Spotlight 5: a learning check

Has difficulty, when appropriate, interpreting a remainder as a fraction, for example $16 \div 3 = 5\frac{1}{3}$

Opportunity for: explaining and discussing

Double-decker pizza

Time 5–20 minutes

Resources

- Number cards 1–15 or to suit your children (Resource sheets 1 and 2)
- ÷ and = cards (Resource sheet 8)
- Plastic fraction pieces or *Fractions* (Resource sheet 42)
- At least one other child

Check: does the child use key vocabulary?

remainder	half
left over	quarter
fraction	three-quarters
divided by	thirds
whole one	two-thirds

Teaching activity

'This game, **Double-decker pizza**, will help you to get better at making remainders into fractions when you work out division calculations. In this game you must remember to choose two numbers that will give you a remainder, otherwise you won't be able to have slices to make up your pizza!'

Choose number cards to suit your children, for example 2, 3 and 4, with cards 8–15.

Put the cards on the table face up in two groups: the 2, 3 and 4 together, and 8–15 on the other side of the table.

Put the fraction pieces on the table, face up. If you use the resource sheet you will need to make several copies of it and cut up the fraction pieces.

The game can be played cooperatively, with pairs trying to make two pizzas.

How to play

1. The players take turns to pick up two cards, one card from 2–4 to show how many to divide by (or the size of step on the number line) and the other from the 8–15 cards to show the number to put on the right-hand end of the number line.

    14 ÷ 3

    0 ——————————————— 14

2. The player reads out their number sentence: 'Fourteen divided by three.'

3. Everyone then works out the calculation, for example on their own empty number line.

4. The player then says their answer – in this case, four remainder two – and makes the remainder into a fraction – in this case two-thirds.

5. If everyone agrees that they are right, the player will win a two-thirds fraction piece.

6. The cards are put back on the table and the other player chooses two more cards – at least one of which must be different from the first player's. So if a player has just divided by three, the new player must divide by either two or four.

7. If children are competing, the winner is the first player to make a whole pizza (for a 5-minute game with two players). For a longer game, the winner needs to make two pizzas to make a double-decker.

? **Which fraction do you need to make to complete your pizza? So which number cards would be good to choose?**

? **Can you explain to me how you knew to choose those two numbers to complete your pizza?**

? **Could you have chosen different cards to get the same fraction answer?**

? **Is it always possible to make a whole pizza in two goes?**

? **How do you know?**

Variations

- Play with different number cards, for example a complete set of 1–20 or 30. For this game you need to have lots of paper circles and make your own fraction piece of pizza if it isn't on the resource sheet or in your plastic fraction set. (For example, if you divide by five you might need several fifths of circles.)

- Play with just a small selection of cards but have them face down (but still in the two sets). (This involves more luck but gives less opportunity to use reasoning to choose numbers to complete a pizza. This might give a child who is having more difficulty with the game a greater chance of winning. Allow at least 15 minutes for this game.)

? **Why can you never make a whole pizza in one go with these cards?**

? **Which number cards would you need to make a whole pizza in one go?** *(With two sets of cards so you could make, for example, 2 ÷ 2 = 1 so you wouldn't be making a fraction.)*

? **Using any numbers up to a hundred, write five calculations that would give the same size fraction part in the answer.**

Learning outcomes

By the end of this set of activities, children should be able to:

- tackle related learning tasks with increased motivation and confidence;
- use and understand connected mathematical vocabulary;
- interpret a remainder as a fraction;
- interpret 'divide by' as a grouping calculation;
- work out a grouping calculation on a number line and show and name the fraction part.