

Summer Block 1

**Fractions B**

## Small steps

Step 1

Add fractions

Step 2

Subtract fractions

Step 3

Partition the whole

Step 4

Unit fractions of a set of objects

Step 5

Non-unit fractions of a set of objects

Step 6

Reasoning with fractions of an amount

# Add fractions

## Notes and guidance

In this small step, children build on their understanding of numerators and denominators to unitise fractions and add them together. They read calculations such as  $\frac{1}{5} + \frac{2}{5}$  as “1 fifth plus 2 fifths” and unitise the fifth to work out that the answer is 3 fifths, or  $\frac{3}{5}$ . They should recognise that adding unit fractions with the same denominator creates a non-unit fraction.

Throughout the step, the meaning of the numerator and denominator is emphasised to support understanding. All the additions are of two or more fractions where the total is less than or equal to 1

Encourage children to explore fractions through the use of pictorial representations and manipulatives, for example paper strips or bar models.

## Things to look out for

- Children may add both the numerators and denominators, for example  $\frac{3}{4} + \frac{1}{4} = \frac{4}{8}$
- Children may not have a clear understanding of the relationship of the denominator to the whole.

## Key questions

- How many equal parts is the whole divided into?
- How many parts are you adding?
- Why do you add the numerators, but not the denominators?
- What do you notice about the numerators?
- What do you notice about the denominators?
- How can you use a bar model to add these fractions?
- How many quarters/fifths/sixths do you have altogether?

## Possible sentence stems

- \_\_\_\_\_ tenths plus \_\_\_\_\_ more tenths is equal to \_\_\_\_\_ tenths altogether.  
\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_
- When adding fractions with the same \_\_\_\_\_, I only add the \_\_\_\_\_

## National Curriculum links

- Add and subtract fractions with the same denominator within one whole

# Add fractions

## Key learning

- Take a strip of paper. Fold it into four equal parts.  
Colour one part red and two parts blue.
  - Use your strip of paper to complete the sentences.
    - \_\_\_\_\_ quarter is red.
    - \_\_\_\_\_ quarters are blue.
    - \_\_\_\_\_ quarters are coloured in total.
  - Complete the number sentence.  $\frac{\square}{4} + \frac{\square}{4} = \frac{\square}{4}$

- Complete the sentences.
  - $1 + 2 = \underline{\hspace{2cm}}$
  - $1 \text{ egg} + 2 \text{ eggs} = \underline{\hspace{2cm}} \text{ eggs}$
  - $1 \text{ ten} + 2 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$
  - $1 \text{ fifth} + 2 \text{ fifths} = \underline{\hspace{2cm}} \text{ fifths}$
  - $\frac{1}{5} + \frac{2}{5} = \underline{\hspace{2cm}}$

What do you notice?

- Draw bar models to help complete the number sentences.
  - $\frac{1}{5} + \frac{2}{5} = \frac{\square}{5}$
  - $\frac{2}{7} + \frac{3}{7} + \frac{1}{7} = \frac{\square}{7}$
  - $\frac{7}{10} + \frac{\square}{10} = \frac{9}{10}$

- The number line shows  $\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$



Colour the number lines to show the additions.

- $\frac{1}{4} + \frac{3}{4} = 1$
- $\frac{1}{5} + \frac{1}{5} + \frac{2}{5} = \frac{4}{5}$

- Brett and Tom are sharing a pizza.  
Brett eats  $\frac{5}{12}$  of the pizza and Tom eats  $\frac{1}{12}$  of the pizza.  
What fraction of the pizza do they eat altogether?

- Fill in the missing numerators.
  - $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{\square}{5}$
  - $\frac{1}{7} + \frac{4}{7} = \frac{\square}{7}$
  - $\frac{4}{7} = \frac{1}{7} + \frac{\square}{7}$
  - $\frac{2}{5} + \frac{1}{5} = \frac{\square}{5}$
  - $\frac{1}{7} + \frac{\square}{7} = \frac{6}{7}$
  - $\frac{3}{7} = \frac{1}{7} + \frac{\square}{7}$

# Add fractions

## Reasoning and problem solving

Tiny is working out  $\frac{4}{7} + \frac{2}{7}$



The answer is  $\frac{6}{14}$

No

Do you agree with Tiny?  
Explain your answer.



Complete the number sentence.

$$\frac{9}{9} = \frac{\square}{9} + \frac{\square}{9} + \frac{\square}{9}$$

Can you do it another way?  
How do you know that you have found all the possible ways?



multiple possible answers, e.g.  
 $\frac{9}{9} = \frac{1}{9} + \frac{2}{9} + \frac{6}{9}$

Mo and Eva share these chocolates.



They both eat an odd number of chocolates.

Complete the number sentence to show what fraction of the chocolates they each could have eaten.

$$\frac{\square}{\square} + \frac{\square}{\square} = \frac{12}{12}$$

in either order:  
 $\frac{1}{12} + \frac{11}{12}$   
 $\frac{3}{12} + \frac{9}{12}$   
 $\frac{5}{12} + \frac{7}{12}$

# Subtract fractions

## Notes and guidance

In this small step, children use what they have learnt about unitising denominators to subtract fractions. In particular, they should recognise that when subtracting fractions with the same denominator, they only subtract the numerators and the denominator stays the same.

Children explore three structures of subtraction and how each one applies to subtracting fractions. They look at subtraction by reduction (taking away), by partitioning and by finding the difference. All the questions require children to subtract from a fraction that is less than or equal to 1 whole.

Encourage children to explore fractions through the use of models, pictorial representations and manipulatives, for example paper strips or bar models.

### Things to look out for

- Children may subtract both the numerators and denominators, for example  $\frac{3}{4} - \frac{1}{4} = \frac{2}{0}$
- Children may find some representations of fractions harder to understand than others.
- Children may not have a clear understanding of the relationship of the denominator to the whole.

## Key questions

- What fraction are you starting with?  
What fraction are you subtracting?  
What fraction is left?
- Which models show taking away?
- Which models show finding the difference?
- Which models show partitioning?
- How many ways can you partition  $\frac{9}{11}$ ?
- Why do you subtract the numerators, but not the denominators?

## Possible sentence stems

- I know that \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_, so  $\frac{\square}{9} - \frac{\square}{9} = \frac{\square}{9}$
- When subtracting fractions with the same \_\_\_\_\_, I only subtract the \_\_\_\_\_

## National Curriculum links

- Add and subtract fractions with the same denominator within one whole

# Subtract fractions

## Key learning

- Complete the sentences.

- ▶  $4 - 1 = \underline{\quad}$
- ▶  $£4 - £1 = £ \underline{\quad}$
- ▶ 4 eggs - 1 egg =  $\underline{\quad}$  eggs
- ▶ 4 fifths - 1 fifth =  $\underline{\quad}$  fifths
- ▶  $\frac{4}{5} - \frac{1}{5} = \underline{\quad}$

What do you notice?

- Work out the subtractions.

$7 - 1$	$8 - 3$	$10 - 9$
7 eighths - 1 eighth	8 ninths - 3 ninths	10 tenths - 9 tenths
$\frac{7}{8} - \frac{1}{8}$	$\frac{8}{9} - \frac{3}{9}$	$\frac{10}{10} - \frac{9}{10}$

- Use the models to complete the calculations.

▶	$\frac{5}{7} - \frac{\square}{7} = \frac{\square}{7}$
▶	$\frac{\square}{9} - \frac{\square}{9} = \frac{4}{9}$
▶	$\frac{4}{8} - \frac{\square}{8} = \frac{\square}{8}$

- Complete the part-whole models and write the subtraction facts for each one.

$\frac{9}{11} - \frac{7}{11} = \frac{\square}{11}$	$\frac{7}{11} - \frac{\square}{11} = \frac{\square}{11}$	$\frac{\square}{11} - \frac{0}{11} = \frac{\square}{11}$
$\frac{9}{11} - \frac{\square}{11} = \frac{7}{11}$	$\frac{7}{11} - \frac{\square}{11} = \frac{\square}{11}$	$\frac{\square}{11} - \frac{\square}{11} = \frac{0}{11}$

Is there more than one way to complete each part-whole model?

- Fill in the missing numbers.

▶ $\frac{6}{7} - \frac{2}{7} = \frac{\square}{7}$	▶ $\frac{6}{7} - \frac{3}{7} = \frac{\square}{7}$	▶ $\frac{6}{7} - \frac{4}{7} = \frac{\square}{7}$
▶ $\frac{7}{8} - \frac{2}{8} = \frac{\square}{8}$	▶ $\frac{7}{8} - \frac{\square}{8} = \frac{3}{8}$	▶ $\frac{7}{8} - \frac{7}{8} = \frac{\square}{\square}$

- Huan has a pizza.

He eats  $\frac{3}{8}$  of the pizza.

What fraction of the pizza is left?

# Subtract fractions

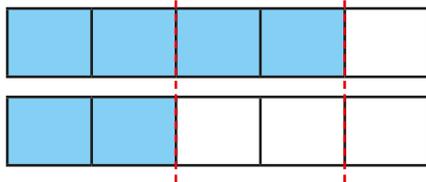
## Reasoning and problem solving

Scott and Dani are working out  $\frac{4}{5} - \frac{2}{5}$

**Scott**



**Dani**



They both say that the answer is  $\frac{2}{5}$

They are both correct.

Explain how they each worked it out.

Scott took  $\frac{2}{5}$  away.

Dani found the difference between  $\frac{4}{5}$  and  $\frac{2}{5}$



The children are subtracting fractions.

**Ron**

$$1 - \frac{2}{9} = \frac{7}{9}$$

**Dexter**

$$\frac{9}{12} - \frac{2}{12} = \frac{7}{0}$$

**Annie**

$$\frac{5}{9} - \frac{2}{9} - \frac{1}{9} = \frac{3}{9}$$

**Dora**

$$\frac{5}{6} - \frac{5}{6} = 0$$

Ron and Dora are correct.

Dexter and Annie are incorrect.



$1 - \frac{1}{6} = 0$ ,  
because  $1 - 1 = 0$

Explain why Tiny is wrong.

$1 = \frac{6}{6}$ ,  
so  $1 - \frac{1}{6} = \frac{6}{6} - \frac{1}{6} = \frac{5}{6}$

Which children are correct?

Which children are incorrect?

Explain your answers.



# Partition the whole

## Notes and guidance

Although it may have been explored briefly in previous steps, children deepen their understanding of the whole and splitting a whole into unit fractions and non-unit fractions. Throughout the step, there is an emphasis on the meaning of the denominator and numerator and this is explored through the use of pictorial representations of shapes, objects and number lines.

Children use their knowledge of number bonds to explore the different ways a whole can be partitioned, for example  $1 = \frac{0}{5} + \frac{5}{5} = \frac{1}{5} + \frac{4}{5} = \frac{2}{5} + \frac{3}{5}$ . They begin to see connections between the sum of the numerators and the common denominator and find how to derive complements to 1 whole, solving problems of the form  $\frac{3}{7} + \frac{\square}{7} = 1$

### Things to look out for

- As fractions split wholes into equal parts, children may assume that the complementary fraction is the same fraction again, for example  $\frac{3}{7}$  and  $\frac{3}{7}$  together are equal to 1 whole.
- Children who are not secure with their number bonds may need visual support to find complements.

## Key questions

- How many equal parts is the whole split into?
- What can you say about a fraction if its numerator and denominator are the same?
- What fraction of the bar model is shaded?  
What fraction of the bar model is not shaded?
- What do you notice about the total of the numerators of the fractions?
- If you have \_\_\_\_\_ fifths, how many more fifths do you need to make a whole?

## Possible sentence stems

- When the \_\_\_\_\_ and the \_\_\_\_\_ are the same, the fraction is equal to 1 whole.  
 $\frac{\square}{\square} = 1$
- I have \_\_\_\_\_ fifths, so I need \_\_\_\_\_ more fifths to make a whole.

## National Curriculum links

- Add and subtract fractions with the same denominator within one whole

# Partition the whole

## Key learning

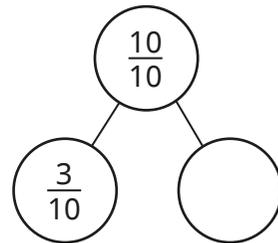
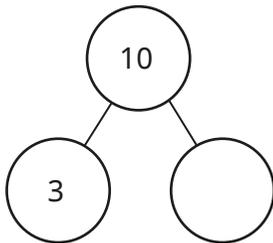
- Complete the sentences.

$\frac{4}{7}$  of the shape is shaded.  
 $\frac{\square}{7}$  of the shape is not shaded.

$\frac{\square}{8}$  of the shape is shaded.  
 $\frac{\square}{\square}$  of the shape is not shaded.

$\frac{\square}{\square}$  of the shape is shaded.  
 $\frac{\square}{\square}$  of the shape is not shaded.

- Complete the part-whole models.



- Use the bar models to complete the number sentences.

$\frac{1}{3} + \underline{\hspace{2cm}} = 1$

$\frac{3}{4} + \underline{\hspace{2cm}} = 1$

$\frac{3}{7} + \underline{\hspace{2cm}} = 1$

- Draw bar models to show the number sentences.

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

$$\frac{4}{10} + \frac{6}{10} = 1$$

$$\frac{1}{6} + \frac{5}{6} = 1$$

- Complete the number sentences.

▶  $\frac{1}{10} + \frac{\square}{10} = 1$

▶  $\frac{5}{7} + \frac{\square}{7} = 1$

▶  $\frac{\square}{5} + \frac{1}{5} = 1$

▶  $\frac{\square}{8} + \frac{3}{8} = 1$

▶  $\frac{\square}{5} + \frac{1}{5} + \frac{3}{5} = 1$

▶  $\frac{\square}{9} + \frac{1}{9} + \frac{2}{9} = 1$

▶  $\frac{\square}{15} + \frac{1}{15} + \frac{7}{15} = 1$

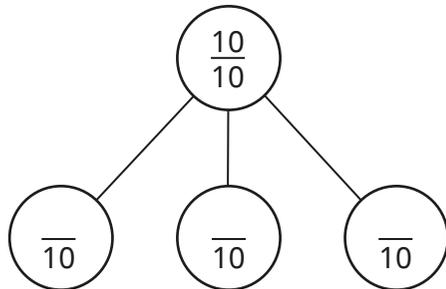
▶  $1 = \frac{\square}{23} + \frac{\square}{23} + \frac{2}{23}$

▶  $\frac{\square}{5} + \frac{\square}{5} + \frac{\square}{5} = 1$

# Partition the whole

## Reasoning and problem solving

Complete the part-whole model.



How many ways can you find?

multiple possible answers, e.g.  
 $\frac{1}{10} + \frac{1}{10} + \frac{8}{10}$   
 There are eight possible combinations.

Nijah has a pizza.



She cuts the pizza into two equal parts.

She cuts one of the two parts into two smaller equal parts.



Then she cuts one of these smaller parts into two equal slices.

What fraction of the whole pizza is each of these slices worth?

$$\frac{1}{8}$$

Is the statement true or false?

If the numerator of a fraction is equal to its denominator, then the fraction is equal to 1

True

Explain your answer.



Teddy has a packet of 11 cards.



He gives 3 cards to Filip.

What fraction of the cards does he give to Filip?

$$\frac{3}{11}$$

What fraction of the cards does Teddy have left?

$$\frac{8}{11}$$

# Unit fractions of a set of objects

## Notes and guidance

In the previous steps, children gained an understanding of fractions as numbers and as parts of a whole. In this small step, they learn about fractions as operators.

Children learn how to find unit fractions of a set of objects, and connect this to what they already know about dividing quantities into equal parts using known division facts. For example,  $20 \div 4 = 5$ , so  $\frac{1}{4}$  of  $20 = 5$ . So far, children have learnt the 2, 3, 4, 5, 8 and 10 times-tables, so in this small step children find  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{1}{4}$ ,  $\frac{1}{5}$ ,  $\frac{1}{8}$  and  $\frac{1}{10}$ . This allows them to focus on the underlying concepts instead of on calculations.

Concrete resources and pictorial representations, such as bar models and place value counters, can be used to support understanding.

Non-unit fractions are covered in the next step.

### Things to look out for

- Children may not be confident enough with times-tables to support them with finding fractions of amounts.
- Children may not make the link between division and finding a fraction of a set of objects.

## Key questions

- What is the whole?
- How many equal parts has the whole been divided into?
- How many \_\_\_\_\_ are there in each equal part?
- How many equal parts do you need to split your bar model into?
- Which operation should you use to find a fraction of an amount?
- What does each part of the fraction tell you?
- How can you use place value counters or base 10 to help you?

## Possible sentence stems

- The whole is divided into \_\_\_\_\_ equal parts.  
Each part is \_\_\_\_\_ of the whole.
- When \_\_\_\_\_ objects are divided into \_\_\_\_\_ equal parts, there are \_\_\_\_\_ objects in each part.  
 $\frac{1}{\square}$  of \_\_\_\_\_ = \_\_\_\_\_

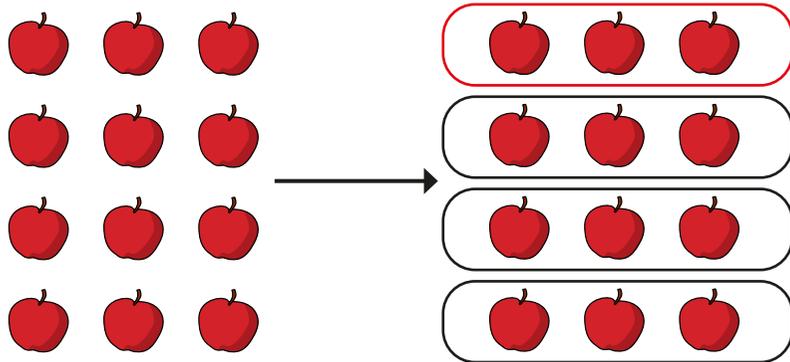
## National Curriculum links

- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

# Unit fractions of a set of objects

## Key learning

- Use the picture to complete the sentences.



The whole is 12 apples.

The whole is divided into \_\_\_\_\_ equal parts.

Each part is \_\_\_\_\_ of the whole.

$\frac{1}{4}$  of \_\_\_\_\_ apples is \_\_\_\_\_ apples.

- Complete the sentences to find  $\frac{1}{5}$  of the marbles.

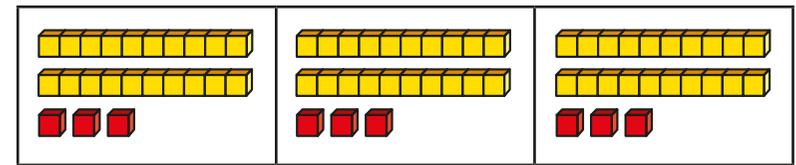


I have divided the marbles into \_\_\_\_\_ equal groups.

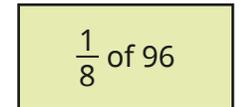
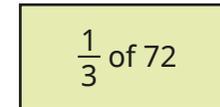
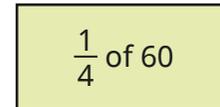
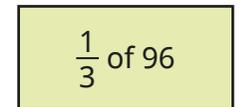
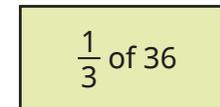
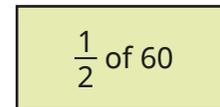
There are \_\_\_\_\_ marbles in each group.

$\frac{1}{5}$  of \_\_\_\_\_ marbles is \_\_\_\_\_ marbles.

- Amir uses a bar model and base 10 to find  $\frac{1}{3}$  of 69



Use Amir's method to find the fractions of the amounts.



- Tommy saves £60  
He spends  $\frac{1}{4}$  of this money on a toy.  
How much does he spend?
- Alex has 36 chocolates.  
She gives  $\frac{1}{3}$  of the chocolates to her friends.  
How many chocolates does she have left?

# Unit fractions of a set of objects

## Reasoning and problem solving

Kim has 12 sweets.



- On Friday, she eats  $\frac{1}{4}$  of her sweets and gives one to her mum.
- On Saturday, she eats  $\frac{1}{2}$  of her remaining sweets and gives one to her brother.
- On Sunday, she eats  $\frac{1}{3}$  of her remaining sweets.

How many sweets does Kim have left?

2

Here is  $\frac{1}{5}$  of Jack's stickers.



How many stickers does Jack have altogether?

20

Write unit fractions to make the statements correct.



$$\frac{1}{\square} \text{ of } 24 < 12$$

$$\frac{1}{\square} \text{ of } 24 = 12$$

How many different answers can you find for each statement?



$$\frac{1}{3}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8} \text{ or } \frac{1}{12}$$

$$\frac{1}{2}$$

Work out the missing numbers.



$$\frac{1}{3} \text{ of } 60 = \frac{1}{4} \text{ of } \underline{\hspace{2cm}}$$

$$\frac{1}{\square} \text{ of } 50 = \frac{1}{5} \text{ of } 25$$



80

10

# Non-unit fractions of a set of objects

## Notes and guidance

In this small step, children progress to finding non-unit fractions of a set of objects.

Children use their knowledge that the denominator tells them how many equal parts the whole is divided into and the numerator tells them how many parts of the whole there are. For example, to find  $\frac{3}{4}$  of an amount means dividing the whole into 4 equal parts, then finding the total of 3 of these parts. Bar models are very useful to model this process, as children can label each part and see how to find the total for the number of parts they need.

As with the previous step, this step only involves finding fractions of amounts that use the 2, 3, 4, 5, 8 and 10 times-tables.

## Things to look out for

- Children may not be confident enough with times-tables to support them with finding fractions of amounts.
- Children may only complete the first step of dividing by the denominator and forget to then multiply by the numerator.
- Children may try to divide the number by the numerator and multiply by the denominator instead of the other way round.

## Key questions

- What is the whole?
- How many equal parts are there?
- What does the denominator tell you?
- What does the numerator tell you?
- How do you find a unit fraction of the whole?  
How can you use the unit fraction to find other fractions of the whole?
- How can you use a bar model to help you?
- If you know one-fifth of the whole, how can you work out three-fifths?

## Possible sentence stems

- The whole is divided into \_\_\_\_\_ equal parts.
- Each part is one \_\_\_\_\_ of the whole.
- $\frac{1}{\square}$  of \_\_\_\_\_ is \_\_\_\_\_, so  $\frac{2}{\square}$  of \_\_\_\_\_ is  $2 \times$  \_\_\_\_\_ = \_\_\_\_\_

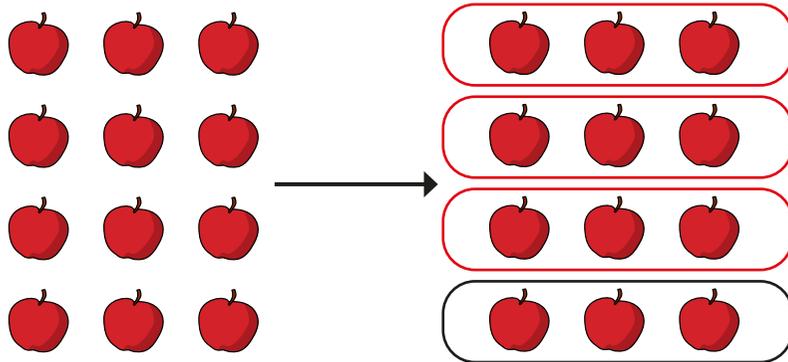
## National Curriculum links

- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

# Non-unit fractions of a set of objects

## Key learning

- Use the picture to complete the sentences.



The whole is \_\_\_\_\_ apples.

The whole is divided into \_\_\_\_\_ equal parts.

Each part is \_\_\_\_\_ of the whole.

$\frac{3}{4}$  of \_\_\_\_\_ apples is \_\_\_\_\_ apples.

- Complete the sentences to find  $\frac{2}{5}$  of the marbles.



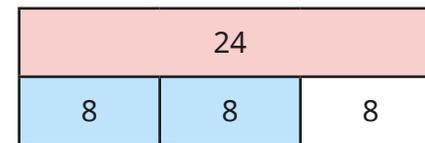
I have divided the marbles into \_\_\_\_\_ equal groups.

There are \_\_\_\_\_ marbles in each group.

There are \_\_\_\_\_ marbles in two groups.

$\frac{2}{5}$  of \_\_\_\_\_ marbles is \_\_\_\_\_ marbles.

- Sam uses a bar model to find  $\frac{2}{3}$  of 24



$$24 \div 3 = 8$$

$$\frac{1}{3} \text{ of } 24 = 8$$

$$8 \times 2 = 16$$

$$\frac{2}{3} \text{ of } 24 = 16$$

Use Sam's method to find the fractions of the amounts.

$$\frac{3}{4} \text{ of } 24$$

$$\frac{2}{3} \text{ of } 12$$

$$\frac{2}{3} \text{ of } 18$$

$$\frac{4}{5} \text{ of } 45$$

- Rosie saves £52  
She spends  $\frac{3}{4}$  of this money on a toy.  
How much does she spend?
- Tom has 95 chocolates.  
He gives  $\frac{3}{5}$  of the chocolates to his friends.  
How many chocolates does he have left?

# Non-unit fractions of a set of objects

## Reasoning and problem solving

The mass of a bag of potatoes is 400 g.

$\frac{3}{8}$  of the potatoes are used to make lunch.

Two-fifths of the remaining potatoes are used to make dinner.

What is the mass of the potatoes that are left in the bag?



150 g

Huan has £28

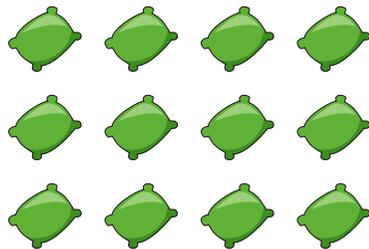
- On Friday, he spends  $\frac{1}{4}$  of his money.
- On Saturday, he spends  $\frac{2}{3}$  of his remaining money and gives £2 to his sister.
- On Sunday, he spends  $\frac{1}{5}$  of his remaining money.

How much money does Huan have left?



£4

This is  $\frac{3}{4}$  of a set of bean bags.



How many bean bags are there in the whole set?



16

Whitney has a strip of paper.

She cuts off  $\frac{2}{5}$  of the strip.

Then she cuts off  $\frac{1}{2}$  of the remaining strip of paper.

The strip is now 9 cm long.

How long was Whitney's strip of paper at the start?



30 cm

## Reasoning with fractions of an amount

### Notes and guidance

In this small step, children build on their knowledge of fractions and finding a fraction of an amount and apply this to a range of contexts, including multi-step calculations.

Encourage children to demonstrate their understanding through clear explanations and reasoning. They can explore alternative methods, for example, to find  $\frac{5}{6}$  of a number, they could subtract  $\frac{1}{6}$  from the whole, rather than multiplying  $\frac{1}{6}$  by 5

The use of contextual examples also provides an opportunity to revisit previous concepts, particularly measures such as time, money, mass, capacity, length and perimeter.

### Things to look out for

- Children may just follow procedures without considering alternative methods.
- Children may be unfamiliar with some of the contexts.
- Children may need to recap some of the units, for example how many minutes there are in an hour.
- Children may need support to set out multi-step calculations such as  $\frac{1}{3}$  of 60 +  $\frac{2}{3}$  of 30

### Key questions

- What is the whole?
- What does the denominator/numerator tell you?
- How do you find a unit fraction of the whole?  
How can you use the unit fraction to find other fractions of the whole?
- How can you use a bar model to help you?
- What do you need to do first? How do you know?  
What do you need to do after that?  
How else could you have worked this out?

### Possible sentence stems

- \_\_\_\_\_ ÷ \_\_\_\_\_ = \_\_\_\_\_, so  $\frac{1}{\square}$  of \_\_\_\_\_ = \_\_\_\_\_
- $\frac{1}{\square}$  of \_\_\_\_\_ is \_\_\_\_\_, so  $\frac{3}{\square}$  of \_\_\_\_\_ is  $3 \times$  \_\_\_\_\_ = \_\_\_\_\_

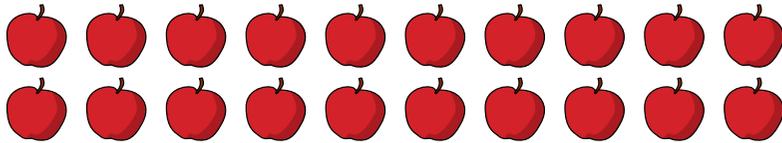
### National Curriculum links

- Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

# Reasoning with fractions of an amount

## Key learning

- Complete the sentences to describe the apples.



- ▶ \_\_\_\_\_ apples =  $\frac{1}{2}$  of the apples
- ▶  $\frac{3}{4}$  of the apples = \_\_\_\_\_ apples
- ▶  $\frac{1}{5}$  of the apples = \_\_\_\_\_ apples
- ▶ 8 apples =  $\frac{\square}{\square}$  of the apples

- Ron collects 30 shells.

Dexter collects 20 shells.

They each give  $\frac{1}{5}$  of their shells to Scott.

How many shells does Scott get?



- A bag contains 24 sweets.

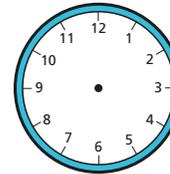
Eva eats a quarter of the sweets and Dani eats two-thirds of the remaining sweets.

How many sweets are left in the bag?



- Find  $\frac{2}{3}$  of an hour.

Use the clock face and sentences to help you.



1 hour = \_\_\_\_\_ minutes

$\frac{1}{3}$  of \_\_\_\_\_ minutes = \_\_\_\_\_ minutes

$\frac{2}{3}$  of \_\_\_\_\_ minutes = \_\_\_\_\_ minutes

- Aisha has 30 counters, Teddy has 20 counters and Dora has 10 counters.

Work out:

**A**  $\frac{1}{2}$  of Aisha and Dora's counters

**B**  $\frac{1}{5}$  of Teddy and Dora's counters

**C**  $\frac{2}{5}$  of Aisha and Teddy's counters

**D**  $\frac{2}{3}$  of Aisha, Teddy and Dora's counters

Which is the greatest number of counters, A, B, C or D?

- Complete the calculations.

$$\frac{1}{3} \text{ of } \pounds 60 + \frac{2}{5} \text{ of } \pounds 30$$

$$\frac{1}{4} \text{ of } 28 \text{ cm} - \frac{1}{10} \text{ of } 20 \text{ cm}$$

$$\frac{1}{5} \text{ of } \pounds 60 \times \frac{2}{3} \text{ of } 6$$

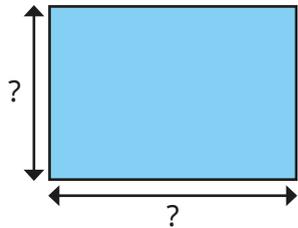
# Reasoning with fractions of an amount

## Reasoning and problem solving

Which amount is greater?

$\frac{1}{3}$ of £60	$\frac{2}{3}$ of £30
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They are equal.



The sides of the rectangle are whole numbers of centimetres.

The length is less than 20 cm.

The width is  $\frac{2}{3}$  of the length.

What measurements could the rectangle have?

How many answers can you find?



- 3 cm by 2 cm
- 6 cm by 4 cm
- 9 cm by 6 cm
- 12 cm by 8 cm
- 15 cm by 10 cm
- 18 cm by 12 cm

Annie and Filip share a bottle of juice.



Annie drinks  $\frac{3}{5}$  of the juice.

Filip drinks 200 ml of the juice.

One-fifth of the juice is left in the bottle.

How much did Annie drink?

What fraction of the juice did Filip drink?

How much juice is left in the bottle?

600 ml

$\frac{1}{5}$

200 ml



To find  $\frac{9}{10}$  of 180, I am going to find  $\frac{1}{10}$  of 180 and multiply my answer by 9



Find an easier way to work out  $\frac{9}{10}$  of 180

Find  $\frac{1}{10}$  of 180 and subtract it from 180