Monday 28th February 2022

Which One Doesn't Belong?

The aim of the *Which One Doesn't Belong?* challenges is to promote children's interest and enthusiasm for English. Focusing on these tasks should allow children to develop their ability to articulate and justify answers, arguments and opinions.

Using language to speculate has also been shown to broaden children's logical thinking and reasoning skills. Allowing them to make connections and comparisons to their own experiences, their understanding of texts, as well as drawing on their knowledge of the wider world, will undoubtedly support the development of comprehension and their engagement with English.

Cambridgeshire
County Council

Cambs
English
Team

Monday - Which One Doesn't Belong?

Which One Doesn't Belong?

This week's WODB challenge contains representations of objects that are nearly symmetrical. Is there anything else they have in common? Which one is the most different or doesn't belong in this group?

Tuesday 1st March 2022

Maths Eyes

Tuesday - Maths Eyes

Maths Eyes

Cambs Maths Team

- Maths Eyes activities are designed to help make connections and 'see' where maths is in the world around us.

- Images and real-life experiences seen through 'Maths Eyes' promote engagement, enthusiasm and creativity, as well as building confidence, in maths.

- Using mathematical language to describe what can be seen, and speculate about what cannot, broadens reasoning skills and logical thinking.

- Cross curricular links can be made and progression in learning can be evident by comparing the responses of learners at different ages and stages.
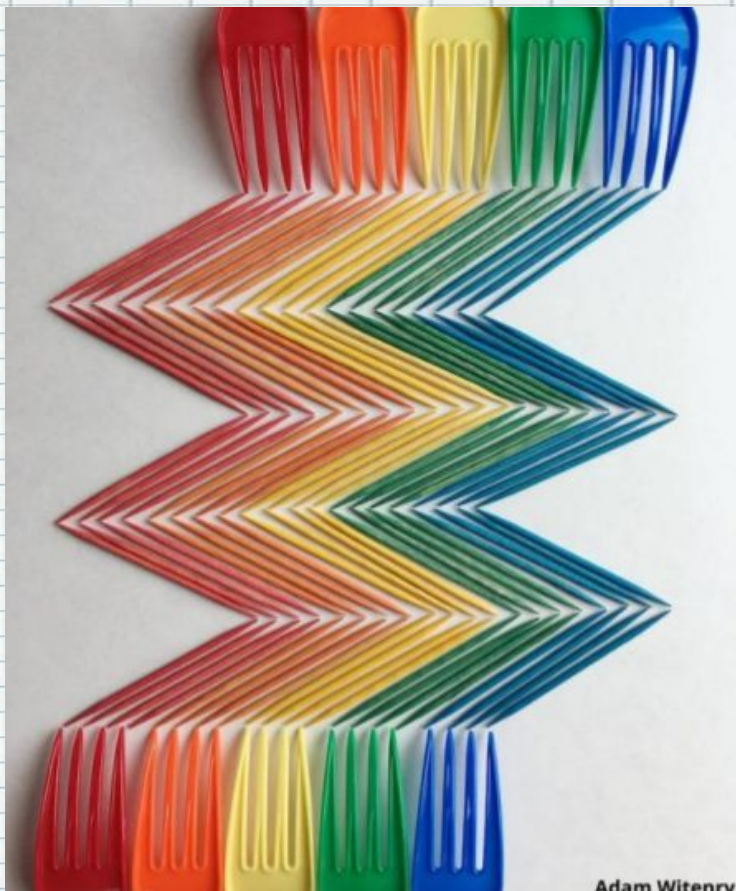
- Prompts and suggestions can be provided or adapted, if required, depending on the intended topic focus or experience that the learner has.

- Sharing ideas and collaborative discussions can generate an even greater range of responses after individual reflections.

Cambridgeshire County Council

Tuesday -   Maths Eyes

Maths Eyes

Cambs Maths Team

How many forks are there altogether? How many blue prongs are there in total? Which row has the most cocktail sticks in it and how do you know?

What fraction of cocktail sticks are red or orange? What percentage of the whole object collection is not green? Are any parts of the image symmetrical?

How would you describe the angle made by any two cocktail sticks meeting tip to tip? If you were to continue this pattern, what would you add and where would you place these items?

What else do your Maths Eyes see? What else do you wonder?

Adam Witenry

Cambridgeshire County Council

Wednesday 2nd March 2022

Maths Challenge!
(pick your level)
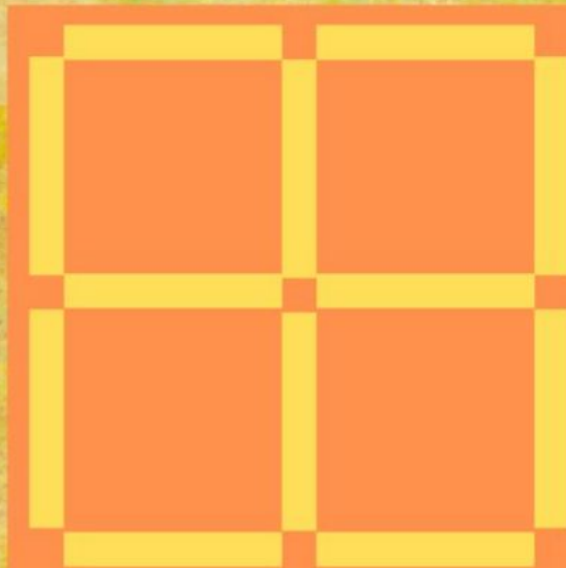
Pick Up Sticks

Pick Up Sticks

This design has been made using 12 yellow sticks. The sticks are all the same length as each other.

How many squares can you see?

Take 2 sticks away so that there are only 2 squares left.

CLUE: The squares do not have to be the same size as each other.

Challenge Prompts

Every stick is the same length, which means it is possible to make regular shapes, such as a square. When introducing the problem, you could first show the children how a large square can be made using 8 sticks, with two on each side. Then you can add the four internal sticks to make the smaller squares inside.

- How could you make this pattern? Which objects will you use?
- How many squares can you see?
- What happens if we remove two of the sticks on the outside?
- What happens if we remove two of the inside sticks?

As an extension, children could be challenged to see what other shapes they can make.

- Is it possible to make a large triangle with smaller triangles inside?

Solution Prompts

On the left you can see that there is one large square (shown by the black outline), one small red square (created by the space between the inside sticks) and four medium-sized squares (shown in blue). Which means there's 6 squares in total. On the right you can see that it's possible to remove two of the inside sticks so that we are left with just two squares: a large square (shown in black) and a medium-sized square (shown in blue).

Possible prompts for discussion:

- What happened when you removed two of the outside sticks? How was that different to picking up two inside sticks?
- Do you think it would be possible to pick up two sticks so that there are three squares left over? How many sticks would you need to pick up to have just one square left?
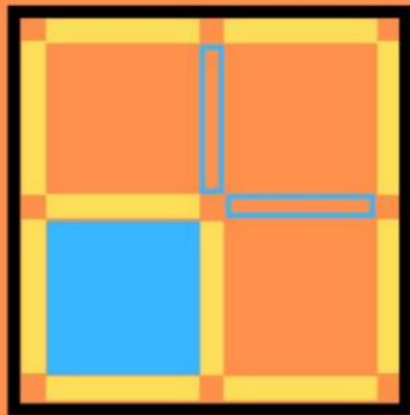- Did you try moving the sticks around to create a pattern with triangles?

Solution

Weekly Maths Challenge
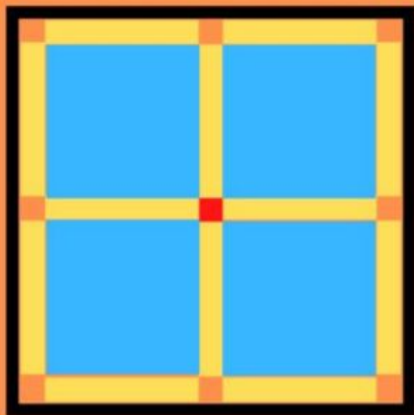
There is **one big square**, **4 medium-sized squares** and **one small square**.

Take away two of the sticks from the inside to make 2 squares.

YEAR OF PROBLEM SOLVING

Cambs Maths Team

Cambridgeshire County Council

Weekly Maths Challenges
Years 3 & 4

Weekly Maths Challenge

Dominoes are rectangular in shape and divided into two squares. Each square may contain a number of spots, from zero to six.

If every combination is unique (i.e. rotated pieces are not allowed), how many dominoes would be in a full set?

How would you record all of these different dominoes so that you know none have been missed or duplicated?

Challenge Prompts

The challenge for this week starts off with investigating the different combinations of spots on a standard set of dominoes.

The set up to 0-0 contains 1 domino (0-0).

The set up to 1-1 contains 3 dominoes (0-0, 0-1 and 1-1).

- What do you notice about this information and the number of dominoes in the sets up to 2-2, 3-3, 4-4, 5-5 and 6-6?

Sets of dominoes are commercially available for 9-9, 12-12, 15-15 and 18-18.

- How many dominoes would make up these sets? How do you know?

Solution Prompts

Here is one way of recording the different combinations of spots on the dominoes in a standard set.

- How else did children record their ideas?

Pattern spotting is a really important skill in mathematics.

- How else did children describe what they could see?
- Were they able to extend the pattern further, without listing all of the dominoes?

Weekly Maths Challenge

There are 28 dominoes in a standard set:

0-0, 0-1, 1-1, 0-2, 1-2, 2-2, 0-3, 1-3, 2-3, 3-3, 0-4, 1-4, 2-4, 3-4,
4-4, 0-5, 1-5, 2-5, 3-5, 4-5, 5-5, 0-6, 1-6, 2-6, 3-6, 4-6, 5-6, 6-6.

Type of Set	Number of Dominoes	
0-0	1	
1-1	3	(2 more)
2-2	6	(3 more)
3-3	10	(4 more)
4-4	15	(5 more)
5-5	21	(6 more)
6-6	28	(7 more)
9-9	55	
12-12	91	
15-15	136	
18-18	190	

The total number of dominoes increases by 1 more than it did in the previous set.

YEAR OF PROBLEM SOLVING

Cambs Maths Team

Cambridgeshire County Council

Weekly Maths Challenges
Years 5 & 6

How Common?

Weekly Maths Challenge

Which letters of the alphabet occur the most often in written English?

How could you investigate this?
What do you predict?
How will you record your findings?
How will you present your data?

What could you investigate next?

Prompts

Challenge Prompts

Pupils could use their current reading book to investigate letter frequency. It may be helpful to consider how they will use their data when they are planning their investigation. They could use a sample page or a certain number of letters. Multiples of 100 letters would make percentage comparisons easier. Discussions about predictions could be very interesting. What are their reasons for predicting certain letters will be more or less common? You may also like to discuss the best way to record results, and when they have collected their results, how do they compare to other people's?

If any children have books written in other languages, it would be fascinating to compare them to their English books. What other ideas for related investigations do they have?

Solution Prompts

I have included my findings.

- Do they match your results? Which letters of the alphabet were the most and least common in your investigation?
- Were your predictions correct? Why do you think the most common letters were the most common?
- If you were inventing a new Scrabble-like game, what scores would you give each letter and why?
- How did you carry out your survey? Would you use the same method in the future?
- How did you present your results? Which of my ways of presenting data do you think are the clearest and why?
- How could I check that my results are reliable? Finally, did you think of any similar investigations to try?

Solution

Results:

I looked at random pages from two books: 'Harry Potter and the Philosopher's Stone' by J.K Rowling and 'Charlie and the Chocolate Factory' by Roald Dahl. I took 300 letters from each page and recorded how many of each letter occurred, using a tally chart.
I've presented my data in tables and a bar chart - see below:

Table showing the frequency of each letter of the alphabet (as a percentage):

Letter	Frequency (%)	Letter	Frequency (%)
A	7	N	4.8
B	1.5	O	8.8
C	3.2	P	1.2
D	3.5	Q	0.2
E	12.3	R	6.8
F	1.8	S	6
G	2	T	10.5
H	5.8	U	3.8
I	5.2	V	0.7
J	0.2	W	2.8
K	2	X	0
L	4.5	Y	3.7
M	1.7	Z	0

Table showing the frequency of each letter of the alphabet (out of 600):

Letter	Frequency	Letter	Frequency
A	42	N	29
B	9	O	53
C	19	P	7
D	21	Q	1
E	74	R	41
F	11	S	36
G	12	T	63
H	35	U	23
I	31	V	4
J	1	W	17
K	12	X	0
L	27	Y	22
M	10	Z	0

Bar chart showing the frequency of each letter of the alphabet (out of 600):

Thursday 3rd March 2022

Estimation and Benchmarking

Thursday - Estimation and benchmarking

Estimation and Benchmarking

Cambs Maths Team

- Estimating is roughly calculating or judging a value or number – it doesn't need to be exact, but it should be reasonable or 'sensible' in the real world.

- A benchmark is a known standard or reference point against which something else can be measured or compared. We can use a benchmark that we do know to estimate a measurement or quantity that we don't.

- Using mathematical language to describe the benchmark in relation to the estimate broadens reasoning skills and logical thinking.

- Cross curricular links can be made and progression in learning can be evident by comparing the responses of learners at different ages and stages.

- Prompts and suggestions can be provided or adapted, if required, depending on the intended topic focus or experience that the learner has.

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Cambridgeshire County Council

Thursday - reasoning prompts

Encouraging mathematical thinking and reasoning:

Describing
What do you notice?
How many can you see?
How do these pine cones compare with yesterday's beads?

Reasoning
How many do you think there are? Why do you think that?
Will it be more or less than 20? A lot more/less? Or a little more/less?
Will it be between 15 and 20? A little or a lot more than this? Or less than this?
How many can you see? How many do you think are hidden?
Was your guess more or less than the actual count?
Was your guess very close/way out? Why do you think that was?
Can you put the estimates in order on the board/washing line?
Were most people close or far out?

Thursday - Estimation and benchmarking
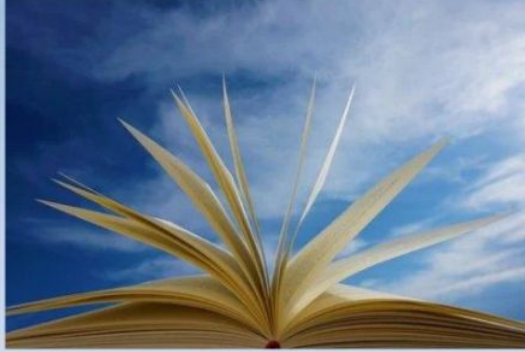
ESTIMATION & BENCHMARKING

It's World Book Day today, so have a look at a book! Estimate how many letters, words, paragraphs or chapters there are on a page or in the whole book. Using a small sample as a benchmark might help you to make estimations, e.g. finding how many words on one page to estimate how many in the whole book. Estimate what fraction of the way through the book you are. Are you more or less than half way? Estimate how long it will take you to finish reading the book or how many pages you will read in 15 minutes. Estimate how heavy your book is, weigh it to check how close you were, then use this as a benchmark to estimate how heavy other books are. Estimate the dimensions of your book - what would be an appropriate unit of measurement? If you wanted to recover your book, estimate the area of paper required - don't forget the spine!) How many books do you think you would need to stack up in a pile to reach the same height as you are? What other estimations could you make about books?

Friday 4th March 2022

Times Tables focus

- Which times tables award are you working towards?

Practise your skills on TTRockstars:

https://ttrockstars.com/

Some more games here:
http://www.maths-games.org/times-tables-games.html

Times table support here:
https://home.oxfordowl.co.uk/maths/primary-multiplication-division/help-with-times-tables/

Sutton School's Gem Certificates of Times Table Excellence

1		Sky Blue Topaz	doubling with equipment
2		Swiss Blue Topaz	doubling and halving with equipment
3		Pink Imperial Topaz	doubling without equipment
4		Reddish-pink Imperial Topaz	halving and 10 x
5		Mystic Topaz	doubling, halving and 10 x
6		Azotic Topaz	divide by 10
7		Onyx	2 x, 5 x, 10 x multiplication facts
8		Black Opal	2 x, 5 x, 10 x multiplication and division facts
9		Garnet	2 x, 3 x, 4 x, 5 x, 10 x multiplication
10		Emerald	2 x, 3 x, 4 x, 5 x, 10 x multiplication and division facts
11		Tanzanite	2 x, 5 x, 10 x, 3 x, 4 x, 6 x, multiplication and division facts.
12		Ruby	2 x, 5 x, 10 x, 3 x, 4 x, 6 x, 7 x, 8 x 9x multiplication and division facts.
13		Sapphire	all multiplication and division facts to 12 x 12
14		Diamond	1. all multiplication and division facts to 12 x 12 and complete the grid in under five minutes (100 questions) 2. all multiplication and division facts to 12 x 12 and complete the grid in under five minutes (144 questions) 3. Ultimate Times Tables Missing Numbers Challenge
15		Blue Diamond	elite level in all areas of multiplication and division Levels 1, 2 and 3 available

S T R I V E