



1

How long have you lived?

- How many years?
- How many weeks?
- How many days?
- How many hours?
- How many seconds?

How accurate can you be?

understanding the relationship
between numbers

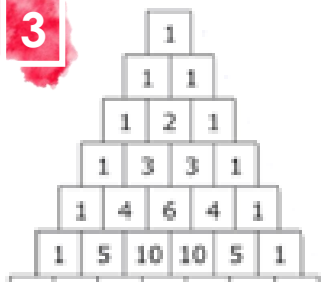
2

You can make a £1 out of 100 pennies and also a £1 coin.

But can you make it using 99 coins? Or 98, 97, 96 3, 2, 1 coin/s?

reasoning about number

3



Blaise Pascal was a mathematician born in 1623. He is famous for this triangle, known as Pascal's triangle. Each number is the sum of the two numbers above.

Construct your own Pascal's triangle with as many rows as you can.

- Shade in the multiples of 2. Is there a pattern?
- Shade in the multiples of 3 in a different way. What do you notice? What do you wonder?



Find the total for each row. What do you notice? Can you predict the next total? And the next?

looking for patterns and making predictions.

4

Draw a 3 x 3 grid.

Use the digits 1-9.

Write a different digit in each space on the grid.

Now calculate the totals for every row, column and diagonal.

Can you re-arrange the digits so all the totals are the same?

What if you use the numbers 11-19 instead? Or 2, 4, 6, 8, 10, 12, 14, 16, 18? Or any numbers?

solving problems and looking for
pattern

5



You need a calculator (did you know all phones have a calculator?).

Write these 6 sets of key presses down so you and a partner can see.

$\div 2 =$
 $\div 5 =$
 $\div 10 =$
 $\times 2 =$
 $\times 5 =$
 $\times 10 =$

Take turns to:

- Put a number into the calculator and tell your partner which number it is.
- Secretly choose one of the sets of keys, and tell your partner the answer.
- Can your partner guess which set of keys you used?
- What helps work it out?

Can you play again with different rules?

estimating and predicting

Did you know ... ?

- The word "hundred" is derived from the Old Norse word "hundrath," which actually means 120, not 100?
- Zero cannot be represented with roman numerals?
- There is only one number spelled with the same number of letters as itself, which is it?
- The number system we use today with 10 symbols (0-9)—is based on a Hindu-Arabic number system. This was developed more 1,000 years ago, but it was only used in Europe from the fifteenth century?



Collect cardboard tubes or some tins. Make some stacks.

This stack has 3 layers and uses 6 tins. A stack with 5 layers uses 15 tins or tubes

Can you predict how many tubes or tins you would need for a stack with 10 layers?

- Or 50?
- Or 100?
- Or 1000?

There is a way to work it out. Can you find it?



sequences and patterns



Go outside and choose a tree with leaves on it somewhere nearby.

- How many leaves do you think there are on the tree?

Will you try to count them all? Or will you estimate? How will you make a good estimate?

- I wonder how far those leaves would reach if you placed them end to end!
- I wonder how many bags they would fill if you collected them up in the autumn!
- I wonder how many insects live in that tree!

estimating large numbers



Draw a picture of what you can see out of your window.

- Is there anything you can see about 10 of?.. Lampposts? Doors? trees?
- Is there anything you can see about 100 of? People? Cars? Flowers?
- Is there anything you can see about 1000 of? Paving stones? Windows? Stones?
- Is there anything you can see about 1000000 of? Blades of grass? Leaves on a tree?

Use arrows to mark them on your picture.

estimating large numbers



Find the film with the title 'Number puzzle' here:

<https://www.atm.org.uk/Maths-Teaching-Resources/Maths-Snacks-Videos>



Can you predict to final number in each puzzle you invent?

solving problems and looking for pattern



Click on this link to find an interactive task from NRICH called Exploring Number Patterns you Make <https://nrich.maths.org/8387>

Can you predict the answer? Every time?

making predictions

You have been...



Solving problems looking for patterns



Estimating large numbers



Making predictions



Exploring the properties of number

