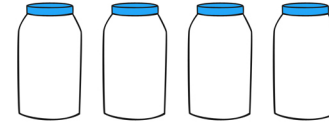
How many squares did you make?

## Sweet Sorting Challenge

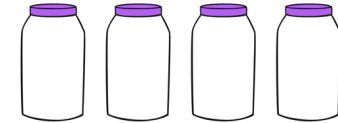
Use 14 sweets every time.



1. Make each jar hold two sweets or five sweets.



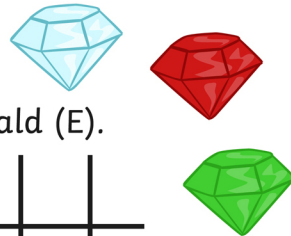
2. Make each jar hold twice as many sweets as the one before.



3. Make each jar hold one less sweet than the one before.

## Treasure Challenge

Jane and Simon have three jewels: a diamond (D), a ruby (R) and an emerald (E).



Jane	D	E							
Simon	R								

Complete the table.

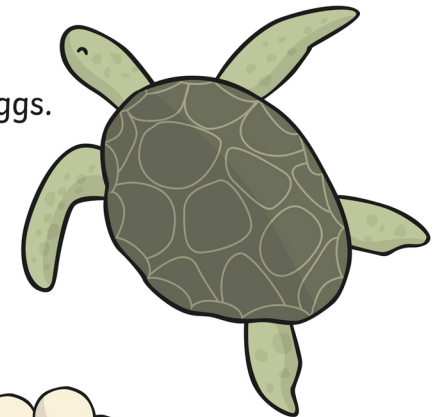
Show what jewels each pirate could have.



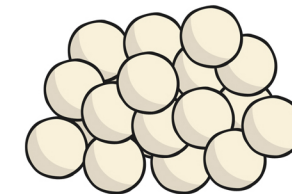
## Turtle Egg Challenge

This turtle has laid up to 20 eggs. She counted her eggs in fives. She had 4 left over.

She counted them in fours. She had 3 left over.



How many eggs has the turtle got?



# Answers

## Baking Challenge

Bag one has 5kg, bag two has 2kg and bag three has 6kg.

## Card Challenge

$$2 + 8 + 6 + 4$$

$$7 + 2 + 6 + 5$$

$$3 + 7 + 6 + 4$$

$$5 + 6 + 8 + 1$$

$$4 + 7 + 8 + 1$$

$$8 + 2 + 6 + 4$$

$$6 + 3 + 7 + 4$$

## Coin Challenge

### Part One

Presented as coins

5p 2p 20p 1p 10p

### Part Two

Presented as coins

2p 5p 1p 2p 1p 5p or

5p 1p 2p 1p 5p 2p

## Counting Beads Challenge

Abbie has 46 beads.

## Detective Dog Challenge

Detective Dog found the number 63.

## Dice Challenge

### Part One

The total number of dots on a dice is

$$1 + 2 + 3 + 4 + 5 + 6 = 21.$$

$$2 + 3 + 4 + 5 + 6 = 21.$$

$$21 - 17 = 4 \text{ so } 4 \text{ is face down.}$$

### Part Two

The total number of points on two dice can be calculated using  $21 \times 2 = 42$ .

$42 - 30 = 12$ , which means that 6 is face down on both dice.

## Gold Coin Challenge

Show each number below also represented as a pile of gold coins.

The King put his coins in piles like this:

7 3 4 6

## Making Footprints Challenge

30 is the first multiple of 2, 3 and 5.

'Large' will have taken 6 steps, 'Medium' will have taken 10 steps and 'Small' will have taken 15 steps.

## Nick Name Challenge

Jack - Ducky

Billie - Cheeky

Francis - Giggles

Abbie - Bambi

## Number Neighbour Challenge Purple Card

7	4			
1	9	2		
3	5	8		
	6	0		

9	1			
5	7	4		
3	0	2		
	6	8		

8	4			
6	0	2		
3	9	5		
	7	1		

## Number Neighbour Challenge Blue Card

	1			
5		3		
2		6		
	4			

	5			
1		3		
4		6		
	2			

## Odd and Even Challenge Grid

●		●		●
		●		
●	●	●	●	●
		●		
●		●		●

			●	●
		●		●
●		●		
	●		●	
●	●			

## Odd Nut Challenge

11, 9 and 5      13, 7 and 5

15, 7 and 3      17, 5 and 3

19, 5 and 1

## Pirate Island Challenge

This problem requires the women to make multiple trips to the island, for example:

Women A and Woman B sail to the island.  
Woman B stays there.

Woman A sails back.

Man A sails to the island and stays there.

Woman B sails back.

Woman A and Woman B sail to the island.

Woman B stays there.

Woman A sails back.

Man A sails to the island.

Woman B sails back.

Woman A and Woman B both sail to the island.

# Answers

Woman B sails back.

Woman A and Woman B both sail to the island.

## Sandcastle Challenge

Part One

Sophie made this many sandcastles each day:

Day One - 24

Day Two - 20

Day Three - 16

Day Four - 12

Day Five - 8

Part Two

Sophie would make 84 sandcastles over 6 days, because she would make an additional 4 sandcastles on Day 6.

## Seating Knights Challenge

Part One

Three knights can sit with the king in 6 different ways.

Part Two

Four knights can sit with the king in 24 different ways.

## Space Monster Challenge

Four possibilities:

3 eyes      4 eyes

8            2

6            5

4            8

2            11

## Stamp Challenge

3 x 10p stamps

5 x 25p stamps

## Stamp Collection Challenge

8 stamps per sheet

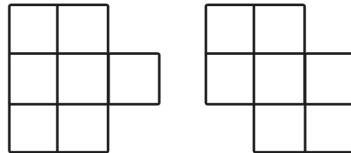
## Stamp Price Challenge

4 x 20p stamps

12 x 10p stamps

## Straw Square Challenge

You can make a maximum of 9 squares:



## Sweet Sorting Challenge

1. Here are the possibilities:

5 5 2 2

2 2 5 5

5 2 2 5

2 5 5 2

5 2 5 2

2 5 2 5

2. 2 4 8

3. 5 4 3 2

## Treasure Challenge

Jane	DE	D	R	RE	RD	E	DER	
Simon	R	RE	ED	D	E	DR		DER

## Turtle Egg Challenge

The turtle has got 19 eggs.