Summer 2 Year 6

L.E.A.D. Academy Trust
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Links to prior learning/ objectives	**Resources**	**Vocabulary:**
Children have covered the majority of the Y6 curriculum. The following 8 weeks will build on previous learning, consolidating necessary areas, alongside developing resilience when solving open-ended mathematical problems.	nrich problems, shapes, fraction cubes, squares, **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose **New and old documents** • Mastery maths stickers • Nrich (curriculum mapping)	

Objectives and Teaching

Children have covered the majority of the Y6 curriculum.
The following 8 weeks will build on previous learning, consolidating necessary areas, alongside developing resilience when solving open-ended mathematical problems.

Some examples of problems and investigations:

Peaches Today, Peaches Tomorrow...

Age 11 to 14 ★★

This problem is in three parts. If you are feeling confident about working with fractions, you might want to skip straight to part (ii) or part (iii).

(i) A little monkey had 60 peaches.

On the **first** day he decided to keep $\frac{3}{4}$ of his peaches.
He gave the rest away. Then he ate one.

On the **second** day he decided to keep $\frac{7}{11}$ of his peaches.
He gave the rest away. Then he ate one.

On the **third** day he decided to keep $\frac{5}{9}$ of his peaches.
He gave the rest away. Then he ate one.

On the **fourth** day he decided to keep $\frac{2}{7}$ of his peaches.
He gave the rest away. Then he ate one.

On the **fifth** day he decided to keep $\frac{2}{3}$ of his peaches.
He gave the rest away. Then he ate one.

How many did he have left at the end?

(ii) A little monkey had 75 peaches.

Each day, he kept a fraction of his peaches, gave the rest away, and then ate one.
These are the fractions he decided to **keep:**

$$\frac{1}{2} \quad \frac{1}{4} \quad \frac{3}{4} \quad \frac{3}{5} \quad \frac{5}{6} \quad \frac{11}{15}$$

In which order did he use the fractions so that he was left with just one peach at the end?

(iii) Whenever the monkey has some peaches, he always keeps a fraction of them each day, gives the rest away, and then eats one.
I wonder how long he could make his peaches last for...
Here are his rules:

- Each fraction must be in its simplest form and must be less than 1.
- The denominator can never be the same as the number of peaches left.
  For example, if there were 45 peaches left, he could not choose to keep $\frac{44}{45}$ of them.

Can you start with fewer than 100 peaches and choose fractions so that there is at least one peach left after a week?

Starting with fewer than 100, what is the longest you can make the peaches last?

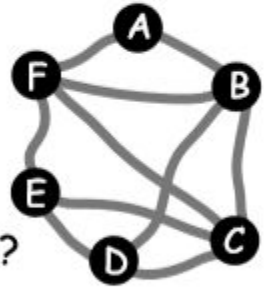
Pet shop

1. Jim bought a cat and dog for £60 each.
   Later he sold them.
   He made a profit of 20% on the dog.
   He made a loss of 20% on the cat.
   How much did he get altogether when he sold the cat and dog?

2. Jim bought another cat and dog.
   He sold them for £60 each.
   He made a profit of 20% on the dog.
   He made a loss of 20% on the cat.
   Did he make a profit or loss on the whole deal?

Bus routes

Six towns are connected by bus routes.
The bus goes from A back to A.
It visits each of the other towns once.
How many different bus routes are there?



This table shows the bus fare for each direct route.
B to A costs the same as A to B, and so on.

A to B	B to C	C to D	D to E	E to F	F to A	B to D	B to F	C to E	C to F
£4	£3	£4	£4	£3	£4	£5	£3	£2	£2

Which round trip from A to A is the cheapest?

All the Digits

Age 7 to 11 ★★

This represents the multiplication of a 4-figure number by 3.

The whole calculation uses each of the digits $0 - 9$ once and once only.

The 4-figure number contains three consecutive numbers, which are not in order. The third digit is the sum of two of the consecutive numbers.

The first, third and fifth figures of the five-digit product are three consecutive numbers, again not in order. The second and fourth digits are also consecutive numbers.

Can you replace the stars in the calculation with figures?

Chocolate

Age 7 to 14 ★★

This challenge is about chocolate. You have to imagine (if necessary!) that everyone involved in this challenge enjoys chocolate and wants to have as much as possible.

There's a room in your school that has three tables in it with plenty of space for chairs to go round. Table 1 has one block of chocolate on it, table 2 has two blocks of chocolate on it and, guess what, table 3 has three blocks of chocolate on it.

Now ... outside the room is a class of children. Thirty of them all lined up ready to go in and eat the chocolate. These children are allowed to come in one at a time and can enter when the person in front of them has sat down. When a child enters the room they ask themself this question:

"If the chocolate on the table I sit at is to be shared out equally when I sit down, which would be the best table to sit at?"

However, the chocolate is not shared out until all the children are in the room so as each one enters they have to ask themselves the same question.

It is fairly easy for the first few children to decide where to sit, but the question gets harder to answer, e.g.

It maybe that when child 9 comes into the room they see:

- 2 people at table 1
- 3 people at table 2
- 3 people at table 3

So, child 9 might think:

"If I go to:

- *table 1 there will be 3 people altogether, so one block of chocolate would be shared among three and I'll get one third.*
- *table 2 there will be 4 people altogether, so two blocks of chocolate would be shared among four and I'll get one half.*
- *table 3, there will be 4 people altogether, so three blocks of chocolate would be shared among four and I'll get three quarters.*

Three quarters is the biggest share, so I'll go to table 3."

Go ahead and find out how much each child receives as they go to the "best table for them". As you write, draw and suggest ideas, try to keep a note of the different ideas, even if you get rid of some along the way.

THEN when a number of you have done this, talk to each other about what you have done, for example:

A. Compare different methods and say which you think was best.

B. Explain why it was the best.

C. If you were to do another similar challenge, how would you go about it?

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