



Maths

Multiplication and Division

Juice



Aim

- I can solve scaling problems.

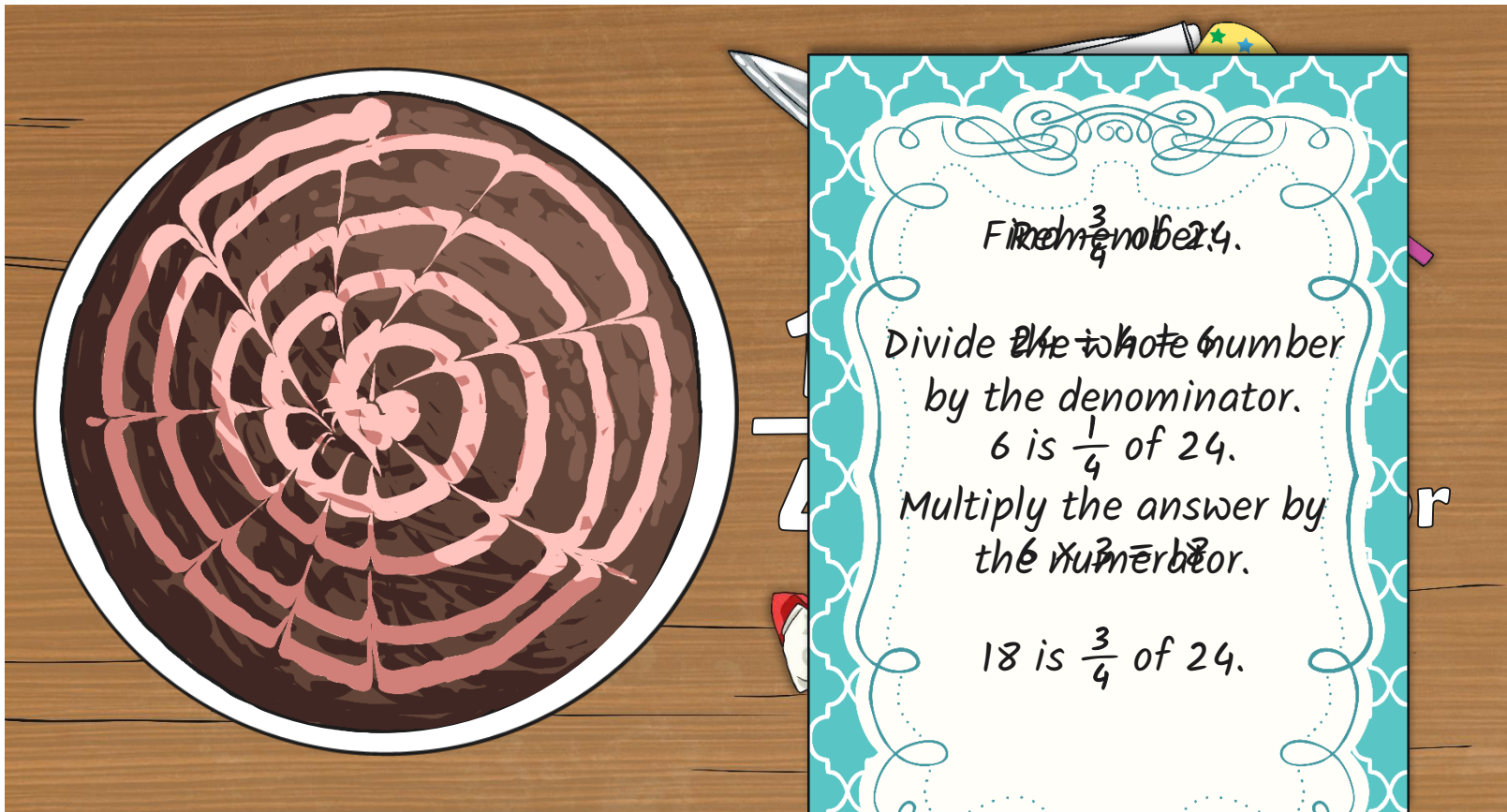
Success Criteria

- I know that fractions represent parts of a whole.
- I can use fractions to scale quantities up and down.

Fantastic Fractions!



Work with a partner to calculate the fractions on the cards.



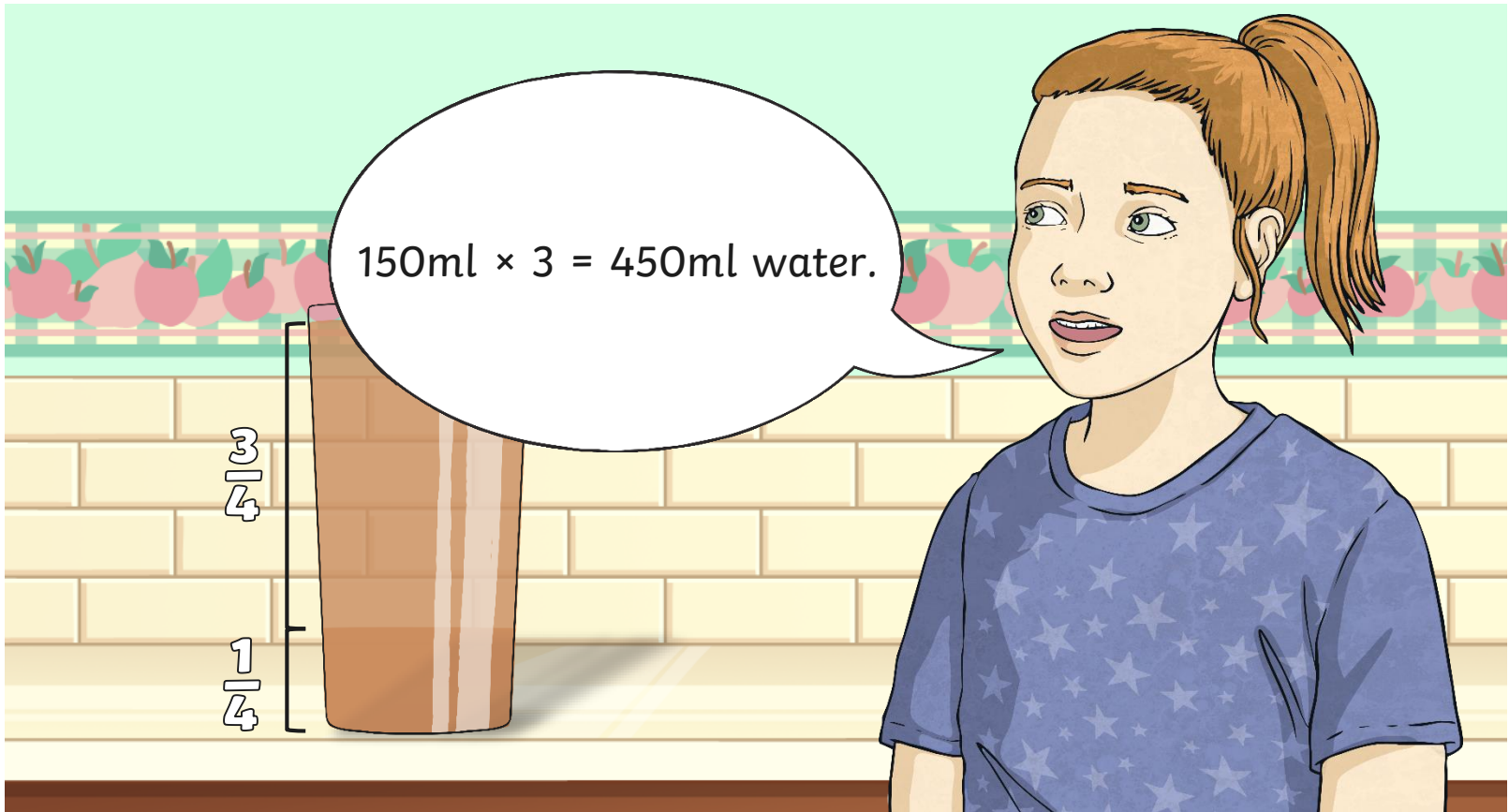
Proportion

On my bottle of squash, it says dilute one part of concentrate to three parts of water.

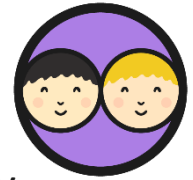


Proportion

If the whole glass contains 600ml of liquid, how much of it is water and how much is concentrate?



Calculating Juice Mixes



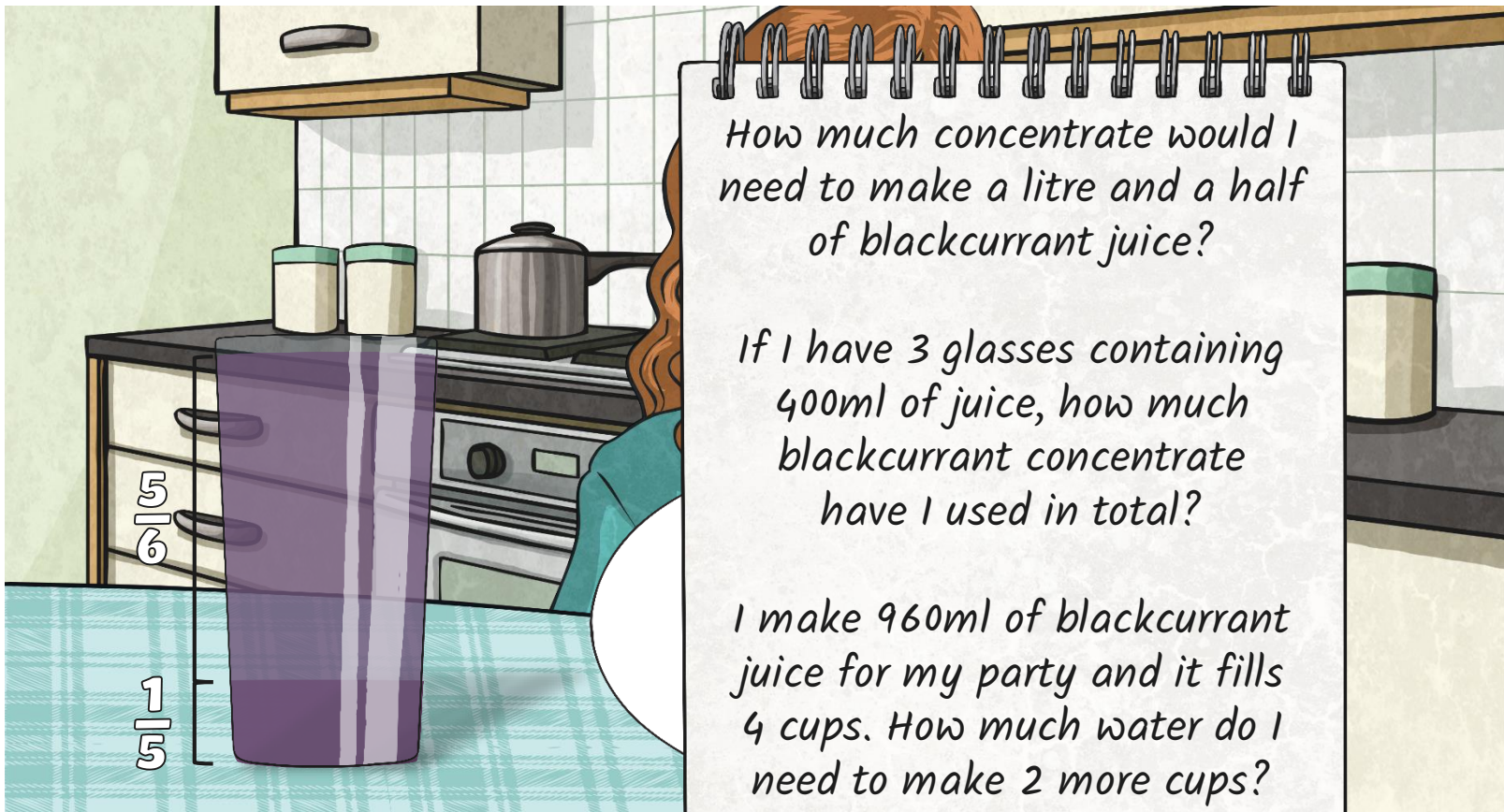
We can use the proportion of squash we add to work out how much water we will need to make the juice. Can you fill in the gaps?

Proportions	Amount of squash	Amount of water
$\frac{3}{10}$ squash and $\frac{7}{10}$ water	720ml is $\frac{4}{6}$ and we need to find $\frac{2}{6}$. $720 \div 4 = 180\text{ml}$ Then 125ml need $\frac{2}{6}$ so we need to multiply 180ml by 2. $180 \times 2 = 360\text{ml}$	84ml is $\frac{3}{10}$ 125ml is $\frac{5}{10}$ and we need and we need to find $\frac{7}{10}$: to find $\frac{7}{10}$: 720ml $84\text{ml} \div 3 = 28\text{ml}$ $125\text{ml} \times 4$ $= 500\text{ml}$ $28\text{ml} \times 7 = 196\text{ml}$

Scaling Questions



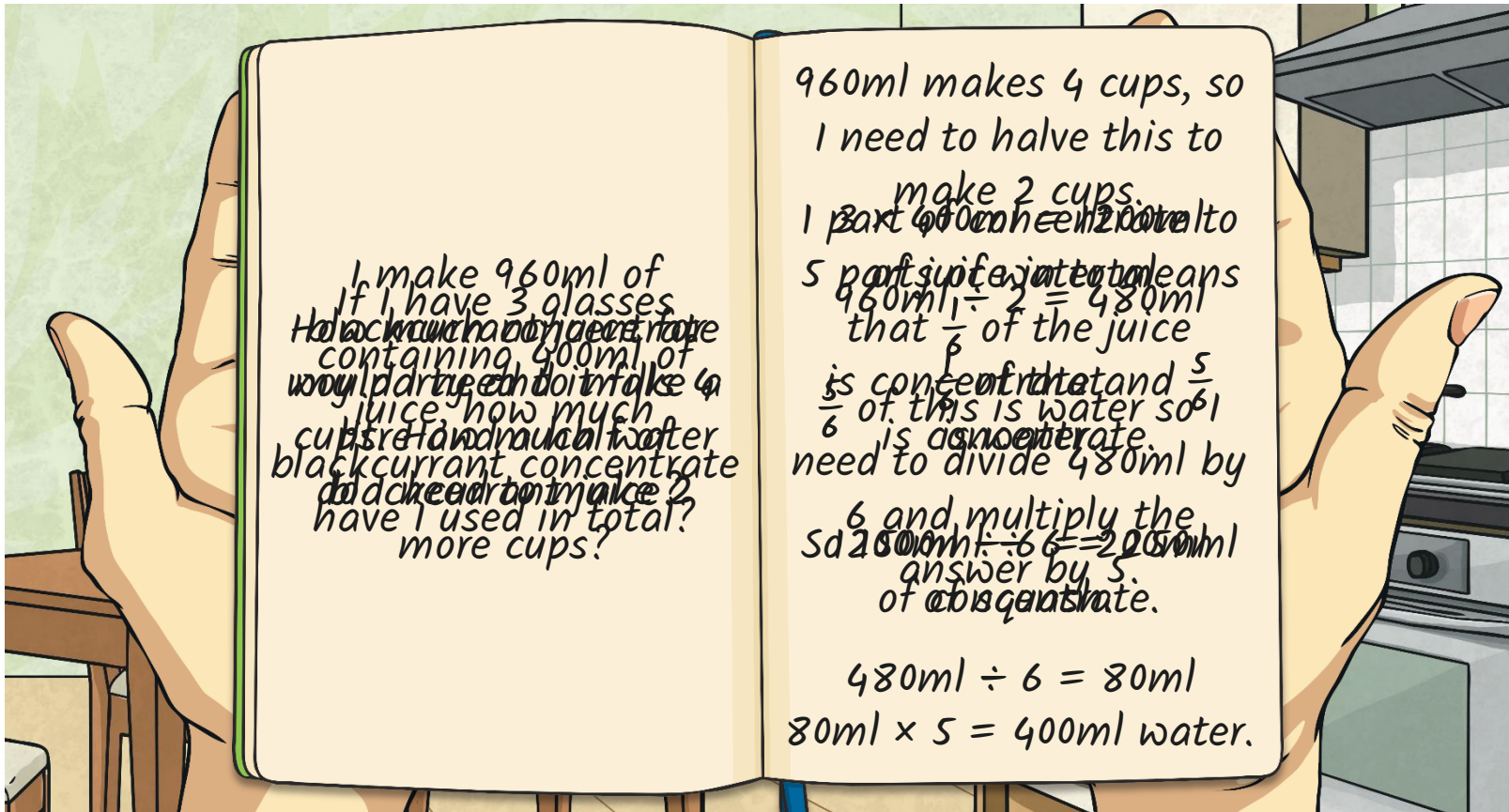
If we know the proportion of concentrate to water, we can scale the quantities of each up or down to make the correct amount of juice.



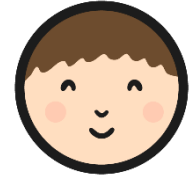
Scaling Answers



If we know the proportion of concentrate to water, we can scale the quantities of each up or down to make the correct amount of juice.



Juice Activities



Use your marvellous maths skills to complete these activities:



Juice

I can solve scaling problems.

How do you like your juice? Weak or strong?

We are going to make the perfect juice by investigating different combinations of concentrate and water.

First, we will try $\frac{2}{5}$ concentrate and $\frac{3}{5}$ water.

- 1) Pour 112ml of concentrate into your cup. How much water do you need to add?
_____ ml

How much water would you need if you used 1252ml of concentrate?
_____ ml

Is $\frac{2}{5}$ concentrate and $\frac{3}{5}$ water too strong or too weak?

- 2) Make and try these combinations.

Combination	Amount of Concentrate	Amount of Water	Rating
$\frac{2}{5}$ concentrate and $\frac{3}{5}$ water	225ml		☆☆☆☆
$\frac{2}{5}$ concentrate and $\frac{3}{5}$ water	318ml		☆☆☆☆
$\frac{3}{7}$ concentrate and $\frac{4}{7}$ water		560ml	☆☆☆☆

- 3) Choose your favourite combination of concentrate and water.

If the recipe was for 8 people, how much concentrate and water would you need?

- a) 16 people _____ ml
b) 1 person _____ ml
c) 100 people _____ ml

Round your answers to the nearest millilitre.



Juice

I can solve scaling problems.

How do you like your juice? Weak or strong?

We are going to make the perfect juice by investigating different combinations of concentrate and water.

First, we will try $\frac{1}{3}$ concentrate and $\frac{2}{3}$ water.

- 1) Pour 110ml of concentrate into your cup. How much water do you need to add?
_____ ml

How much water would you need if you used 552ml of concentrate?
_____ ml

Is $\frac{1}{3}$ concentrate and $\frac{2}{3}$ water too strong or too weak?

- 2) Make and try these combinations.

Combination	Amount of Concentrate	Amount of Water	Rating
$\frac{2}{6}$ concentrate and $\frac{4}{6}$ water	120ml		☆☆☆☆
$\frac{2}{5}$ concentrate and $\frac{3}{5}$ water	320ml		☆☆☆☆
$\frac{3}{7}$ concentrate and $\frac{4}{7}$ water		560ml	☆☆☆☆

- 3) Choose your favourite combination of concentrate and water.

If the recipe was for four people, how much concentrate and water would you need?

- a) 8 people _____ ml
b) 1 person _____ ml
c) 25 people _____ ml



Juice

I can solve scaling problems.

How do you like your juice? Weak or strong?

We are going to make the perfect juice by investigating different combinations of concentrate and water.

First, we will try $\frac{1}{4}$ concentrate and $\frac{3}{4}$ water.

- 1) Pour 100ml of concentrate into your cup. How much water do you need to add?
_____ ml

How much water would you need if you used 550ml of concentrate?
_____ ml

Is $\frac{1}{4}$ concentrate and $\frac{3}{4}$ water too strong or too weak?

- 2) Make and try these combinations.

Combination	Amount of Concentrate	Amount of Water	Rating
$\frac{1}{5}$ concentrate and $\frac{4}{5}$ water	125ml		☆☆☆☆☆
$\frac{1}{4}$ concentrate and $\frac{3}{4}$ water	72ml		☆☆☆☆☆
$\frac{1}{3}$ concentrate and $\frac{2}{3}$ water	84ml		☆☆☆☆☆

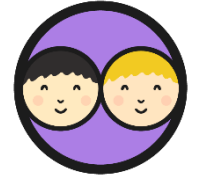
- 3) Choose your favourite combination of concentrate and water.

If the recipe was for two people, how much concentrate and water would you need for:

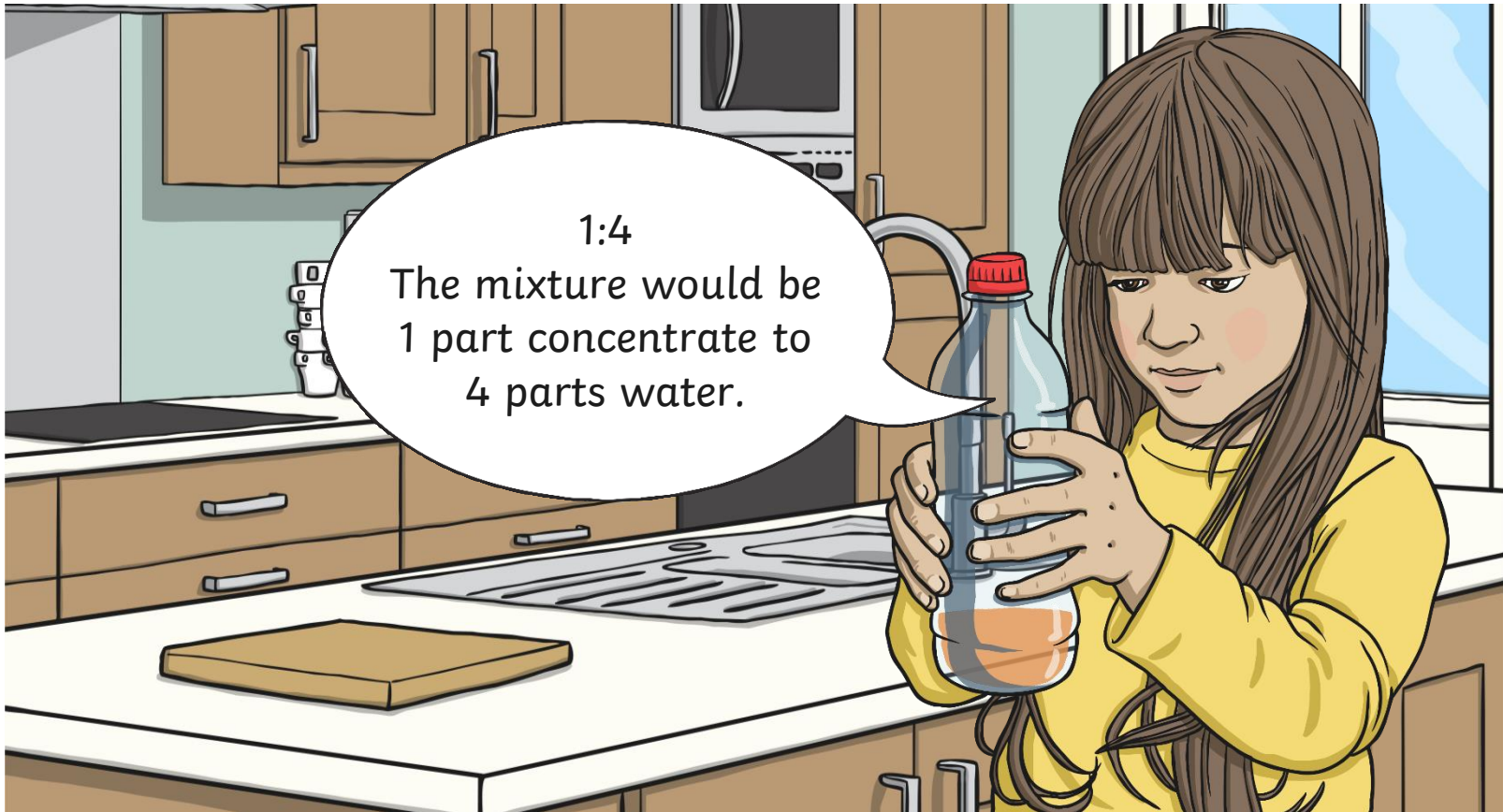
- a) 1 person _____ ml
b) 4 people _____ ml
c) 10 people _____ ml



Ratios



Another way to write 'one part concentrate to five parts water' would be 1:5.



Aim



- I can solve scaling problems.

Success Criteria

- I know that fractions represent parts of a whole.
- I can use fractions to scale quantities up and down.

