

Maths

Multiplication and Division



Maths | Year 5 | Multiplication and Division | Problem Solving Scaling and Rates | Lesson 1 of 3: Juice

Juice



Aim

• I can solve scaling problems.

Success Criteria

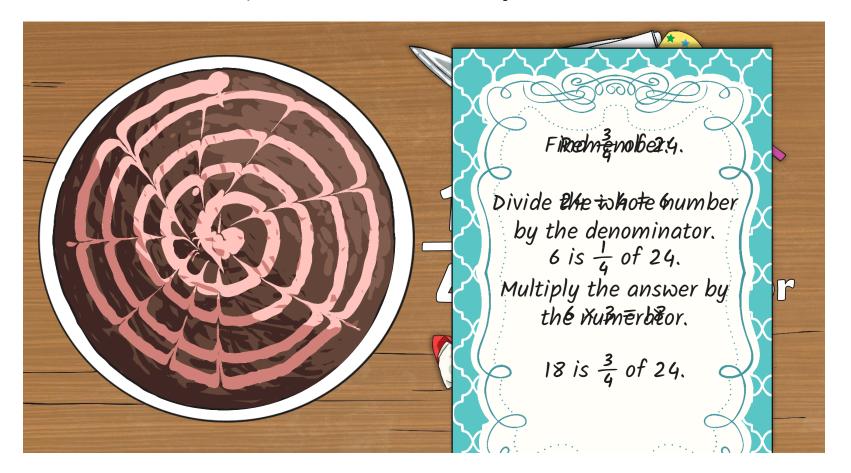
- I know that fractions represent parts of a whole.
- I can use fractions to scale quantities up and down.



Fantastic Fractions!



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





Proportion

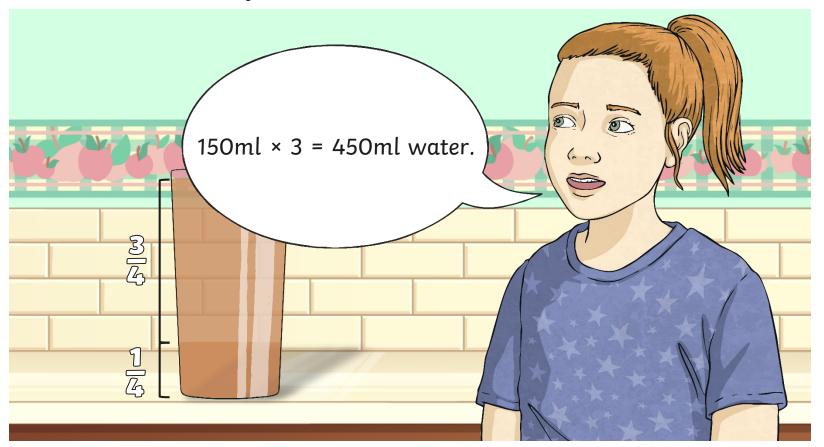
On my bottle of squash, it says dilute one part of concentrate to three parts of water.





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	
3 15 squash and 4 15 water	720ml is $\frac{4}{6}$ and we need to find $\frac{2}{6}$. 720 ÷ 4 = 180ml Then 325mal need $\frac{2}{6}$ so we need to multiply 180ml by 2. 180 × 2 = 360ml	84ml is $\frac{3}{10}$ 125ml is $\frac{10}{10}$ and we need and we need to find $\frac{10}{10}$: 720ml ⁵ 84ml ÷ 3 = 28ml 125ml × 4 28ml × 7 = 196ml	



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.



How much concentrate would I need to make a litre and a half of blackcurrant juice?

If I have 3 glasses containing 400ml of juice, how much blackcurrant concentrate have I used in total?

I make 960ml of blackcurrant juice for my party and it fills 4 cups. How much water do I need to make 2 more cups?



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.

960ml makes 4 cups, so I need to halve this to Make 2 cups. I Bart Goon Een 2 normalto 5 pontsyntexiatentonleans that z of the juice need to d omi bu kate 6 and multiply the Sd**250000 H: :6**6==2**9**0000001 used in ta more cubs of absorbute. $480ml \div 6 = 80ml$ 80ml × 5 = 400ml water.



Juice Activities

Use your marvellous maths skills to complete these activities:

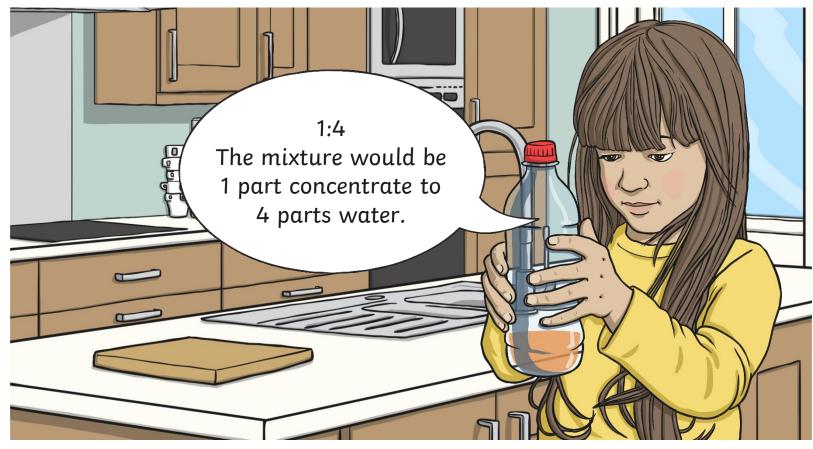
Juice	* Juice	* Juice	
I can solve scaling problems.	I can solve scaling problems.	I can solve scaling problems.	
 How do you like your juice? Weak or strong? We are going to make the perfect juice by investigating different combinations of and water. First, we will try 2/6 concentrate and 4/6 water. 1) Pour 112ml of concentrate into your cup. How much water do you need to a mi How much water would you need if you used 1252ml of concentrate? ml Is 2/6 concentrate and 4/6 water too strong or too weak? 	 How do you like your juice? Weak or strong? We are going to make the perfect juice by investigating different combinations of and water. First, we will try 1/2 concentrate and 4/2 water. 1) Pour 110ml of concentrate into your cup. How much water do you need to at ml How much water would you need if you used 552ml of concentrate? ml Is 1/2 concentrate and 4/2 water too strong or too weak? 	 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 1/4 concentrate and 3/4 water. 1) Pour 100ml of concentrate into your cup. How much water do you need to add? mi How much water would you need if you used 550ml of concentrate? ml Is 1/4 concentrate and 3/4 water too strong or too weak? 	
2) Make and try these combinations.	2) Make and try these combinations.	2) Make and try these combinations.	
Combination Amount of Concentrate Amount of Water Rati	Combination Amount of Concentrate Amount of Water Rati	Combination Amount of Concentrate Amount of Water Rating	
$\frac{2}{5}$ concentrate 225ml $\Box \Box \Box \Box$	$\frac{\frac{2}{6}}{4}$ concentrate 120ml $2 \frac{1}{6}$ the second	1 concentrate and $\frac{4}{9}$ water 125ml	
2 concentrate 318ml 公会会	$\frac{2}{8}$ concentrate 320ml \therefore	1 concentrate and ⁵ / ₆ water 72ml	
$\begin{array}{c} \frac{3}{7} \text{ concentrate} \\ \text{ and } \frac{4}{7} \text{ water} \end{array} \qquad $	$\frac{\frac{3}{7}}{\text{and } \frac{4}{7} \text{ water}} 560 \text{ml} \qquad \text{if } \%\%$	1 concentrate and 6 ywater 84ml 公公公公公	
 3) Choose your favourite combination of concentrate and water. If the recipe was for 8 people, how much concentrate and water would you n a) 16 people ml b) 1 person ml c) 100 people ml Round your answers to the nearest millilitre. 	 3) Choose your favourite combination of concentrate and water. If the recipe was for four people, how much concentrate and water would you a) 8 people ml b) 1 person ml c) 25 people ml 	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.





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