Extra Support Mathematics

Take another look at the help guide to subtracting fraction from the Thursday before Half Term. Remind yourself how to subtract fractions using bar models and part whole models.

Subtract fractions - Help Guide

Today you will be subtracting fractions with the same denominator (Common Denominator). Just like with addition, the denominator in all the questions will stay the same. Only the numerator will change. When you add fractions, you add the numerators together. When you subtract fractions, you subtract the smaller numerator from the bigger one.

Watch this video clip to learn more about subtracting fractions.

https://www.youtube.com/watch?v=x-6h5ZOKHtg

Subtraction using a bar model

Let's look at the calculation $\frac{3}{5} - \frac{2}{5}$

When you subtract using a bar model you firstly need to count the total number of parts to find the denominator. This model has 5 parts so the denominator is 5.

You then need to count the shaded parts to find out what number you are subtracting from. In this case 3 parts are shaded. As a fraction this is $\frac{3}{5}$
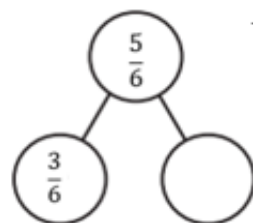
Our calculation asked us to subtract $\frac{2}{5}$ from $\frac{3}{5}$ so our last step is to simply cross off the number of parts we are subtracting to find our answer. Like this

As you can see, we are left with just one shaded part so

$$\frac{3}{5} - \frac{2}{5} = \frac{1}{5}$$

Sometimes we use part whole models to subtract. Let's go through an example together

This part whole model shows $\frac{5}{6} - \frac{3}{6}$

On a bar model it would look like this.

You take the fraction at the top of the part whole model and subtract the fraction in the bottom part of the part whole model. Remember it is only the numerator that changes, not the denominator. The denominator stays the same.

So the missing part of the part whole model is $\frac{2}{6}$

Hopefully you are now ready to start having a go yourself. Complete all the questions on the next page. Once again bars have been added alongside some of the questions to help you answer the subtraction calculations
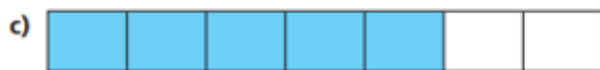
Subtract 2 fractions

White Rose Maths

1 Complete the subtractions.

a)

$$\frac{4}{5} - \frac{1}{5} = \boxed{}$$

b)

$$\frac{4}{5} - \frac{2}{5} = \boxed{}$$

c)

$$\frac{5}{7} - \frac{3}{7} = \boxed{}$$

d)

$$\frac{7}{9} - \frac{4}{9} = \boxed{}$$

For this last question you can see there are 9 squares in total in the bar model – this represents the denominator (bottom fraction number) You need to firstly colour in 7 to represent the numerator in the first fraction (top fraction number) $\frac{7}{9}$ then cross off 4 to represent the numerator in the second fraction $\frac{4}{9}$
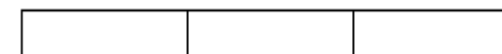
2 Complete these calculations using the method you used for 1d on the previous page. Colour in the amount of the first numerator then cross out the amount of the second numerator.
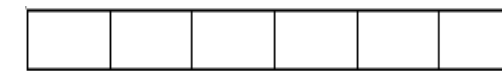
a) $\frac{7}{10} - \frac{3}{10} = \boxed{}$

b) $\frac{2}{3} - \frac{1}{3} = \boxed{}$
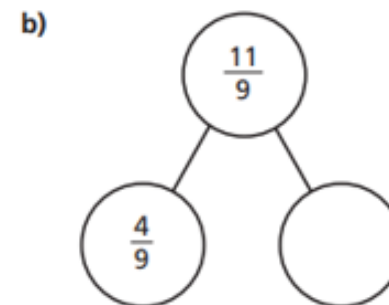
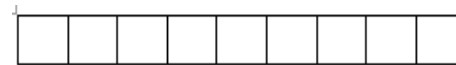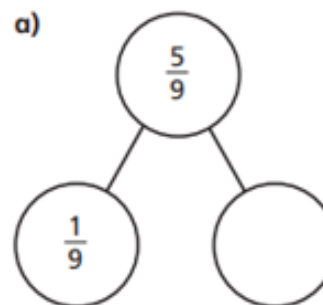c) $\frac{6}{6} - \frac{6}{6} = \boxed{}$
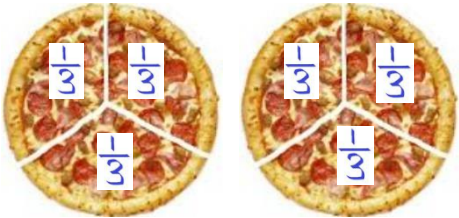
d) $\frac{3}{4} - \frac{1}{4} = \boxed{}$

3 Complete the part whole models. Use the bars to help you. Colour in the amount shown by the numerator in the top circle fraction then subtract (cross off) the amount shown by the numerator in the bottom circle fraction.

a)

$\frac{5}{9}$

$\frac{1}{9}$

b)

$\frac{11}{9}$

$\frac{4}{9}$

Subtract from whole amounts

White Rose Maths
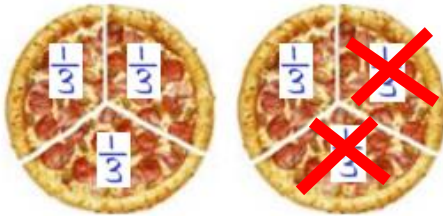
Do you remember when we used pizzas to represent fractions greater than 1 in the weeks before the half term break. Here is a little reminder.

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$

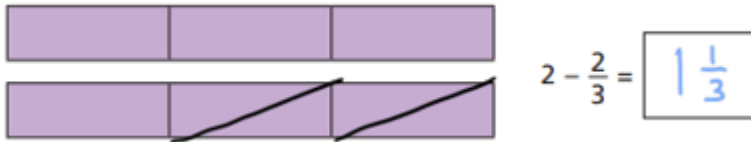Sam has two pizzas that he cuts into thirds. Like this

As a fraction this would be 2 wholes or $\frac{6}{3}$

Sam then invites a friend over and they both eat $\frac{1}{3}$ each. How much pizza would be left?

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$
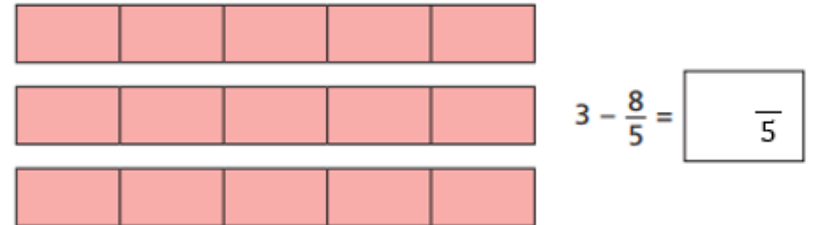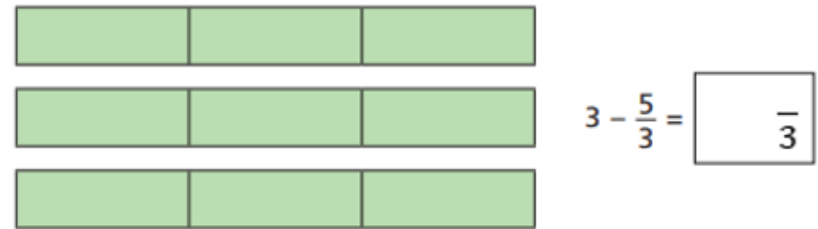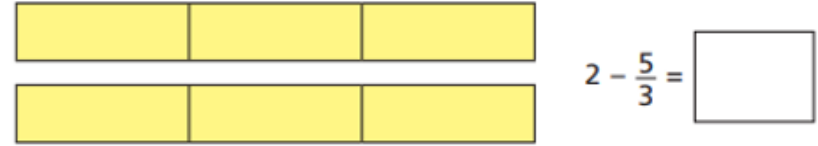
The answer would be 1 whole pizza and $\frac{1}{3}$

These pizzas show the calculation $2 - \frac{2}{3} = \boxed{1\frac{1}{3}}$

As a bar model it would look like this

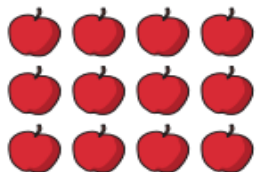$2 - \frac{2}{3} = \boxed{1\frac{1}{3}}$

As each bar has 3 parts, the denominator in the calculation is 3. Notice that when a whole bar is coloured in it represents 1 whole. In this case 3 out of 3 thirds $\frac{3}{3}$

Now it's your turn. Have a go at using the bar models to subtract. Remember when a whole bar is coloured in it = 1 whole

$2 - \frac{5}{3} = \boxed{}$

$3 - \frac{5}{3} = \boxed{\dfrac{}{3}}$

$3 - \frac{8}{5} = \boxed{\dfrac{}{5}}$

Problem solving with fractions

White Rose Maths

As a fraction, half is written as $\frac{1}{2}$ the bottom number shows how many equal parts the amount is being divided into whilst the top number shows how many of these parts we are looking at.

Here are 12 apples. If we wanted to divide them in half ($\frac{1}{2}$) we would need 2 equal groups as the denominator is 2

Like this

As the numerator in half is 1. We only need to look at how many apples are in one of the groups. In this case 6 so half ($\frac{1}{2}$) of 12 = 6

If we wanted to find one quarter ($\frac{1}{4}$) of an amount we would need to share the amount into 4 equal groups as the denominator is 4. Let's use the apples again.

$\frac{1}{4}$ of 12

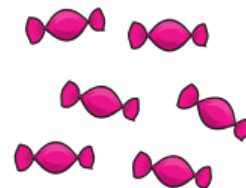= 3 as there are 3 apples in one of the 4 parts.

Now it's your turn

1 Mo has these bananas

He gives half of the bananas to his friend.

How many bananas does he give to his friend? ☐ bananas

2 a) This is half of Eva's sweets.

Draw the rest of Eva's sweets.

3 Draw counters in the bar models to help you complete each number sentence. The first one has been done for you. Remember each part of the bar model must contain the same number of counters.

a) $\frac{1}{2}$ of 8 = 4

This is how many counters in total

This is how many counters in each part.

b) $\frac{1}{2}$ of 16 = ☐

c) $\frac{1}{4}$ of 8 = ☐

d) $\frac{1}{4}$ of 16 = ☐

Fractions of a set of objects (1)

White Rose Maths

Yesterday we looked at halves and quarters of amounts below 20. Today and tomorrow the numbers we are using will be a little higher so we will be using place value counters with values of 10 (10) and 1 (1) (The last page has some you can cut out and use to help you answer the questions for today and tomorrow) we will also be looking at non-unit fractions. This means that for some questions the numerator will be greater than 1. All this means is that instead of adding up the place value counters in one part of the bar model you add up the place value counters in more than one part.

Here is an example.

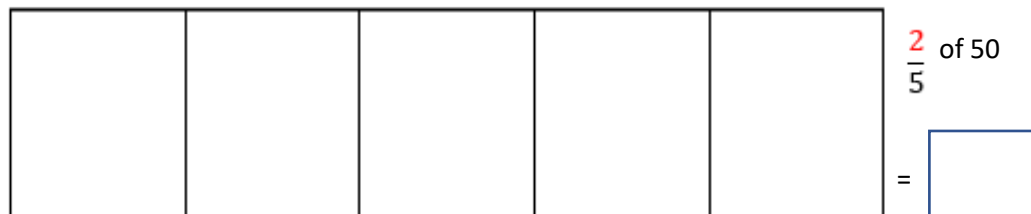Kim uses a bar model and place value counters to find $\frac{2}{3}$ of ⟨36⟩

Kim has made sure that she has shared her total of ⟨36⟩ out equally so that each part of her bar model has the same place value counters (One 10 and two 1s = 12) Kim needs to find $\frac{2}{3}$ of 36 which means she needs to add up 2 parts of the bar model

Each part of the bar model is 12 so 2 lots of 12 = 24. $\frac{2}{3}$ Of 36 = 24

Use Kim's method to complete the following number sentences. Remember to collect place value counters to the value of 50 and share them out equally.

a)

$\frac{2}{5}$ of 50

=

b) Find $\frac{3}{4}$ of 44 =

To answer this question, collect the correct amount of 10s and 1s place value counters. Then share them out equally across the 4 boxes. Once you know how many counters are in each box you can work out how many are in 3 boxes to find $\frac{3}{4}$ of 44
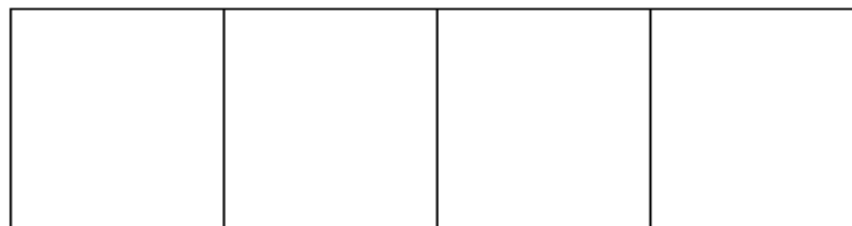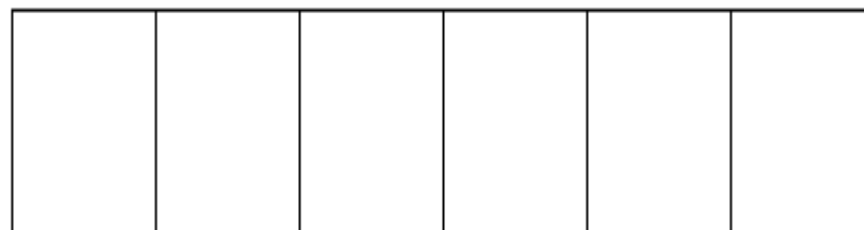
c) Find $\frac{2}{3}$ of 39 =

- Collect place value counters to the value of 39.
- Share them out equally between the three boxes below
- Work out the value of $\frac{2}{3}$

d) Find $\frac{4}{6}$ of 66 =

Fractions of a quantity

White Rose Maths

Take a quick look back at the work you did yesterday to remind you how to find a fraction of an amount. Remember you can use the counters and grid from yesterday to help you or use objects such as lego or pasta to represent the 10 and 1 place value counters.

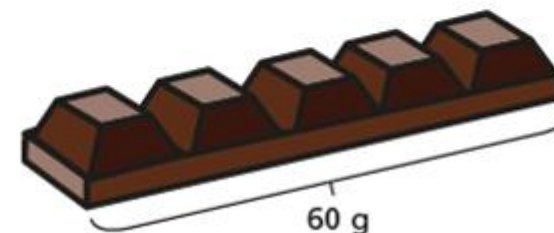**1** Complete the number sentences.

a) $\frac{1}{4}$ of 20 = ☐

To answer this question, and the one below, you will need to think carefully about which place value disks you use to make 20. Remember each box must have the same amount in.

b) $\frac{1}{5}$ of 20 = ☐

2 Filip has a chocolate bar with **6** equal pieces.

The chocolate bar weighs 60 g.

60 g

How much does on piece of the bar weigh? Use this grid and the place value counters to help you work it out.

b) Filip eats $\frac{3}{6}$ of the bar of chocolate. ☐
How many grams does Filip eat?

3 Challenge – Can you match the calculation to the answer. You will need to use a grid and place value counters to help you.

$\frac{2}{3}$ of 18	15
$\frac{5}{6}$ of 18	16
$\frac{4}{5}$ of 20	12

Cut out the place value counters then use the enlarged grids below to help you answer the questions from day 4 and 5 above
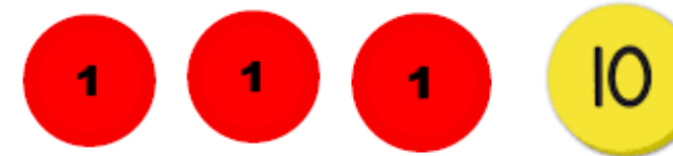
Once you have worked out the answers using the grids below, draw the place value counters onto your learning sheet for the day.

Subtract 2 fractions

White Rose Maths

1 Complete the subtractions.

a)

$$\frac{4}{5} - \frac{1}{5} = \boxed{\frac{3}{5}}$$

b)

$$\frac{4}{5} - \frac{2}{5} = \boxed{\frac{2}{5}}$$

c)

$$\frac{5}{7} - \frac{3}{7} = \boxed{\frac{2}{7}}$$

d)

$$\frac{7}{9} - \frac{4}{9} = \boxed{\frac{3}{9}}$$

2 Complete these calculations using the method you used for 1d on the previous page. Colour in the amount of the first numerator then cross out the amount of the second numerator.

a) $\frac{7}{10} - \frac{3}{10} = \boxed{\frac{4}{10}}$

b) $\frac{2}{3} - \frac{1}{3} = \boxed{\frac{1}{3}}$
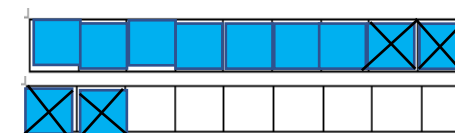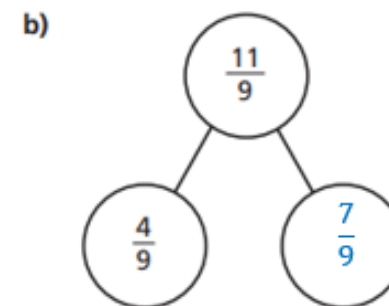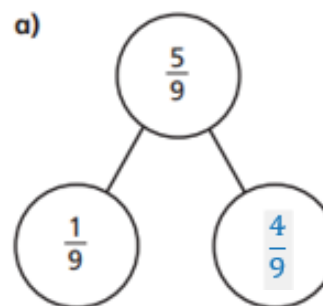
c) $\frac{6}{6} - \frac{6}{6} = \boxed{0}$

d) $\frac{3}{4} - \frac{1}{4} = \boxed{\frac{2}{4}}$

3 Complete the part whole models. Use the bars to help you. Colour in the amount shown by the numerator in the top circle fraction then subtract (cross off) the amount shown by the numerator in the bottom circle fraction.

a)

$\frac{5}{9}$

$\frac{1}{9}$ $\frac{4}{9}$

b)

$\frac{11}{9}$

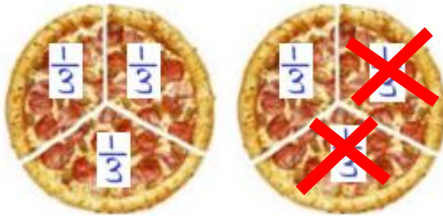$\frac{4}{9}$ $\frac{7}{9}$

Subtract from whole amounts

Do you remember when we used pizzas to represent fractions greater than 1 in the weeks before the half term break. Here is a little reminder.
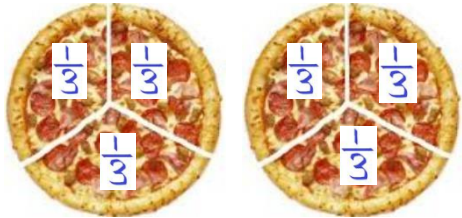
Sam has two pizzas that he cuts into thirds. Like this

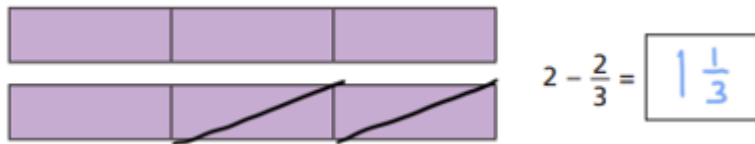As a fraction this would be 2 wholes or $\frac{6}{3}$

Sam then invites a friend over and they both eat $\frac{1}{3}$ each. How much pizza would be left?
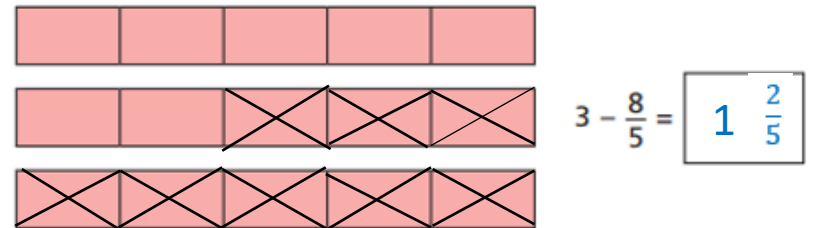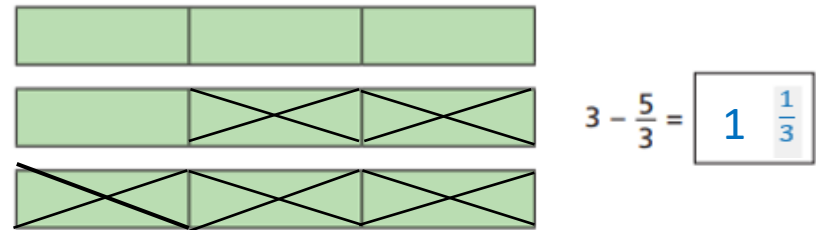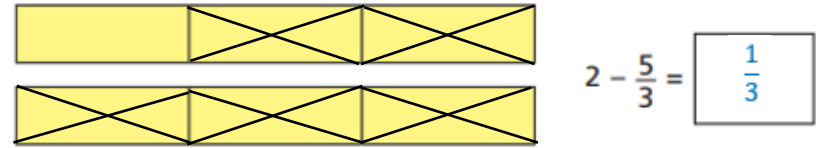
The answer would be 1 whole pizza and $\frac{1}{3}$

These pizzas show the calculation $2 - \frac{2}{3} = \boxed{1\frac{1}{3}}$

As a bar model it would look like this

$2 - \frac{2}{3} = \boxed{1\frac{1}{3}}$

As each bar has 3 parts, the denominator in the calculation is 3. Notice that when a whole bar is coloured in it represents 1 whole. In this case 3 out of 3 thirds $\frac{3}{3}$

Now it's your turn. Have a go at using the bar models to subtract. Remember when a whole bar is coloured in it = 1 whole

$2 - \frac{5}{3} = \boxed{\frac{1}{3}}$

$3 - \frac{5}{3} = \boxed{1\frac{1}{3}}$

$3 - \frac{8}{5} = \boxed{1\frac{2}{5}}$

Problem solving with fractions

As a fraction, half is written as $\frac{1}{2}$ the bottom number shows how many equal parts the amount is being divided into whilst the top number shows how many of these parts we are looking at.

Here are 12 apples. If we wanted to divide them in half ($\frac{1}{2}$) we would need 2 equal groups as the denominator is 2

Like this

As the numerator in half is 1. We only need to look at how many apples are in one of the groups. In this case 6 so half ($\frac{1}{2}$) of 12 = 6

If we wanted to find one quarter ($\frac{1}{4}$) of an amount we would need to share the amount into 4 equal groups as the denominator is 4. Let's use the apples again.

$\frac{1}{4}$ of 12 = 3 as there are 3 apples in one of the 4 parts.
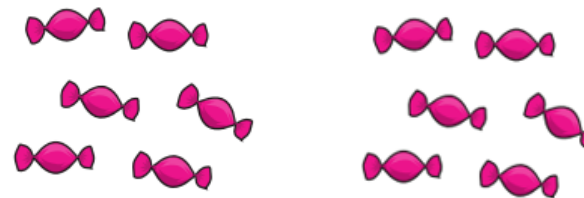
Now it's your turn

1 Mo has these bananas

He gives half of the bananas to his friend.

How many bananas does he give to his friend? | 9 | bananas

2 a) This is half of Eva's sweets.

Draw the rest of Eva's sweets.

3 Draw counters in the bar models to help you complete each number sentence. The first one has been done for you. Remember each part of the bar model must contain the same number of counters.

a) $\frac{1}{2}$ of 8 = | 4 |

This is how many counters in total

This is how many counters in each part.

b) $\frac{1}{2}$ of 16 = | 8 |

c) $\frac{1}{4}$ of 8 = | 2 |

d) $\frac{1}{4}$ of 16 = | 4 |

Fractions of a set of objects (1)

Yesterday we looked at halves and quarters of amounts below 20. Today the numbers we are using will be a little higher so we will be using place value counters with values of 10 and 1 (The next page has some you can cut out and use to help you answer todays questions) we will also be looking at non-unit fractions. This means that for some questions the numerator will be greater than 1. All this means is that instead of adding up the place value counters in one part of the bar model you add up the place value counters in more than one part.

Here is an example.

Kim uses a bar model and place value counters to find $\frac{2}{3}$ of ⓛ36
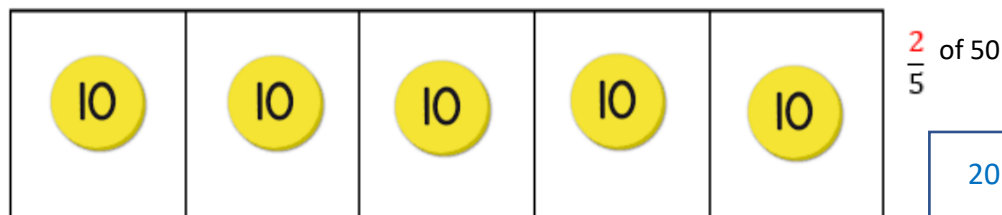

Kim has made sure that she has shared her total of ⓛ36 out equally so that each part of her bar model has the same place value counters (One 10 and two 1s = 12) Kim needs to find $\frac{2}{3}$ of 36 which means she needs to add up 2 parts of the bar model

Each part of the bar model is 12 so 2 lots of 12 = 24. $\frac{2}{3}$ Of 36 = 24

Use Kim's method to complete the following number sentences. Remember to collect place value counters to the value of 50 and share them out equally.
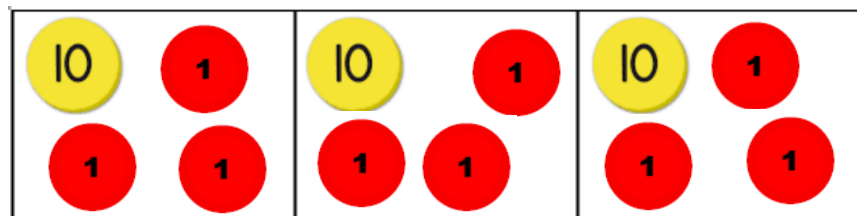
a)

$\frac{2}{5}$ of 50

20

b) Find $\frac{3}{4}$ of 44 =   33

To answer this question, collect the correct amount of 10s and 1s place value counters. Then share them out equally across the 4 boxes. Once you know how many counters are in each box you can work out how many are in 3 boxes to find $\frac{3}{4}$ of 44
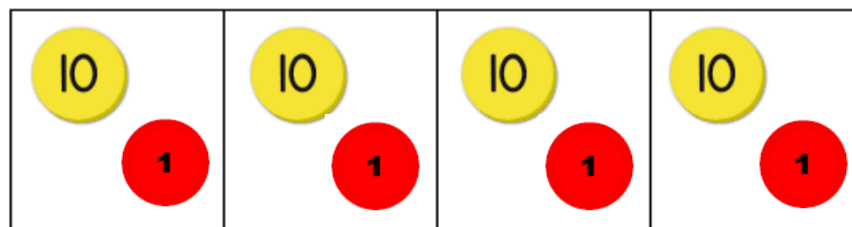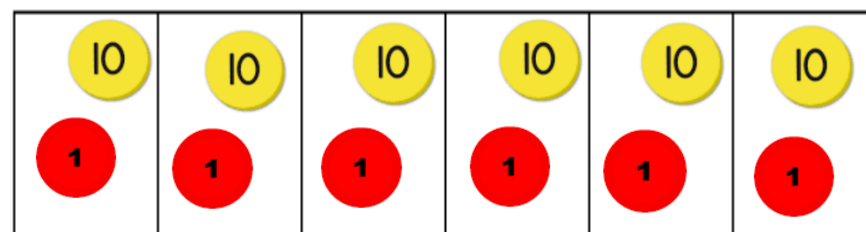

c) Find $\frac{2}{3}$ of 39 =   26

- Collect place value counters to the value of 39.
- Share them out equally between the three boxes below
- Work out the value of $\frac{2}{3}$

d) Find $\frac{4}{6}$ of 66 =   44
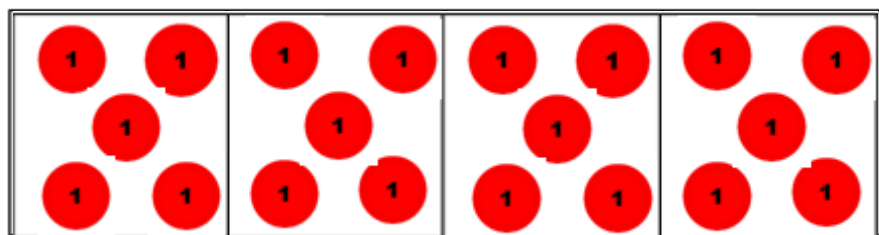
Day 5 - 5.3.21

Fractions of a quantity

Take a quick look back at the work you did yesterday to remind you how to find a fraction of an amount. Remember you can use the counters and grid from yesterday to help you or use objects such as lego or pasta to represent the 10 and 1 place value counters.
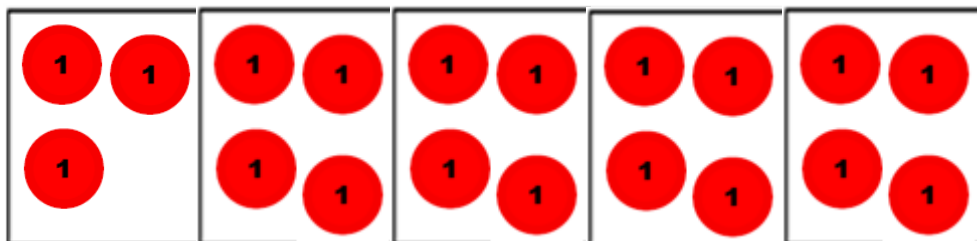
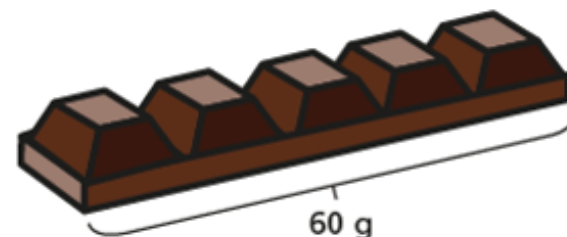**1** Complete the number sentences.

a) $\frac{1}{4}$ of 20 = **5**

To answer this question, and the one below, you will need to think carefully about which place value disks you use to make 20. Remember each box must have the same amount in.
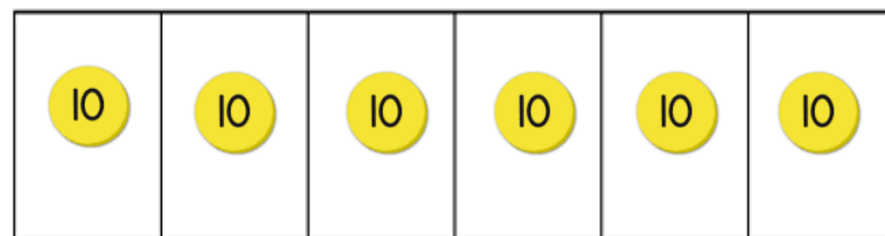
b) $\frac{1}{5}$ of 20 = **4**

2 Filip has a chocolate bar with **6** equal pieces.

The chocolate bar weighs 60 g.

60 g

How much does on piece of the bar weigh? Use this grid and the place value counters to help you work it out.

b) Filip eats $\frac{3}{6}$ of the bar of chocolate. How many grams does Filip eat?   **30**

3 Challenge – Can you match the calculation to the answer. You will need to use a grid and place value counters to help you.

$\frac{2}{3}$ of 18 — 15

$\frac{5}{6}$ of 18 — 16

$\frac{4}{5}$ of 20 — 12