

Maths Investigation Challenge Cards



Maths Investigation

How many shapes can you make with an area and perimeter of 20?

Hint: You can use diagonal lines to help.

Remember that the perimeter is the measurement around the edge of a 2D shape and the area is the measurement of the space taken up by a 2D shape, usually measured in square units, such as cm^2 .

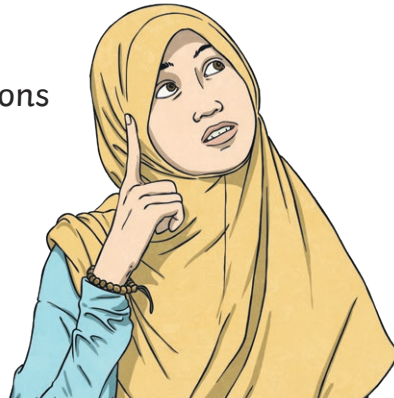


Maths Investigation

If the answer is 256, what could the equation be?

For example: $257-1=256$.

What are the most complicated equations you can come up with?

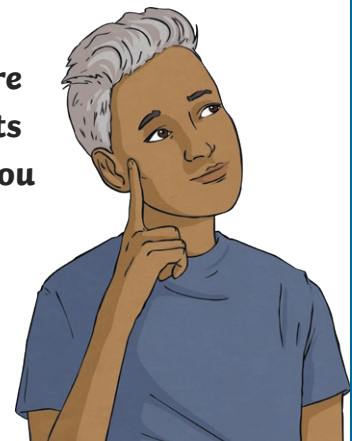


Maths Investigation

How many school hats do you think are lost at your school every year?

Estimate and explain your thinking.

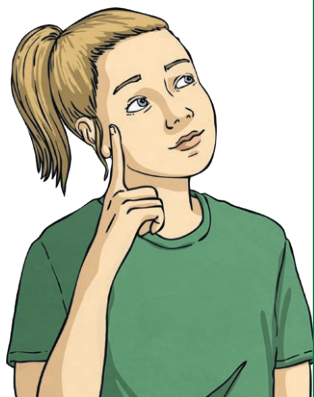
Hint: Think about how many weeks there are in a school year, how many students there are at your school and how often you have lost your hat.



Maths Investigation

How many counters do you think would fit on a page of your maths book?

Explain your guess and then try it out.



Maths Investigation

How many cups of coffee do you think your teachers drink at school every week?

Think about how many teachers there are at your school, how many recess and lunch breaks they have and how often teachers might have yard duty.



Maths Investigation

How many pens or pencils are there in your classroom? Don't forget inside cupboards and your teacher's desk (ask permission first). How many could be in the whole school? Explain your guess.



Maths Investigation

Make your own net that folds into a 3D shape, such as a cube, pyramid, cone or perhaps something more complicated.

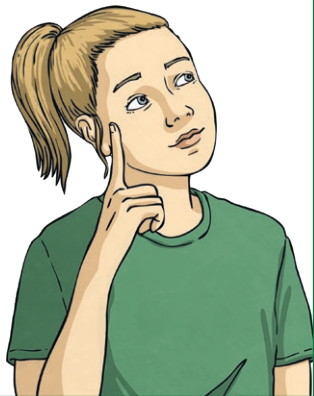
Hint: Have a look at some 3D shapes in your classroom for inspiration, including boxes and packaging.



Maths Investigation

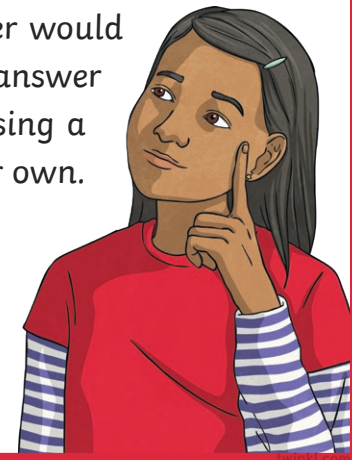
Design a new layout for your classroom and share it with your teacher.

The more accurate your measurements of furniture, the better your chance of your teacher adopting your design.



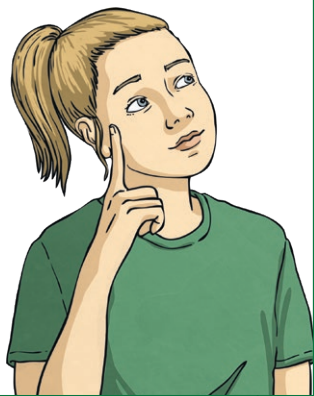
Maths Investigation

If you roll a dice 100 times, which number would you roll the most? Give a reason for your answer and then try it out. Record your results using a tally and then graph using a choice of your own.



Maths Investigation

Create a timetable of your week. You could include the different lessons you have at school as well as scheduled time for homework, sleeping, eating and your favourite activities.



Maths Investigation

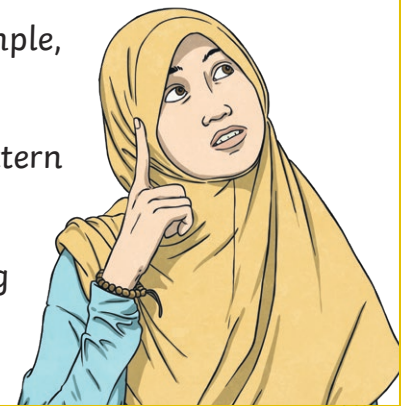
Choose a number from below:

2 3 4 5 6 7 8 9

Multiply it by itself 10 times. For example, $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$ or 2^{10} .

Record each multiplication and the pattern you see.

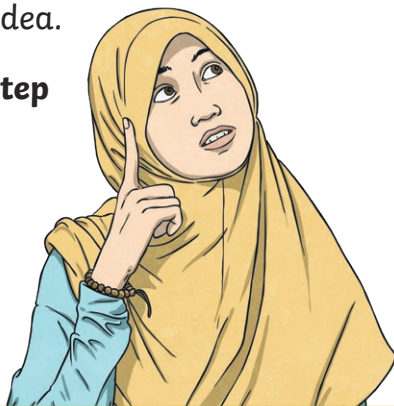
If you have time, you could keep going with another number.



Maths Investigation

Design a maths poster that will help your classmates understand a tricky maths idea.

Hint: Include pictures and a step-by-step example that explains your strategy.



Maths Investigation

Budget a trip for your family to a place of your choice. Think about how much fuel or plane tickets would cost, how much accommodation and food would cost for everyone as well as tickets to any attractions your family would enjoy in that area.



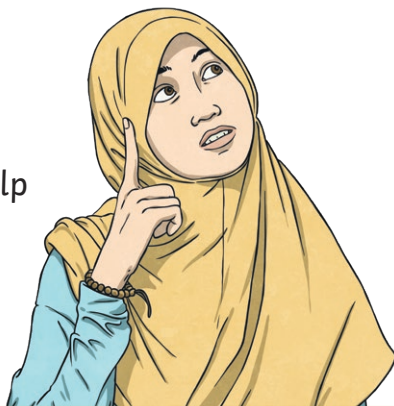
Maths Investigation

The 4 fours problem. Can you complete these equations?

$$\begin{array}{rclcl} 4 & 4 & 4 & 4 & = & 0 \\ 4 & 4 & 4 & 4 & = & 1 \\ 4 & 4 & 4 & 4 & = & 2 \\ 4 & 4 & 4 & 4 & = & 3 \\ 4 & 4 & 4 & 4 & = & 4 \\ 4 & 4 & 4 & 4 & = & 5 \end{array}$$

Hint use BODMAS and $+$ $-$ \times \div $()$ to help you

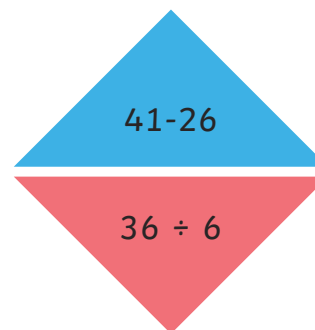
Can you keep going or make your own?



Maths Investigation

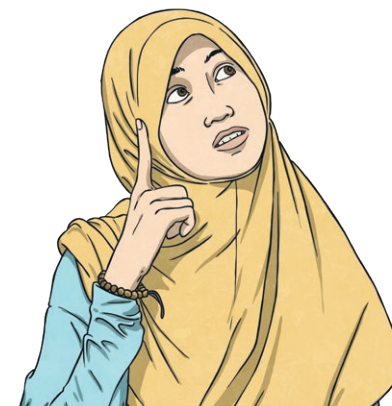
Create a colour by equation picture for your teacher to copy for your class.

For example,



15 = Blue

6 = Red



Maths Investigation

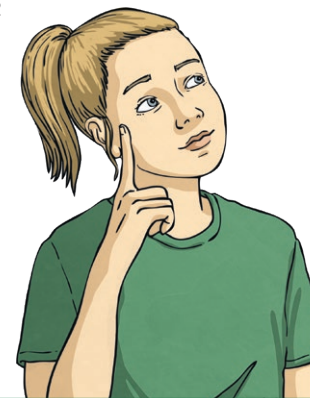
How could you raise \$100 or \$1000 from something you made?

Think about how much it would cost to buy all the materials, how much you could sell it for and how many you would need to make.



Maths Investigation

Using only scissors and a scrap sheet of A4 paper, what is the longest piece of paper you can make? Make an estimate and test out different ways you can cut the paper to make it longer.



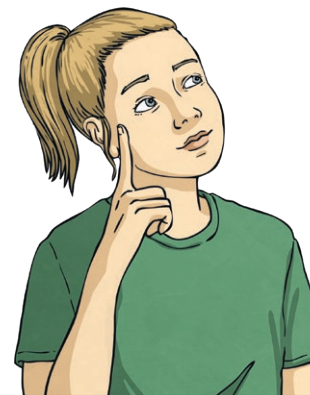
Maths Investigation

Create a sculpture using coloured blocks and draw it from all sides, including a bird's-eye view. What do you notice?



Maths Investigation

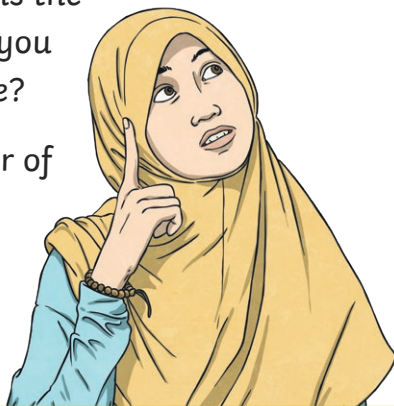
How long have you been at school? Answer as accurately as you can. Try to use the exact number of days, hours, minutes or even seconds?



Maths Investigation

Place 20 counters on your table and imagine that you are about to play a game with a partner. Each player can take 1, 2 or 3 counters at a time and the winner is the person who takes the last counter. Can you devise a winning strategy for this game?

What happens if you change the number of counters you start with?



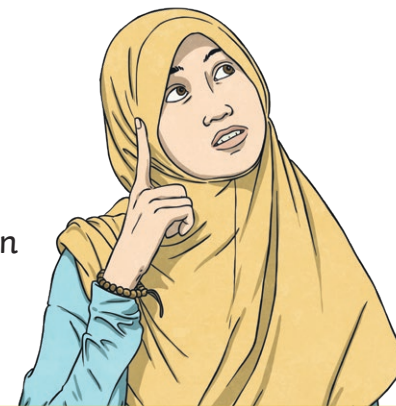
Maths Investigation

What is the largest number you can make from the numbers below?

9	6	3	2
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For example, $632 + 9 = 641$ or $63 \times 29 = 1829$.

What is the smallest number you can make?

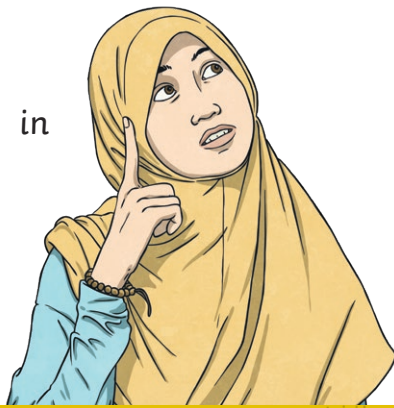


Maths Investigation

Using the numbers 1, 2, 3, 4, and the operations +, -, \times , \div make an equation equaling 0-30.

For example $1 + 2 + 3 + 4 = 10$

You must use all four numbers once in each equation.

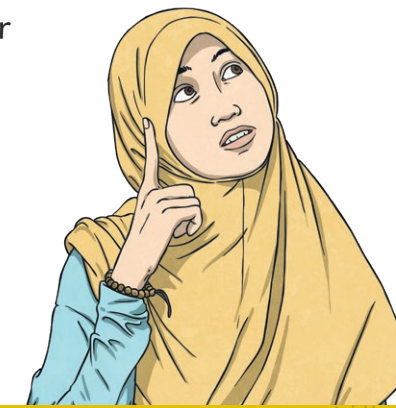


Maths Investigation

Can you place numbers into a grid so that every row, column and diagonal combination equals the same number?

Each box must have a different number in it.

Hint: think about the relationships between the numbers you choose



Maths Investigation

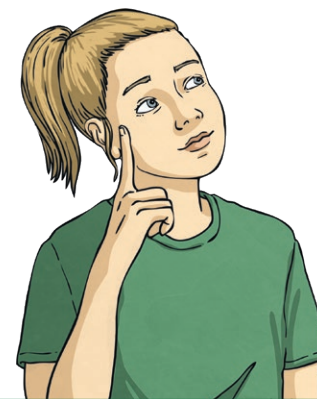
If A = \$0.01c (1 cent), B = \$0.02c (2 cents), C = \$0.03c (3 cents) and so on, how much is your name worth?

Can you find a word that equals exactly \$1.00?



Maths Investigation

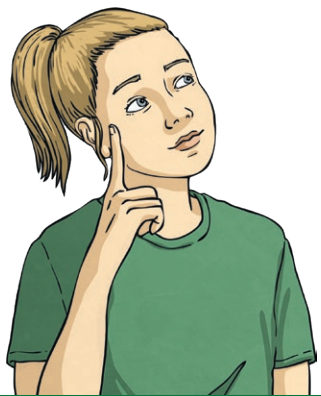
Create a maze complete with traps, dead ends and only one way to the finish line. Write some instructions to help your classmates escape in case they get stuck.



Maths Investigation

Write your name or a word of your choice in block letters on grid paper. Calculate the perimeter and area of your word.

Remember that the perimeter is the measurement around the edge of a 2D shape and the area is the measurement of the space taken up by a 2D shape, usually measured in square units, such as cm^2 .



Maths Investigation

How many different ways can you cut this shape into 4 equal groups or quarters?

