Year 2 Maths Activities - Week Beginning 18.5.20.

Dear Parents and Carers,

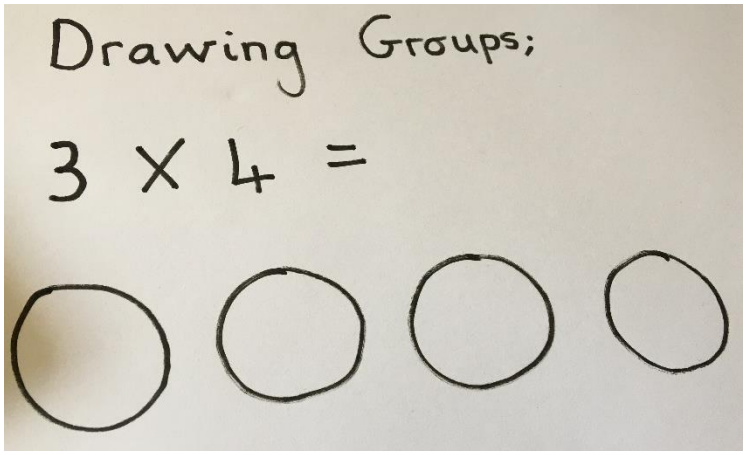
We are going to continue with our revision and this week the activities will be about Multiplication and Division and Fractions, as they were areas that lots of children needed to consolidate.

As with the last two weeks work, the activities have been organised into three levels so that you can choose the most appropriate ones for your child. You do not have to complete all of them, but you may wish to. Even a child who is Working At Greater Depth could use some of the easier activities as a 'brain warm-up' before completing the more challenging tasks.

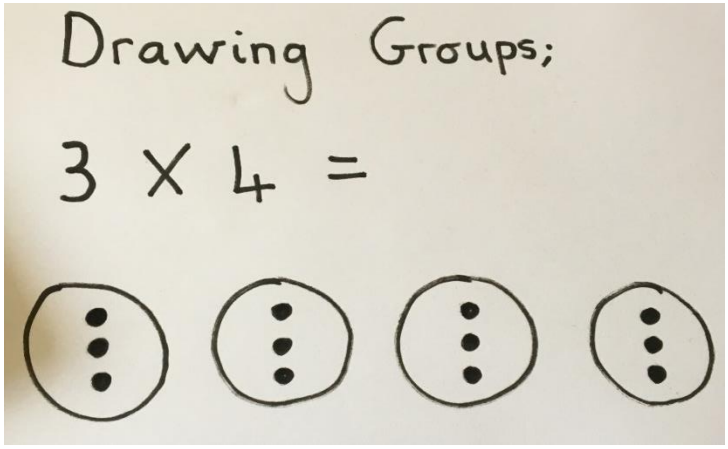
Before we begin, let's take a look at how we teach Multiplication, Division and Fractions in Year 2.

Multiplication

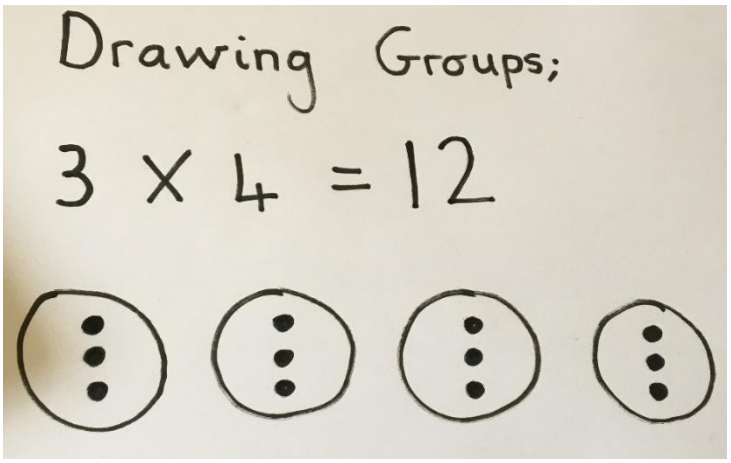
- The first thing that children learn about multiplication, is that it can be done in any order and that it is the same as REPEATED ADDITION. So 3 X 4 is the same as 4 X 3, which is also the same as 3 + 3 + 3 + 3, and this is also the same as 4 + 4 + 4.
- We teach children that if they see a multiplication question that they don't know the answer to, they can either **draw groups**, or they can do **an array**.



Step 1 – Draw your groups. In this example, children could draw 3 groups or 4 groups. Technically, it is 4 because 3 X 4 means 'three, four times', but children also learn that multiplication is commutative (it can be done in any order and you will get the same answer).



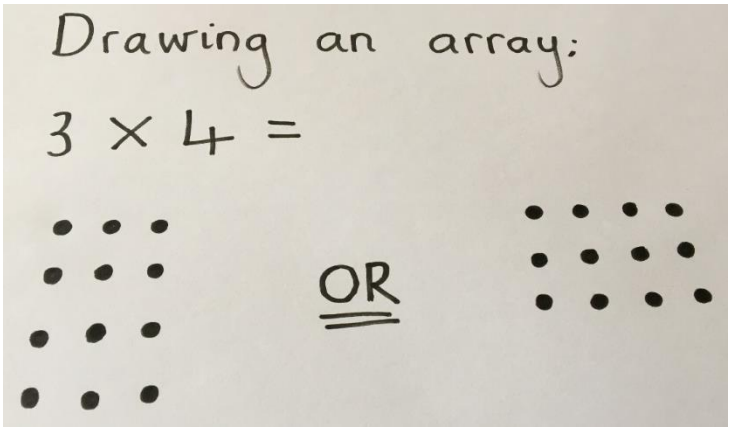
Step 2 – One of the numbers in the number sentence tells us how many groups to draw, the other number tells us how many 'things' to put in each group.



Step 3 – Count how many 'things' you have altogether and write the answer.

The other way to do this is to **draw an array.** The easiest way to think of an array is like an egg box. You might have an egg box that holds 12 eggs and it is set out in 2 rows of 6. This shows us that 2 X 6 = 12.

I personally prefer an array, because children draw neat rows and are less likely to miscount them. Drawing groups also looks very similar to what we do for division, so an array looks different and they are less likely to mix up the two operations.

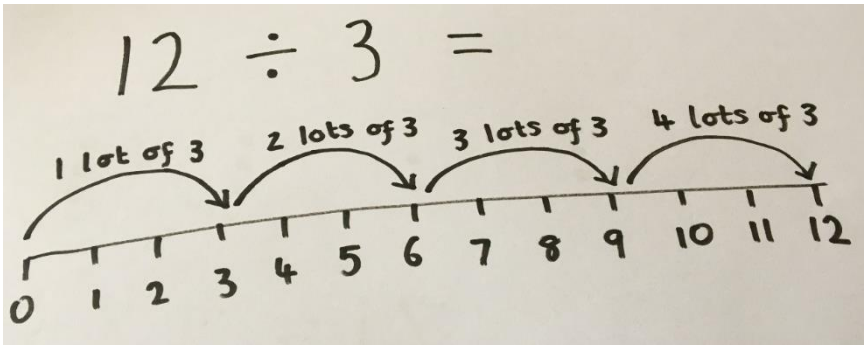


It doesn't matter if you do 3 rows or 4 or 4 rows of 3, you will still get the same answer.

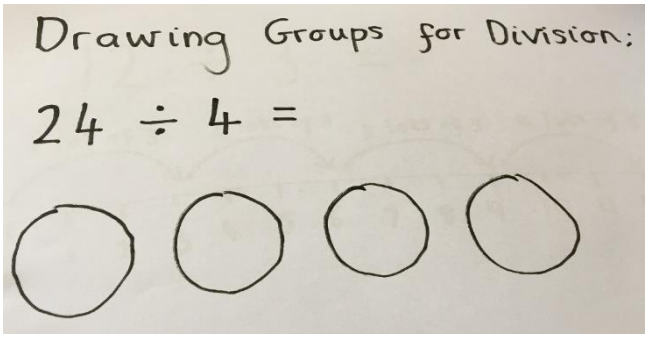
- So, I said that these are the methods we use when children don't know the answer, but that is not the end of the story. Children might use the above methods for something like 4 X 6, because we don't teach the 4 or 6 times tables in Year 2. However, we do teach the 2, 5, 10 and 3 times tables. Children should work mentally whenever possible and **only use written methods if they cannot do something mentally**. In other words, they should use their times tables as a first resort. They might automatically know that 3 X 4 = 12 (if they know their tables off by heart), or they might be able to count in 3's (3, 6, 9, 12) to find the answer. I have seen children trying to do 10 X 10 by drawing groups. It takes them forever and they end up getting the wrong answer because they don't count accurately. **They need to start to see what the most efficient and reliable strategy would be.** When children are able to make decisions like these, it is part of what we call '**mathematical fluency**'.

Division

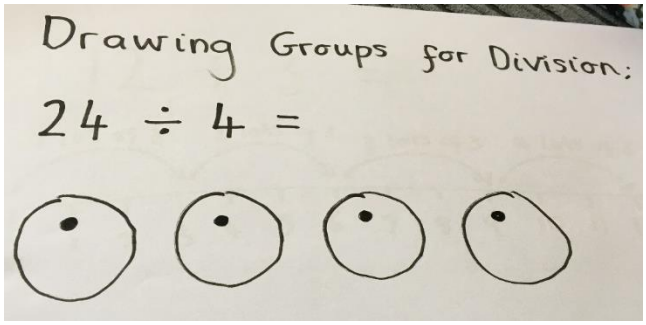
- Like with Multiplication, children should use their Times Tables where they are able to. They begin by seeing division as 'sharing' into equal groups, but they should now also start to see the link between multiplication and division. They are 'inverse operations', so to do 12 ÷ 3, they should be able to count in 3s until they get to 12 and then see that they counted 4 times, it took 4 lots of 3 to get to 12. They may just know this as a number fact, or they may be able to do it mentally. Alternatively, it helps some children to see it drawn on a number line, like this;



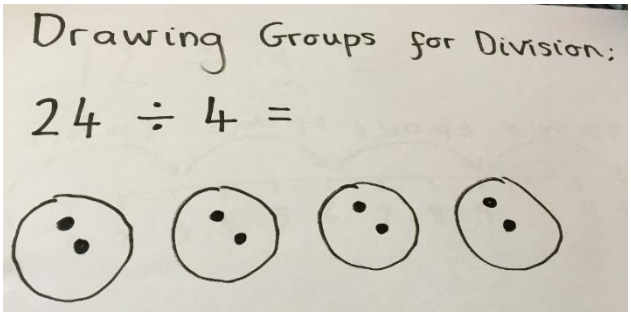
- So what should we do if we don't know the times table fact or if we cannot do it in our head? Well, in that case, we draw groups;

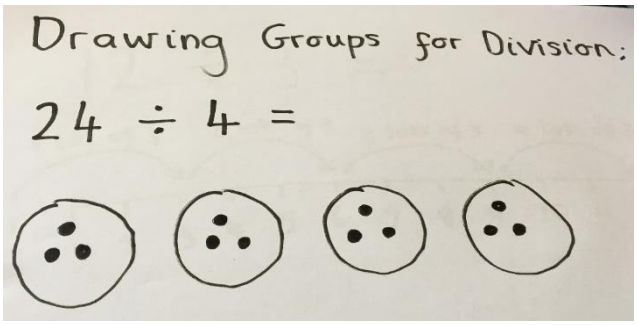


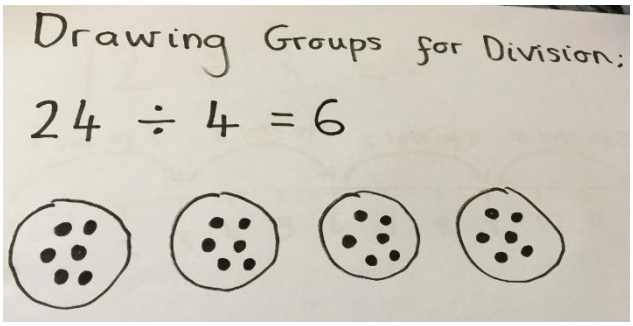
Step 1 – Draw your groups. The number of groups you need to draw will be the smaller number in the number sentence and the larger number is how many 'things' we need to share amongst them.



Step 2 – Share the larger number amongst the groups. Do this systematically. Draw one in the first group and say 'one', then draw the second one in the next group and say 'two', the third in the next group and say 'three'. When you have put one in each group, go back to the first group and start again. Keep going in this way, counting the whole time until you get to the larger number (in this case 24).

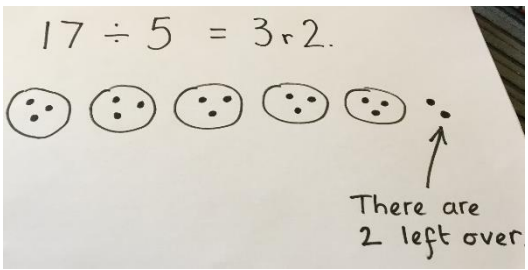






Step 3 – Once you have shared the bigger number equally between your groups, count how many 'things' are in each group and that is the answer.

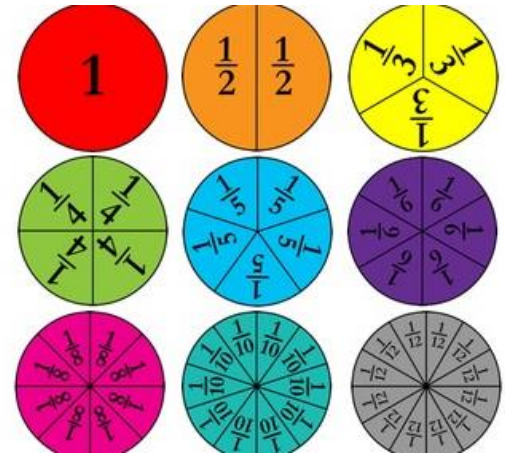
- Extra things for Greater Depth. If children are Working At Greater Depth, they are also required to understand about remainders. They can do this in a couple of ways.
- Firstly, if they draw groups, they should see that the groups are not equal and they have some 'left over' that will not share exactly.



- Alternatively, they might be able to use their Times Tables. So in the above example, they may know that 17 does not occur in the Five Times Table, but 15 does. If it was 15, there would be 3 in each group and then 17 is 2 more than 15, so there will be 2 left over.

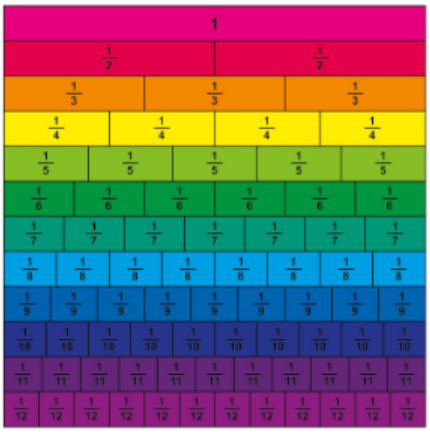
Fractions

- When learning about Fractions, children first start to understand fractions of shapes.

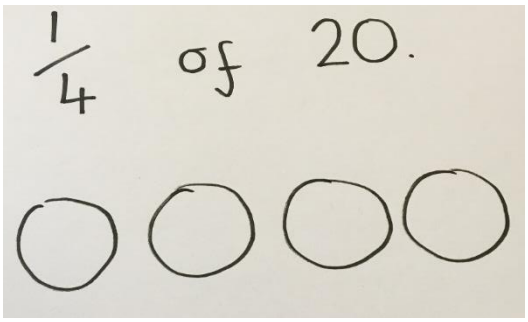


They learn that the bottom number in the fraction (the denominator) tells us how many **equal** pieces the shape has been divided into. The top number (the numerator) tells us how many pieces we are talking about. So for example, with the green circle that is divided into 4 equal parts, these are called quarters and if we are talking about one quarter (1/4), then we are talking about one of the 4 pieces. If we are talking about two quarters (2/4), then we are talking about two out of the four pieces, and so on.

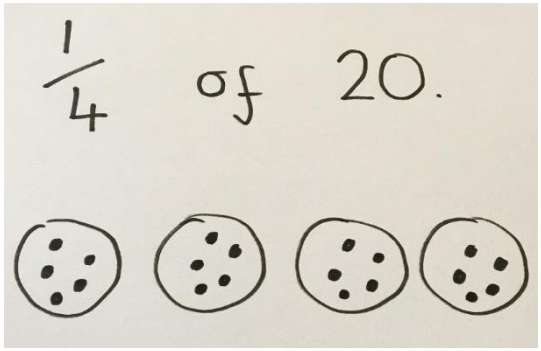
It is important that children don't always see fractions as circles. We can show lots of different models and images, for example;



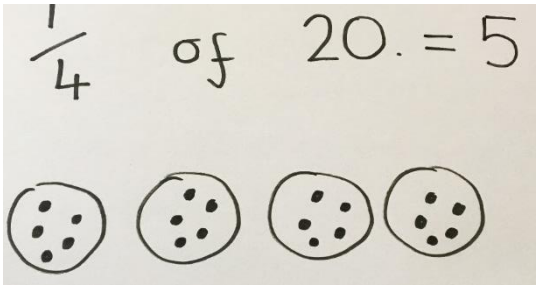
- Once children have understood fractions as parts of whole things, they start to understand that some fractions are **equivalent**, or the same. For example, ½ is the same as 2/4 or 3/6 or 4/8, etc. This can be shown using the equals sign as we know that 'equals' means 'the same as' or 'equal to'.
  So, 1/ 4 = 3/6.
  The models and images are a good way to show this to children. If you get a strip of paper and cut it into 2 equal parts, then get a second strip of paper (the same size as the first) and cut it into 6 equal parts. You can then quite easily show your child that 1 piece from the first strip is exactly the same size as 3 pieces from the second strip.
- Children then begin to calculate fractions of amounts and they do this by sharing.



Step 1 – Draw your groups. We teach children that the bottom number in the fraction tells us how many groups we need to draw.



Step 2 – Share the last number (the biggest number) equally between your groups. Remember to work systematically like we did for division.



Step 3 – Now we need to look at the top number in the fraction so see how many of our groups it is asking us about. In this case it only wants to know about 1 group, so the answer is 5. But if it had asked us for 2/4 of 20, the answer would be 10 because it would be asking how many are in two groups and if it had asked for 3/4 of 20, the answer would be 15 because it would be asking us about three groups.

Activity 1

Objective: To revise multiplication strategies.

Working Towards the Expected Standard

- Work with the 2, 3, 5 and 10 times table. Or just stick to one of these tables. Write out the number sentences, e.g. 2 X 3 =.
- Use physical objects to work out the answers (pieces of pasta, small beads, pennies, lego). You might want to lay out plates or pieces of paper to put them on, e.g. for 2 X 3, you might put down 3 plates with 2 pieces of pasta on each plate. How many pieces of pasta do we have altogether? Keep going, with lots of examples.

Working At the Expected Standard

Try working out the following;
As an extra challenge, can you explain how you did each one? Did you use your times tables? Did you need to draw something to help you to work out the answer?

Work out the answers to the following;	Try doing some with the equals sign at the beginning. Remember that = just means 'the same as' or 'equal to', so we can put it at the beginning of our number sentence, but the answer will be the same.	Try answering some of these missing number questions.
4 X 2 = 3 X 6 = 7 X 4 = 5 X 8 = 3 X 6 = 7 X 5 = 3 X 8 = 9 X 4 = 7 X 10 =	? = 2 X 8 ? = 5 X 3 ? = 8 X 4 ? = 5 X 2 ? = 7 X 6 ? = 3 X 7 ? = 8 X 5 ? = 2 X 9 ? = 10 X 4	6 X ? = 12 ? X 3 = 21 ? X 6 = 24 5 X ? = 20 6 X ? = 30 ? X 3 = 18 8 X ? = 56 ? X 3 = 27 ? X 5 = 50

Extra Activities for Children Working at Greater Depth

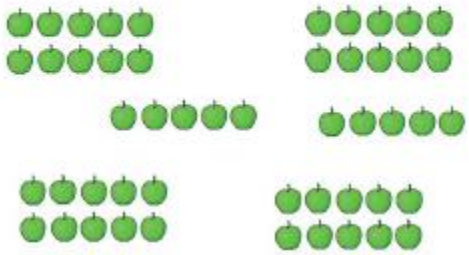
For each problem, can you write an explanation as to how you solved it? Write some sentences or draw something to demonstrate what you did. If you worked it out mentally or if you 'just knew the answer', how did you know?

I have 24 p and divide it between 2 friends. How much will they get each?

I have 24 p in 2 pence pieces. How many 2 pence pieces do I have?

What is the same and what's different?

Matilda and Charlie share these apples equally. How many apples do they each get?



<table>
<tr>
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<td>
Share 18 counters in two equal groups.

Take another 18 counters and put them in groups of 2

What's the same?

What's different?
</td>
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<tr>
<td>Activity 2</td>
<td>
Objective: To revise division strategies.

<u>Working Towards the Expected Standard</u>
As with yesterday's multiplication lesson, work practically. Work with numbers in the 2, 3, 5 or 10 times tables. Write out your number sentence, then work on sharing real objects into groups (small pieces of pasta on plates, pennies into purses or pictures of purses, pieces of lego onto pieces of paper). Maye sure that your child works systematically and counts accurately and that they understand that the groups need to be equal.

<u>Working At the Expected Standard</u>
Try working out the following;
As an extra challenge, can you explain how you did each one? Did you use your times tables? Did you need to draw something to help you to work out the answer?

<table>
<tr><th>Work out the following;</th><th>Try doing some with the equals sign at the beginning.</th><th>Try answering some of these missing number questions.</th></tr>
<tr><td>12 ÷ 2 =
55 ÷ 5 =
8 ÷ 2 =
80 ÷ 10 =
24 ÷ 6 =
35 ÷ 5 =
2 ÷ 2 =</td><td>? = 18 ÷ 2
? = 27 ÷ 3
? = 16 ÷ 4
? = 45 ÷ 5
? = 50 ÷ 5
? = 30 ÷ 6
? = 35 ÷ 7</td><td>? ÷ 2 = 6
24 ÷ ? = 8
? ÷ 4 = 3
? ÷ 5 = 2
15 ÷ ? = 5
20 ÷ ? = 4
36 ÷ ? = 6</td></tr>
</table>
</td>
</tr>
</table>

14 ÷ 2 = 40 ÷ 10 = 120 ÷ 10 = 18 ÷ 3 =	? = 32 ÷ 8 ? = 45 ÷ 9 ? = 130 ÷ 10 ? = 30 ÷ 10	? ÷ 7 = 4 1? ÷ 8 = 2 90 ÷ ? = 81 ? ÷ 10 = 8

Extra Activities for Children Working at Greater Depth

For each problem, can you write an explanation as to how you solved it? Write some sentences or draw something to demonstrate what you did. If you worked it out mentally or if you 'just knew the answer', how did you know?

You have 30 counters.

How many equal groups can you make?

Represent you groups as a number sentence.

Tom has 5 equal groups.

The amount he started with is greater than 10 but less than 35

What could he have started with?

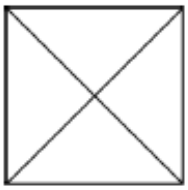
How many will be in each group?

Can you write some division number sentences that would have remainders? How do you know that they will have remainders? What are the answers to your number sentences? How did you work the answers out?

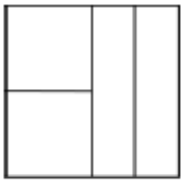
Activity 3	**Objective:** To revise fractions. **<u>Working Towards the Expected Standard</u>** Work with your child practically. Can you cut a pizza into 4 equal pieces? Can you fill a jug half full? Can you build a tower of Lego with 12 pieces and divide it into quarters or divide it in half or divide it into thirds? Can you share 20 pennies between 5 friends (fifths?) Do lots of practical tasks, working visually and using the correct language (fraction, half, third, quarter, fifth, sixth……, groups, share, equal, how many). **<u>Working At the Expected Standard</u>** Can you work out the following; $\frac{1}{4}$ of 8 = $\frac{1}{2}$ of 90 = 2/4 of 36 = $\frac{1}{2}$ of 6 = $\frac{1}{4}$ of 24 = $\frac{1}{2}$ of 14 = 1/3 of 12 = $\frac{1}{2}$ of 16 = $\frac{1}{4}$ of 12 = 1/3 of 30 **<u>Extra Activities for Children Working at Greater Depth</u>**

Three children are splitting a square into equal parts.

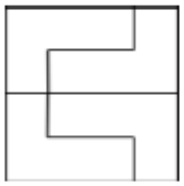
Child A



Child B

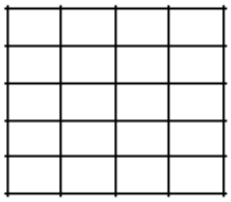


Child C

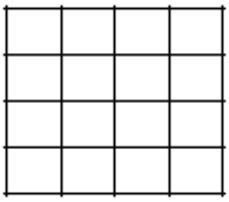


Who has split the square into equal parts? Explain why.

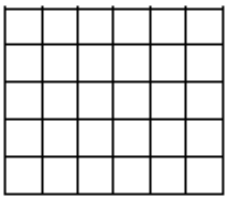
Tina is designing tiles for her kitchen. She wants half of each tile to be red and half of each tile to be blue.



Tile 1



Tile 2



Tile 3

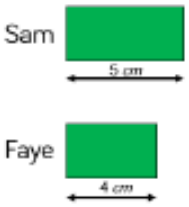
Can you create 3 different designs for each tile?

True or False?

$\frac{1}{4}$ of the shape is shaded.

Explain your answer.

Sam and Faye each have a piece of ribbon that they have cut into quarters.



How long was Sam's whole piece of ribbon?

How long was Faye's whole piece of ribbon?

Whose whole piece of ribbon was the longest?

Activities 4 and 5	**Objective:** Mixed arithmetic practice. **Working Towards the Expected Standard** Please continue to work on practical examples of Multiplication, Division and Fractions. Alternatively, pick out some of the easier questions from the following; **Working At the Expected Standard and Greater Depth** I have put Activities 4 and 5 together as it might be rather a lot to do all in one sitting! **Please see 'Arithmetic SATs Paper' and 'Reasoning Questions'.** You might need to refer to the guidance provided with last weeks work about addition and subtraction. This can be found in the Archive folder. These are examples of SATs papers / questions. In the first instance, children should work mentally, using the most efficient method. However, they should use written methods to find answers where appropriate. Missing number questions tend to throw children. In these cases, it is often necessary to carry out **the inverse operation**, so turn an add into a take away or a divide into a times.

A Little Extra

The White Rose End of Block Assessments are also included here with the other resources. There are three separate ones (one for multiplication, one for division and one for fractions). Children do one of these at the end of each maths topic, so they have already done these. You might want to give them to them at the end of this week

to see if they can complete them independently and if there are still things they have not understood.