Finding $\frac{3}{4}$

Learning focus

In this lesson, children will work out unit and non-unit fractions of numbers up to 20.

Small steps

- Previous step: $\frac{1}{2}$ and $\frac{2}{4}$
- **This step: Finding $\frac{3}{4}$**
- Next step: Understanding a whole

NATIONAL CURRICULUM LINKS

Year 2 Number – Fractions

Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.

ASSESSING MASTERY

Children can work out $\frac{1}{4}$ of a number and use this information to work out $\frac{3}{4}$. Children can understand that the number they are dividing by is the denominator of the fraction they are trying to find and can work out the whole from a non-unit fraction such as $\frac{3}{4}$.

COMMON MISCONCEPTIONS

The scaffolds in this lesson guide children through the process of working out a non-unit fraction step-by-step, but they may still become confused as to what each number in the fraction represents and what to do with it. Children might think that to get from $\frac{1}{4}$ to $\frac{3}{4}$ they multiply both the numerator and the denominator by 3 and get $\frac{3}{12}$. Ask:

- *These are all quarters. Does that change when you have more quarters?*

STRENGTHENING UNDERSTANDING

Provide physical resources such as paint brushes and pots so that children can model the questions. Share out the resources in quarters and ask children to count how many there are in three quarters.

GOING DEEPER

Working out a whole from a non-unit fraction requires strong conceptual understanding of what the denominator and the numerator represent. Give children a number that represents a non-unit fraction, for example $\frac{3}{4}$. With the help of pictures or physical resources, children will see that they divide that fraction by 3 in order to find one equal part because the non-unit fraction only represents three parts. Show children that they just have to add one of those parts to find the whole.

KEY LANGUAGE

In lesson: fraction, quarter, $\frac{3}{4}$, divided, equal parts, share, how many, half, whole, unit fraction, non-unit fraction

Other language to be used by the teacher: numerator, denominator

RESOURCES

Mandatory: multilink cubes, counters

Optional: classroom objects such as pots and paintbrushes or pencils and pencil cases

In the eTextbook of this lesson, you will find interactive links to a selection of teaching tools.

Before you teach

- Did children understand fractions when the numerator was greater than 1 in the previous lesson?
- Do children have a strategy for working out a fraction of a number, such as sharing physical resources, or do they rely on times-table knowledge?

Discover

WAYS OF WORKING Pair work

ASK

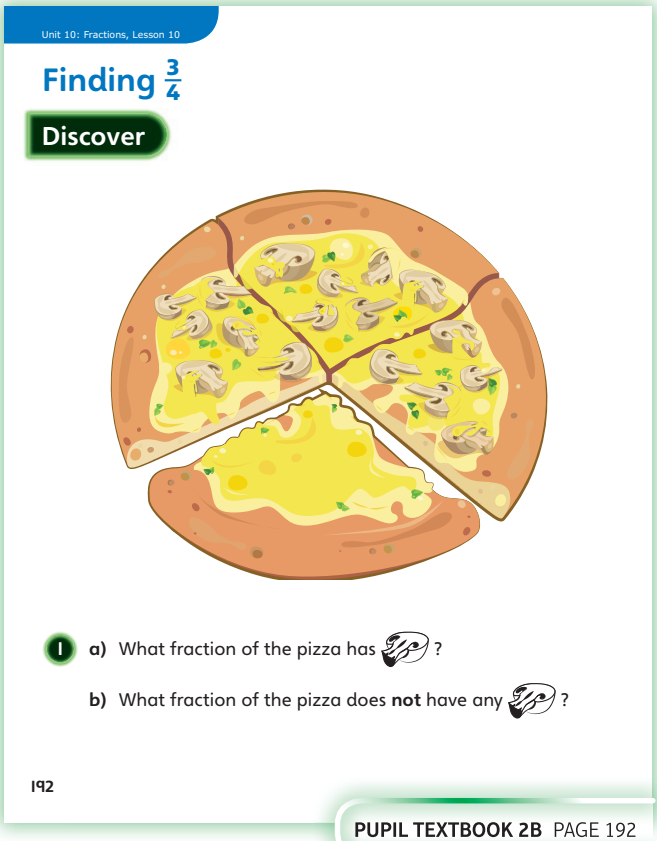
- *How many equal pieces has the pizza been split into?*
- *How many equal pieces have mushrooms on?*
- *What is the same and what is different about the answers?*
- *Are there the same amount of mushrooms on each part?*

IN FOCUS This picture is a reminder of unit and non-unit fractions. First, the questions require children to work out that the pizza has been divided into four equal parts (quarters). Show children that three of those equal parts have mushrooms on and that this is represented as $\frac{3}{4}$.

ANSWERS

Question 1 a): $\frac{3}{4}$ of the pizza has .

Question 1 b): $\frac{1}{4}$ of the pizza does not have any .



Unit 10: Fractions, Lesson 10

Finding $\frac{3}{4}$

Discover

1 a) What fraction of the pizza has ?

b) What fraction of the pizza does **not** have any ?

192

PUPIL TEXTBOOK 2B PAGE 192

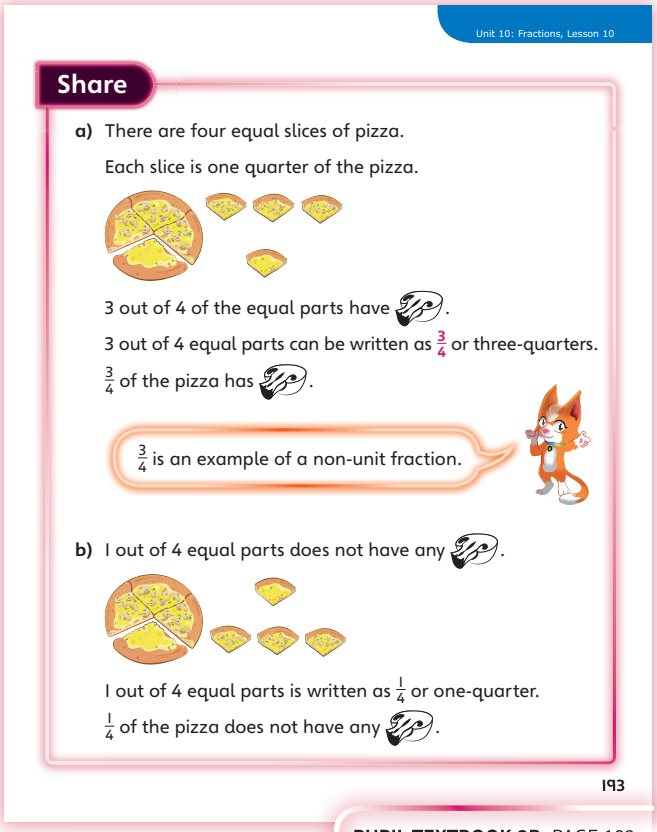
Share

WAYS OF WORKING Whole class teacher led

ASK

- *What is the same and what is different about the fractions in questions 1 a) and 1 b)?*
- *Why does the numerator change?*

IN FOCUS When both fractions have been written up, work together with the whole class to compare them. Refer to what Sparks says about $\frac{3}{4}$ being a non-unit fraction. Ask children to explain what a non-unit fraction is and where they might have seen one before.



Unit 10: Fractions, Lesson 10

Share

a) There are four equal slices of pizza.

Each slice is one quarter of the pizza.

3 out of 4 of the equal parts have .

3 out of 4 equal parts can be written as $\frac{3}{4}$ or three-quarters.

$\frac{3}{4}$ of the pizza has .

$\frac{3}{4}$ is an example of a non-unit fraction.

b) 1 out of 4 equal parts does not have any .

1 out of 4 equal parts is written as $\frac{1}{4}$ or one-quarter.

$\frac{1}{4}$ of the pizza does not have any .

193

PUPIL TEXTBOOK 2B PAGE 193

Think together

WAYS OF WORKING Whole class teacher led (I do, We do, You do)

ASK

- *Does each whole have to be the same size to be compared?*

IN FOCUS Question 1 is scaffolded to help children work out $\frac{3}{4}$ of a quantity.

Question 2 requires children to recognise $\frac{3}{4}$.

Question 3 shows that $\frac{1}{2}$ and a further $\frac{1}{4}$ shaded makes $\frac{3}{4}$ shaded. Children should recognise this and may split the $\frac{1}{2}$ into quarters.

STRENGTHEN Encourage children to use multilink cubes or counters to represent the slices of pizza shared in question 1. Ask children to draw four sorting hoops, label each circle $\frac{1}{4}$ and share the resources out one by one into the circles until they have none left.

Encourage children to recreate the square in question 3 by folding a piece of paper. When they fold the paper in half and then in half again, the folds will show them how to split the shaded half into quarters.

DEEPEN Look at the answers to question 1. Do children spot a similarity between or pattern within the numbers?

ASSESSMENT CHECKPOINT Do children use the answer to question 1 a), which they know to be $\frac{1}{4}$, to help them to work out $\frac{3}{4}$ in question 1 b)? Do children work out $\frac{3}{4}$ another way, such as by sharing physical resources into four equal groups and counting the number of resources in three of the groups?

ANSWERS

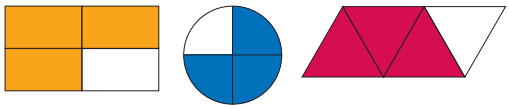
Question 1 a): $\frac{1}{4}$ of 8 = 2

He gives 2 to one person.

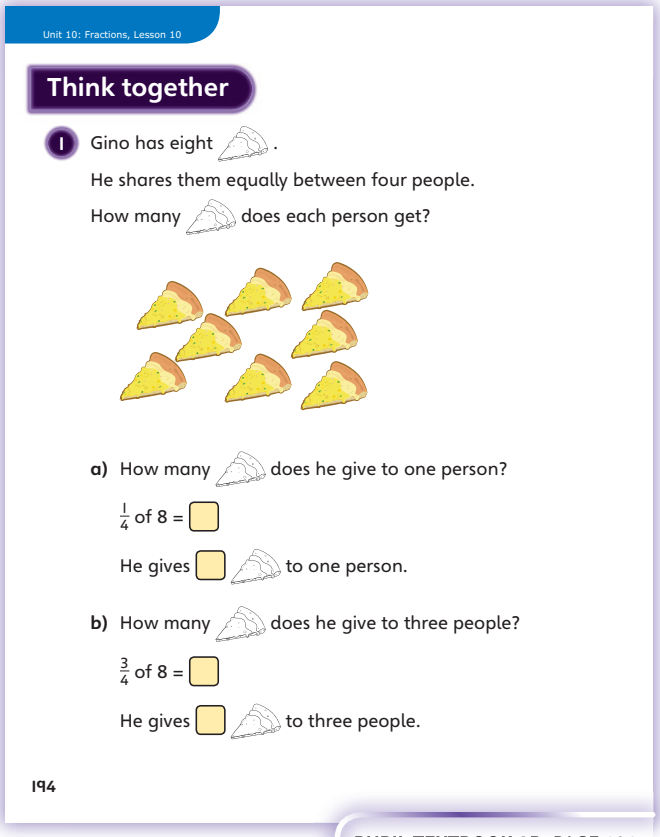
Question 1 b): $\frac{3}{4}$ of 8 = 6

He gives 6 to three people.

Question 2 :



Question 3 : $\frac{3}{4}$ is shaded.



Unit 10: Fractions, Lesson 10

Think together

1 Gino has eight .

He shares them equally between four people.

How many does each person get?

a) How many does he give to one person?

$\frac{1}{4}$ of 8 = ☐

He gives ☐ to one person.

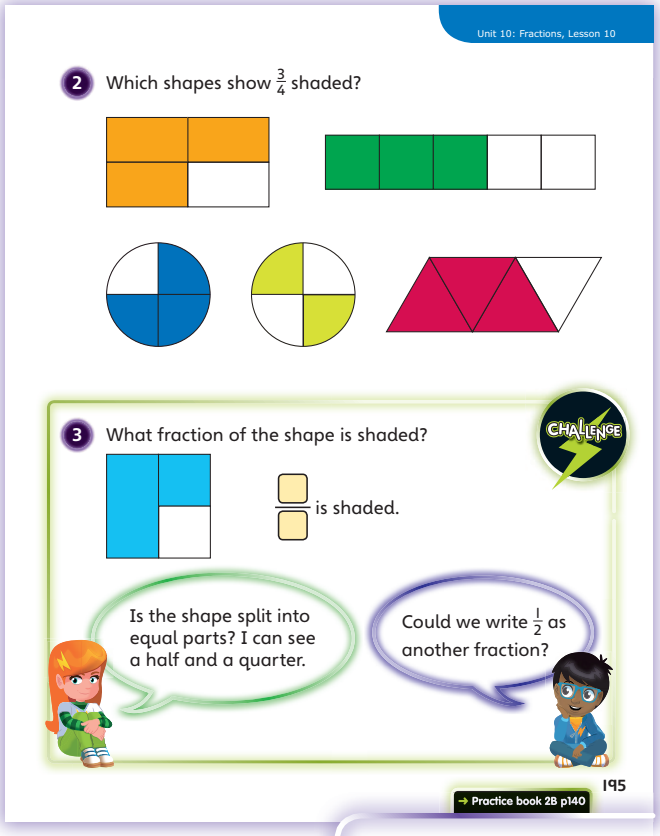
b) How many does he give to three people?

$\frac{3}{4}$ of 8 = ☐

He gives ☐ to three people.

194

PUPIL TEXTBOOK 2B PAGE 194



Unit 10: Fractions, Lesson 10

2 Which shapes show $\frac{3}{4}$ shaded?

3 What fraction of the shape is shaded?

☐/☐ is shaded.

Is the shape split into equal parts? I can see a half and a quarter.

Could we write $\frac{1}{2}$ as another fraction?

CHALLENGE

195

Practice book 2B p140

PUPIL TEXTBOOK 2B PAGE 195

Practice

WAYS OF WORKING Independent thinking

IN FOCUS The shapes in question 1 have been split into different numbers of equal parts for children to shade $\frac{3}{4}$ of. The triangle has been split into four parts, which is a familiar representation for quarters, but the rectangle has been split into eight parts, requiring children to see that a column of two squares is one of four equal parts.

Questions 2, 3 and 4 ask children to work out $\frac{1}{4}$ and $\frac{3}{4}$ of different numbers. The questions provide no specific sentence scaffolds prompting children to identify the numerator and the denominator, so you may need to guide children to explain what each number in the fraction represents.

STRENGTHEN Question 5 tells children that $\frac{3}{4}$ is 9 and shows a picture demonstrating this, and then asks them to identify $\frac{1}{4}$ and the whole. One of the quarters is empty, so ask children how they know the number of counters that should fill that quarter. Now cover the whole picture. How can children represent 9 as $\frac{3}{4}$ for themselves? Encourage them to draw four circles, share nine counters among three of the circles and draw a question mark in the last circle.

DEEPEN Give children a number such as 15 that cannot be divided into 4 and ask them to try to split that number of cubes into four equal groups. How do children cope when they reach the point when they do not have enough to continue sharing? Do children try to split the leftover cubes into halves and share those out equally? Guide children to make a link between the 4 times-table and the process of dividing by 4.

ASSESSMENT CHECKPOINT Question 4 does not provide a picture as a prompt or a guide. Do children need to draw 20 dots in order to help them work out $\frac{3}{4}$?

ANSWERS Answers for the **Practice** part of the lesson appear in the separate **Practice and Reflect answer guide**.

Reflect

WAYS OF WORKING Whole class

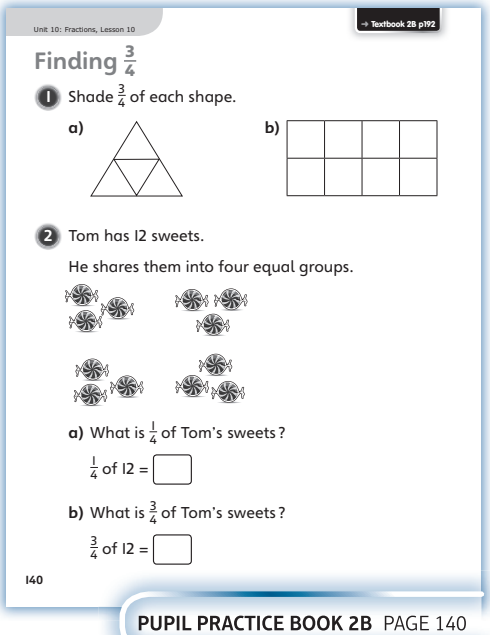
IN FOCUS Ask children to refer to the word list to help them form answers in their own words. Highlight the differences between the words by giving a false statement and asking children to agree or disagree with it. For example: *Non-unit fractions always have a 1 as the numerator. Unit fractions can only be a whole divided by 2. One half is not a unit fraction.*

ASSESSMENT CHECKPOINT Which words from the word list do children choose to use in their answers? Do children struggle more to explain similarities or differences between unit fractions and non-unit fractions? Can children come up with other examples of non-unit fractions?

ANSWERS Answers for the **Reflect** part of the lesson appear in the separate **Practice and Reflect answer guide**.

After the lesson

- Were children able to find $\frac{1}{4}$ of an amount that has more than four equal parts?
- Did children require a pictorial representation to help them work out a fraction? Did they draw one for themselves if no pictorial representations were provided?
- Did children remember that $\frac{1}{2}$ is equivalent to $\frac{2}{4}$ from the previous lesson and use this to help them in this lesson?


Unit 10: Fractions, Lesson 10

→ Textbook 2B p192

Finding $\frac{3}{4}$

1 Shade $\frac{3}{4}$ of each shape.

a) b)

2 Tom has 12 sweets.

He shares them into four equal groups.

a) What is $\frac{1}{4}$ of Tom's sweets?

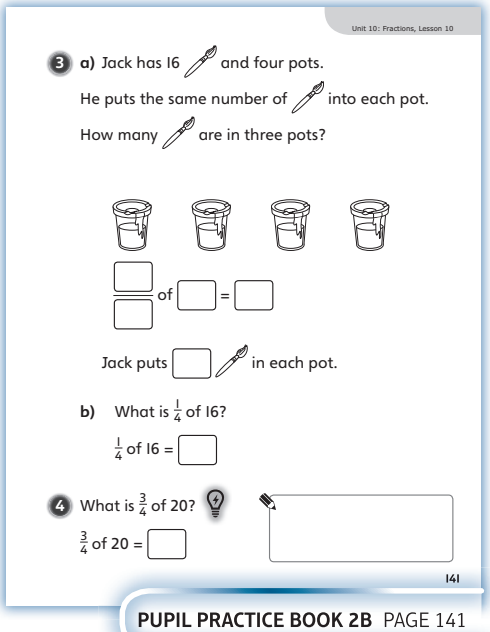
$\frac{1}{4}$ of 12 = ☐

b) What is $\frac{3}{4}$ of Tom's sweets?

$\frac{3}{4}$ of 12 = ☐

140

PUPIL PRACTICE BOOK 2B PAGE 140


Unit 10: Fractions, Lesson 10

3 a) Jack has 16 and four pots.

He puts the same number of into each pot.

How many are in three pots?

☐/☐ of ☐ = ☐

Jack puts ☐ in each pot.

b) What is $\frac{1}{4}$ of 16?

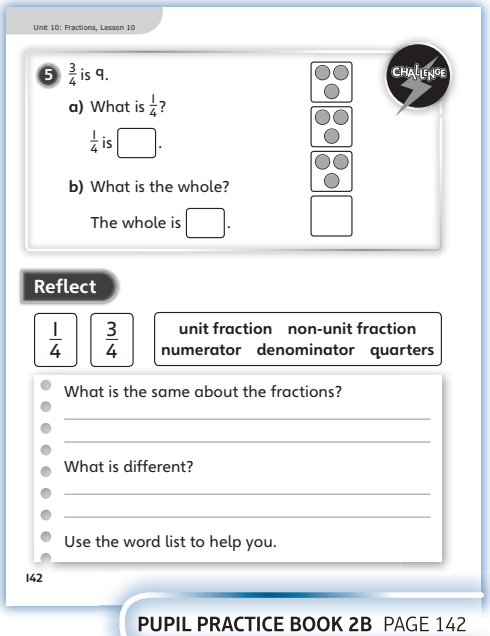
$\frac{1}{4}$ of 16 = ☐

4 What is $\frac{3}{4}$ of 20?

$\frac{3}{4}$ of 20 = ☐

141

PUPIL PRACTICE BOOK 2B PAGE 141


Unit 10: Fractions, Lesson 10

5 $\frac{3}{4}$ is 9.

a) What is $\frac{1}{4}$?

$\frac{1}{4}$ is ☐.

b) What is the whole?

The whole is ☐.

CHALLENGE

Reflect

$\frac{1}{4}$ $\frac{3}{4}$

unit fraction non-unit fraction
numerator denominator quarters

What is the same about the fractions?

What is different?

Use the word list to help you.

142

PUPIL PRACTICE BOOK 2B PAGE 142