Mathematics Mastery

Exploring number

1

Find, borrow or draw some 1p coins and some 10p coins.
If you have one 1p coin and one 10p coin, and you don't *have* to use both of them, you could make 3 different amounts: 1p, 10p and 11p.

- What if you have two of each coin (and you can use none, one, or two of each to make an amount)? How many different amounts can you make now? What are they?
- What if you have 3 of each? 4? or more?
- Can you predict how many different amounts you can make?

looking for patterns

2

Ask an adult to help you look in a newspaper, or at an online news website.

- Make a note of at least 10 different numbers in the news.
- Decide if they are exact numbers or estimates.
- What could the actual number be if this is the estimate?
- How do you decide?

reasoning about estimates

3

How many suitcases do you think you would need to hold £1 000 000 in £1 coins?
Start by thinking how many would fit inside a jar or a used yogurt pot, then think about how much money that would be.

- What if you had the money in £2 coins?
- … or 50p coins?
- …. or pennies!!!!

comparing large numbers

4

Look at this inequality: ☐ > ☐
You have the numbers 1, 2 and 3. Write one of these three numbers in each box to make the inequality true.

Pick one of these three numbers - 1, 2 or 3 - to write in each box to make the expression true. How many different ways are possible?

What if you can also use 4, how many ways are possible now? And also 5…
Is it possible to predict the number of ways you can make the sentence true?

- What if you use -2, -1, 0, 1 and 2?
- Are the patterns the same?

looking for patterns when comparing numbers

5

Mark out a hopscotch game on the ground, with sticks, tape, string or chalk
Write a different multiple of 5 in each of the ten spaces - you can choose which one goes where.
Take turns to hop on the single squares and jump with one foot on each of the double squares. As you go, and before you move on to the next row, calculate the total of the numbers you have jumped on so far.
Change to numbers from a different times table and play again!

using multiplication facts and mental calculation

Did you know … ?

- A millipede (which means "thousand-footed") may have as few as eight legs or as many as several hundred but not a thousand?
- There are more than 12,000 species of ants in the world?
- There are 200 million insects for each person on earth?

Mathematics Mastery

For example
531-
135
396 +
693
1089

6

1089 is magic!

- Write any 3 digit number
- Reverse the digits to make another 3 digit number
- Subtract the smaller number from the larger number.
- Reverse the digits again, and add the new number.
- Make a note of the answer and try again and again.

puzzling with numbers

7

Look outside. Is there anything you can see one of? An aeroplane, a tree, a dog or a cat?

10 of? Maybe birds? Cars? Bicycles?

About a hundred of? Flowers? Windows? Wheels?

About a thousand of? Roof tiles? Plants?

About ten thousand of? Bricks?

comparing and estimating large numbers

8

Fibonacci is a famous Italian mathematician born in 1170. He is most well known for identifying this sequence of numbers.

1 1 2 3 5 8 13 21 34 55…

- Can you see how it grows?
- Can you write more numbers for the sequence?

You will need a large piece of paper, a ruler, and something to help you measure a right angle, like a book, or a piece of paper.

Draw a tiny line that is 1mm long, then draw another line that is 1mm long, at right angles to it, then another one that is 2mm long at right angles to that, and so on, using the numbers generated in the Fibonacci sequence. Turn clockwise every time. What pattern do you get?

Ask an adult to help you find some pictures which show this.

understanding patterns and sequences

9

Cindy Neuschwander has written several books about a knight called Sir Cumference and his adventures.

Ask an adult to help you find '**Sir Cumference And All The King's Tens**' being read out loud (unless you have the book.. in which case you can read it yourself!).

What is the biggest event you have been to? How many people were there? How would you count them?

understanding large numbers

10

Look at this website (https://www.atm.org.uk/Maths-Teaching-Resources/Maths-Snacks-Videos) and choose the task 'Arranging Eggs'.

Maybe a nearby shop can let you have an empty egg tray to use, otherwise you could sketch a grid to use instead. You could use pebbles instead of eggs, just to be safe!

reasoning about numbers

You have been…

- ☐ Reasoning about numbers
- ☐ Estimating and comparing numbers
- ☐ Looking for patterns
- ☐ Understanding large numbers