Counting in halves

Learning focus

In this lesson, children will count forwards and backwards in halves with the aid of a number line.

Small steps

- Previous step: Understanding whole and parts
- **This step: Counting in halves**
- Next step: Counting in quarters

NATIONAL CURRICULUM LINKS

Year 2 Non-statutory guidance

Pupils should count in fractions up to 10, starting from any number.

ASSESSING MASTERY

Children can count forwards and backwards in halves up to and down from 10. They can match fractions of wholes and halves on the number line and fill in an incomplete number line with intervals of one half.

COMMON MISCONCEPTIONS

When counting backwards in halves, children may also count backwards one whole as well as one half. For example, they may count backwards from $3\frac{1}{2}$ to 2 or $2\frac{1}{2}$. Model this on a number line and by using physical resources representing halves that children can take away each time they count backwards. Ask:

- *When counting backwards in halves, when does the whole go down?*

STRENGTHENING UNDERSTANDING

Counting forwards and backwards in halves on a metre stick or a displayed number line will help children to rehearse the pattern of halves going forwards and backwards. To embed conceptual understanding, provide pictures of wholes and halves going up like a staircase along the number line.

GOING DEEPER

If children are confident counting forwards and backwards in halves from 0 to 10, can they do the same starting from one quarter? The intervals on the counting stick will be the same but will land on different numbers. Can children pick up the pattern of one quarter and three quarters instead of wholes and halves? Can children explain why they will never say one whole when counting forwards in halves from one quarter?

KEY LANGUAGE

In lesson: halves, whole, parts, count up, count down, total, number line, next, last, how many, values, pattern

Other language to be used by the teacher: intervals, skip count, even, odd

STRUCTURES AND REPRESENTATIONS

Number line

RESOURCES

Mandatory: blank number lines, counting sticks or metre sticks, different coloured highlighters

Optional: physical resources to represent halves such as a halved apple, a halved circle or a halved chocolate bar

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

Before you teach

- Can children recall facts such as $\frac{1}{2} = \frac{2}{4}$ or $\frac{4}{4}$ = one whole?
- Are children confident when skip counting in whole numbers?

Discover

WAYS OF WORKING Pair work

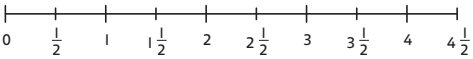
ASK

- Question 1 a): *How many apples is each child holding?*
- Question 1 b): *How many children represent one apple?*

IN FOCUS Can children count in halves to work out how many whole apples are in the picture? If children know that $\frac{2}{2}$ is one whole, you can lead them to the conclusion that two children make one whole apple.

ANSWERS

Question 1 a):



Question 1 b): There are four whole apples. There is also $\frac{1}{2}$ an apple. There are $4\frac{1}{2}$ apples in total.

Unit 10: Fractions, Lesson 13

Counting in halves

Discover

1 a) Count in halves to see how many apples there are.

b) How many whole apples are there?

How many extra parts?

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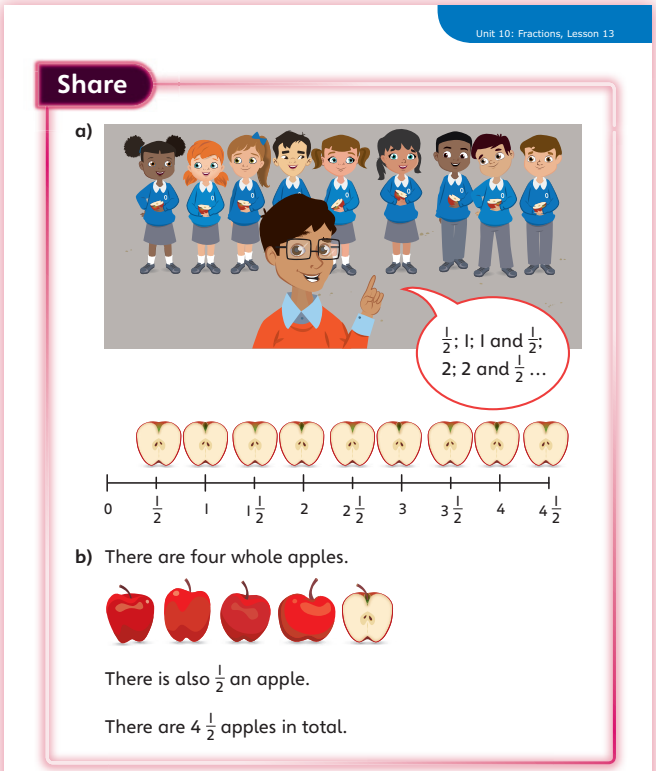
Share

WAYS OF WORKING Whole class teacher led

ASK

- Question 1 a): *Do you notice a pattern when counting forwards in halves?*
- Question 1 a): *What words get repeated? Why is that?*

IN FOCUS Use a counting stick or metre stick to count how many apples each child has. Pictures can be added to the counting stick or on the board to make it clear when there is a half apple and when there is a whole apple.



Unit 10: Fractions, Lesson 13

Share

a)

$\frac{1}{2}$; 1; 1 and $\frac{1}{2}$; 2; 2 and $\frac{1}{2}$ ...

0 $\frac{1}{2}$ 1 $1\frac{1}{2}$ 2 $2\frac{1}{2}$ 3 $3\frac{1}{2}$ 4 $4\frac{1}{2}$

b) There are four whole apples.

There is also $\frac{1}{2}$ an apple.

There are $4\frac{1}{2}$ apples in total.

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Think together

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

ASK

- Question 1 *What will be the next point on the number line? How do you know?*
- Question 1 *Could you count up in halves starting with a different number?*
- Question 3 *Is there a similar pattern when counting backwards in halves as there is when counting forwards in halves?*

IN FOCUS Model question 3 a) using a marked number line. Use a different coloured highlighter to represent Noah and Di. Mark in both colours starting at either end of the number line and jumping towards the centre to show what number Noah and Di would both say together. Repeat with new number lines starting from 8 and 7 for questions 3 b) and 3 c).

STRENGTHEN Create a number line with intervals of halves. Ask children to skip count forwards and backwards. Cover up different parts of the number line and ask children to skip count, calling out the covered numbers as children count. Keep changing the starting number from which children count forwards or backwards.

DEEPEN Provide a blank number line with every whole number marked by a longer line as in question 2. Ask children to take turns to write a whole or a whole and a half in the middle of the number line. Ask children what number will be either side of it and how they know. Further extend this question by asking: *How many jumps to get to ___?*

ASSESSMENT CHECKPOINT When marking numbers on the number lines in questions 1 and 2, do children have to mark all of the values in order to do this? Do children count forwards from 0 for each value or do they count on from intervals that they have already marked?

Do children struggle more when counting backwards in halves than when counting forwards? Do they skip count backwards by one whole as well as one half?

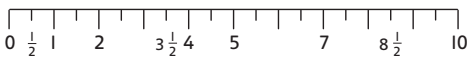
In question 3, do children spot that half of an even number is a whole number and half of an odd number always has a half?

ANSWERS

Question 1 a): The next number will be 2.

Question 1 b): The last number is 5.

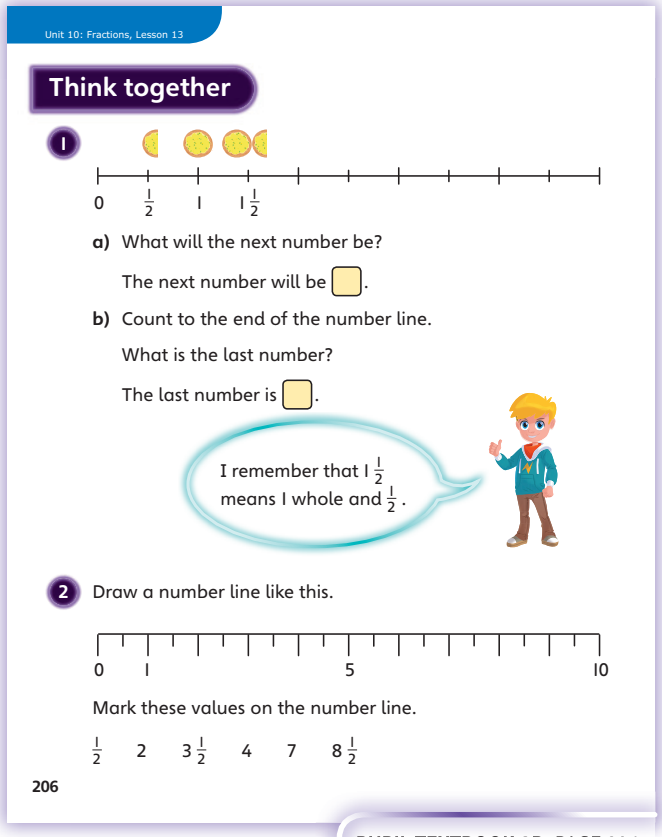
Question 2:



Question 3 a): They will say $4\frac{1}{2}$ together.

Question 3 b): 4

Question 3 c): $3\frac{1}{2}$



Unit 10: Fractions, Lesson 13

Think together

1

a) What will the next number be?

The next number will be ☐.

b) Count to the end of the number line.

What is the last number?

The last number is ☐.

2 Draw a number line like this.

Mark these values on the number line.

$\frac{1}{2}$ 2 $3\frac{1}{2}$ 4 7 $8\frac{1}{2}$

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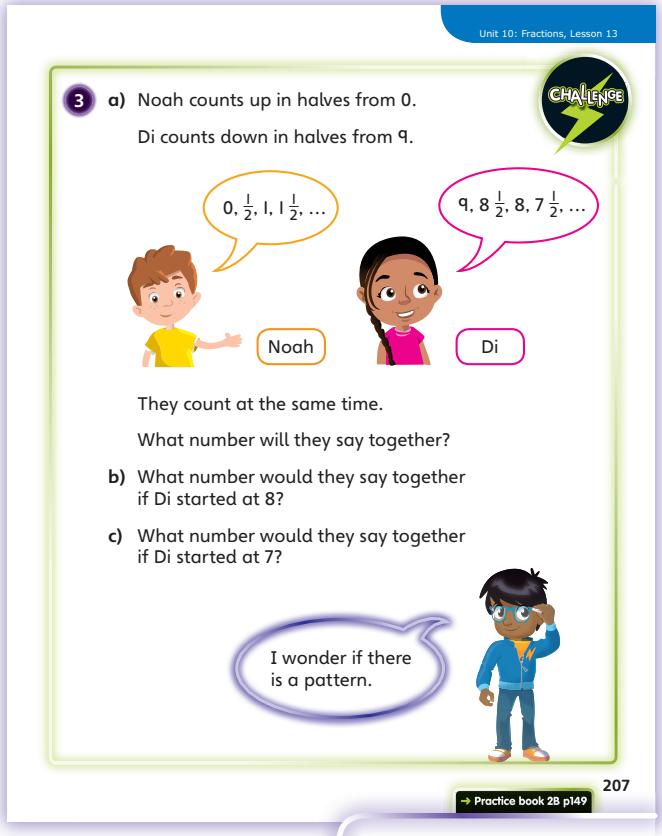

Unit 10: Fractions, Lesson 13

3 a) Noah counts up in halves from 0.

Di counts down in halves from 9.

They count at the same time.

What number will they say together?

b) What number would they say together if Di started at 8?

c) What number would they say together if Di started at 7?

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Practice

WAYS OF WORKING Independent thinking

IN FOCUS Question 1 asks children to complete the sentence scaffolds with the whole and fraction shown in the picture and then circle the number that comes next. Question 1 a) prompts the answer as the outline of the next half is shown, whereas question 1 b) requires children to visualise the outline of the next half of a shape.

Question 3 requires children to draw their own pictorial representation of the number. Do children attempt to draw the half in proportion to the whole? Prompt children to think about how they could represent 0. Some children may want to draw an outline, whereas others may prefer to leave it blank.

STRENGTHEN Children have partly drawn counting up in halves using sweets as a prompt. Can they draw their own number line, drawing a different pictorial representation to represent each half and whole? It could be a different shape, such as an apple, or it could be a length model that gets taller each time, perhaps using a pencil as a benchmark.

DEEPEN Question 5 can be completed alongside a number line marked with half intervals. If children are confident counting forwards and backwards in halves, ask what is $1\frac{1}{2}$ after or before a certain number, such as: *What is $1\frac{1}{2}$ after 4? What is $1\frac{1}{2}$ before 4?* Vary the starting number so that children work from either whole numbers or numbers with a half.

ASSESSMENT CHECKPOINT In question 1, do children automatically know that the next number is 2 or do they have to shade in the blank half in the picture to check? Question 1 b) does not provide a shape to shade in, requiring children to either draw it themselves or visualise it to work out what comes next.

In questions 2 b) and c), do children count backwards to fill in missing values higher up on the number line?

If children draw a picture to represent 0 in question 3, do they draw an outline of one whole sweet or of one half sweet?

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

Reflect

WAYS OF WORKING Pair work

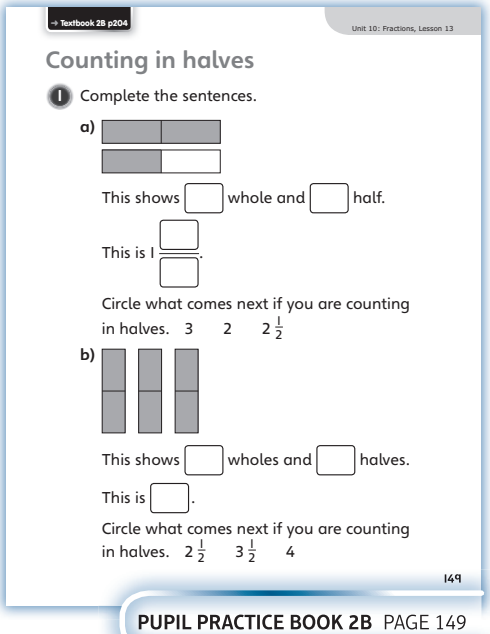
IN FOCUS This part of the lesson asks children to explain in their own words how to count on one half from a whole number. Encourage children to refer to the number line when explaining or to draw their own model to illustrate their explanation.

ASSESSMENT CHECKPOINT Do children use jumps on a number line to explain their thinking or do they draw a series of boxes that have been halved with a dotted line down the middle? Are children confident that the next number will have the same whole number because not enough has been added to cross over to the next whole number?

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

After the lesson

- Did children become familiar with the pattern of counting up in halves?
- Could children fill out a blank number line in halves?
- Were children able to count backwards as well as forwards in halves?



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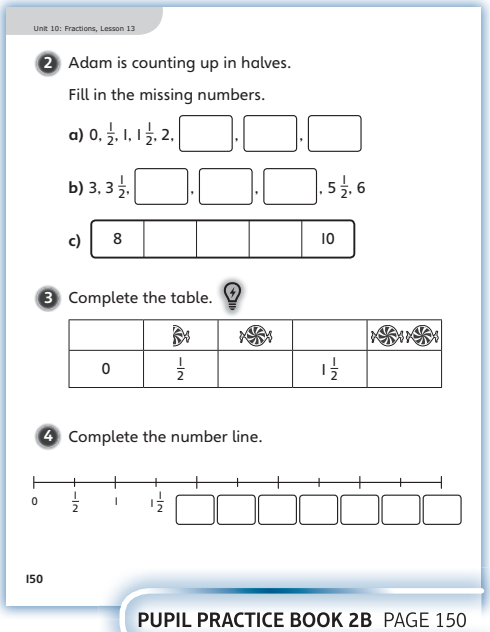

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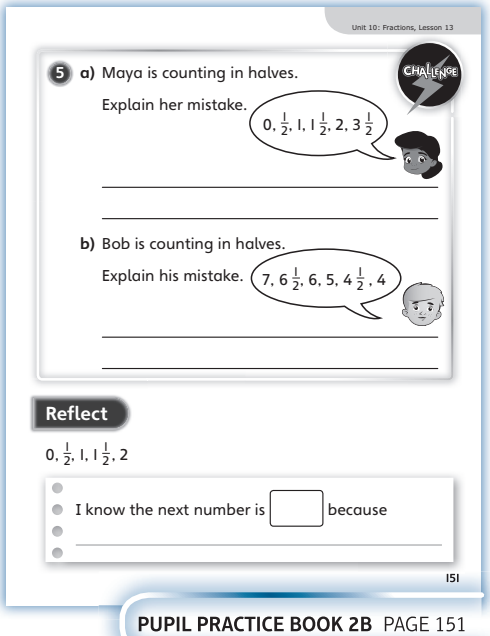

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