

Equivalent Ratios

I am learning to find equivalent ratios by identifying common whole number factors.

Examples:

1. Carina works in a petrol station, one day she counts that she has filled 72 cars with Regular and 48 with Super. As a ratio this is 72:48. This ratio can be written in its simplest form as 3:2 .
2. Making condensed soup asks for 1 can of soup, 3 cans of water and 2 cans of milk. The ratio for this is 1:3:2. If I had 2 cans of soup, the equivalent ratio is 2:6:4, so I would need 6 cans of water and 4 cans of milk.

Exercise 1 - Equivalent Ratios

Write 2 equivalent ratios for each of the following - one with higher numbers, one with lower numbers.

1. 6 : 9
2. 8 : 24
3. 20 : 12
4. 9 : 12 : 9
5. 28 : 35
6. 14 : 26
7. 24 : 16 : 32
8. 9 : 36

Exercise 2 - Write these ratios in their simplest form

1. 2 : 8
2. 4 : 16
3. 5 : 15 : 20
4. 10 : 90
5. 35 : 45
6. 16 : 32 : 64
7. 54 : 63
8. 18 : 45 : 63
9. 45 : 63
10. $1\frac{1}{2} : 4\frac{1}{2}$
11. 120 : 250
12. 0.6 : 0.35
13. $1\frac{1}{5} : 1\frac{1}{3}$
14. 0.28 : 0.21

Word Problems

1. A student notices that in the classroom 14 boys are wearing jerseys and 10 are not. Write this as a ratio in its simplest form.
2. A 500mL bottle of cordial is diluted with 1500mL of water. Write the ratio of cordial to water in its simplest form.
3. On a Hawaiian pizza the ratio of ham to pineapple is 3:2. If there is 60g of ham, calculate the weight of pineapple on the pizza.

4. A map uses a scale of 1cm : 10km. The distance between two towns is measured on the map as 5.3cm, how far apart are the towns in real life.

Expressing Ratios as Fractions

I am learning to express ratios as fractions.

Examples:

1. A school has boys and girls in the ratio 4:5. There are 9 parts altogether.

$$\frac{4}{9} \qquad \frac{5}{9}$$

This means that $\frac{4}{9}$ of the school are boys and $\frac{5}{9}$ of the class are girls.

2. There are 50 cows and 150 chickens on Mr Brown's farm. The ratio of

cows to chickens is 50:150 or 1:3 in its simplest form. Altogether $\frac{1}{4}$ of

the animals on Mr Brown's farm are cows and $\frac{3}{4}$ of the animals are chickens.

Exercise 1

Express the first number in each ratio as a fraction of the total.

1. 2 : 3 2. 1 : 6 3. 5 : 4 4. 3 : 4 : 3
5. 4 : 11 6. 13 : 27 7. 7 : 1 : 32 8. 15 : 38

Exercise 2

Express the first number in each ratio as a fraction of the total, in its simplest form.

1. 3 : 9 2. 4 : 16 3. 7 : 49 4. 9 : 81
5. 35 : 45 6. 16 : 32 7. 54 : 63 8. 18 : 45
9. 120 : 250 10. 12 : 6 : 24 11. 16 : 4 : 54 12. 0.6 : 0.35
13. 18 : 63 : 9 14. 0.28 : 0.21

Word Problems

1. The ratio of coloured jellybeans to black jellybeans in a bag is 14 : 3
What fraction of the jellybeans are black?
2. In the staff carpark the ratio of grey cars to white cars to others is 2 : 3 : 6. What fraction of the cars in the carpark are white?
3. The teacher notices that in the class 6 boys forgot their homework and 18 handed it in.

- a. Express this as a ratio.
- b. What fraction of the class forgot their homework?

Sharing in Ratios

I am learning to share amounts in a given ratio.

Example:

Divide \$1200 between two people in the ratio 4:2.

Altogether there are 6 parts to the ratio.

The first person would receive $\frac{4}{6}$, or $\frac{2}{3}$ of the money. $\frac{2}{3} \times 1200 = \800

The second person would receive $\frac{2}{6}$, or $\frac{1}{3}$ of the money. $\frac{1}{3} \times 1200 = \400
Show your working out;

1. Share \$50 in the ratio 2:3
2. An 88m fence is divided into sections in the ratio 1:3. How long is each section?
3. 250 people are eating at a restaurant. The ratio of people dining outdoors to people dining indoors is 1:4. How many people are dining indoors?
4. For every lolly that June eats her older brother Harry eats 2 lollies. For each lolly Harry eats his older sister eats 3 lollies. They eat a whole bag of lollies. If Harry eats 24 lollies how many lollies were there in the bag?
5.
 - a) Mariana studies odds. She chooses a number that will turn up when a dice is thrown. She reasons correctly that the odds she will lose are 5 : 1. Explain her reasoning.
 - b) At the Casino they tell Mariana that, if she bets \$5 on choosing the correct number on a dice, they will give her \$23 if she is correct. Explain why Mariana would be foolish to accept this betting situation.
6. Josh and Cullen buy a Playstation 2, Josh contributing \$120 and Cullen \$180.
 - a) Express this as a ratio in its simplest form.
 - b) Once tired of it, they sell the Playstation 2 on E-Bay for \$60. How much of the \$60 should they each receive?
7. A mixed Indoor Netball team decide to buy a gift for their coach at the end of the year. Boys and girls contributed in the ratio 5:4. If the gift cost \$270, how much did the girls contribute?

Expressing Ratios as Percentages

I am learning to express ratios as percentages.

Examples:

1. Pete's Pizzas finds that the ratio of pizzas ordered with pineapple to pizzas ordered without pineapple is 1:4. There are 5 parts altogether.

This means that $\frac{1}{5}$ of the pizzas sold have pineapple. $\frac{1}{5}$ as a percentage

$$\frac{1}{5} \times \frac{100}{1} = 20\%.$$

is 20% of the pizzas ordered have pineapple.

2. An oil / petrol mix is required for a line trimmer in the ratio of 1:39. Oil

is therefore $\frac{1}{40}$ of the mix. As a percentage $\frac{1}{40} \times \frac{100}{1} = 2.5\%$ of the mixture is oil.

Exercise 1

Express the first number in each ratio as a percentage of the total.

1. 1 : 4 2. 4 : 5 3. 2 : 3 4. 3 : 4 : 3
5. 15 : 30 6. 5 : 3 7. 17 : 1 : 32 8. 15 : 28 : 17

Exercise 2

Express the first number in each ratio as a percentage of the total. Estimate where appropriate.

1. 3 : 9 2. 4 : 16 3. 7 : 49 4. 9 : 81
5. 35 : 45 6. 16 : 32 7. 54 : 63 8. 18 : 45
9. 120 : 250 10. 12 : 6 : 24 11. 16 : 4 : 54 12. 0.6 : 0.35
13. 18 : 63 : 9 14. 0.28 : 0.21

Word Problems

- The ratio of red marbles to black marbles in a bag is 18 : 7. What percentage of the marbles are black?
- In a fruit salad the ratio of pineapple to peach to pear is 2 : 3 : 3. What percentage of the fruit salad is peach?
- The teacher notices that in the class 3 boys have red hair, 12 have brown hair and 9 have blonde hair.
 - Express this as a ratio.
 - What percentage of the class has red hair?

Comparing Apples with Apples 1

I am learning to add fractions and mixed numbers with unlike denominators.

Examples:

$$\begin{aligned}
 1. \quad \frac{4}{6} + \frac{1}{3} &= \frac{4}{6} + \frac{2}{6} \\
 &= \frac{6}{6} \\
 &= 1
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \frac{2}{5} + \frac{1}{3} &= \frac{6}{15} + \frac{5}{15} \\
 &= \frac{11}{15}
 \end{aligned}$$

Exercise 1 - Like Denominators

Solve and simplify the following, show all your working out;

$$\begin{array}{llll}
 1. \quad \frac{3}{5} + \frac{4}{5} & 2. \quad \frac{3}{4} + \frac{5}{4} & 3. \quad \frac{3}{16} + \frac{5}{16} & 4. \quad \frac{9}{8} + \frac{5}{8} \\
 5. \quad \frac{9}{6} + \frac{8}{6} & 6. \quad \frac{11}{12} + \frac{7}{12} & 7. \quad \frac{13}{8} + \frac{7}{8} & 8. \quad \frac{7}{2} + \frac{4}{2}
 \end{array}$$

Exercise 2 - Unlike Denominators

Find and simplify the following, show all your working out;

$$\begin{array}{llll}
 1. \quad \frac{1}{2} + \frac{1}{3} & 2. \quad \frac{1}{2} + \frac{1}{4} & 3. \quad \frac{3}{4} + \frac{3}{8} & 4. \quad \frac{3}{5} + \frac{1}{2} \\
 5. \quad \frac{3}{4} + \frac{2}{3} & 6. \quad \frac{3}{4} + \frac{2}{5} & 7. \quad \frac{2}{3} + \frac{4}{5} & 8. \quad \frac{5}{6} + \frac{1}{8} \\
 9. \quad \frac{4}{7} + \frac{2}{3} & 10. \quad \frac{3}{10} + \frac{7}{15} & 11. \quad \frac{1}{2} + \frac{1}{3} + \frac{1}{5} & 12. \quad \frac{1}{6} + \frac{2}{9} + \frac{3}{12}
 \end{array}$$

Exercise 3 - Mixed Numbers (Change into improper fraction first)

$$\begin{array}{llll}
 1. \quad 1\frac{5}{6} + \frac{2}{3} & 2. \quad 2\frac{5}{8} + 1\frac{1}{4} & 3. \quad \frac{4}{5} + 1\frac{4}{10} & 4. \quad 3\frac{2}{3} + 1\frac{1}{2} \\
 5. \quad 3\frac{7}{5} + \frac{1}{2} & 6. \quad 2\frac{3}{4} + 1\frac{2}{3}
 \end{array}$$

Word Problems

1. $\frac{2}{5}$ of the local park is taken up with sunflowers and $\frac{1}{6}$ is taken up with roses. The rest of the park is grass. What fraction of the park is flowers?
2. Troy eats $\frac{1}{8}$ of a pizza, Ross eats $\frac{7}{24}$ and Morgan eats $\frac{5}{12}$. How much pizza is:
 a) Eaten by the three boys
 b) Left from the original whole pizza once the boys have taken their share.

I am revising adding and subtracting mixed fractions.

Use the fraction strips or otherwise to find and simplify the following:

Example:

$$\begin{aligned} 2\frac{1}{2} + \frac{1}{6} &= 2\frac{3}{6} + \frac{1}{6} \\ &= 2\frac{4}{6} \\ &= 2\frac{2}{3} \end{aligned}$$

1						$\frac{1}{2}$		
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{3}$		$\frac{1}{3}$						

Do the problems in your book setting them out like the example above.

Exercise 1

Use the fraction strips or otherwise to find and simplify the following:

1. $2\frac{5}{6} + \frac{5}{6}$ 2. $2\frac{3}{4} + \frac{3}{4}$ 3. $3\frac{3}{10} + \frac{8}{10}$ 4. $2\frac{5}{8} + 1\frac{7}{8}$
5. $1\frac{3}{10} - \frac{7}{10}$ 6. $2\frac{1}{4} - \frac{3}{4}$ 7. $4\frac{5}{9} - \frac{8}{9}$ 8. $1\frac{3}{8} - \frac{5}{8}$

9. $3\frac{1}{6} + \frac{5}{6}$ 10. $5\frac{5}{9} + \frac{7}{9}$ 11. $4\frac{3}{8} - \frac{7}{8}$ 12. $2\frac{1}{10} - \frac{7}{10}$

Exercise 2 Word Problems

- Priyal and Riya visited Domino's Pizza store and bought two large Hawaiian Pizzas to share. Priyal ate $1\frac{1}{8}$ pizzas and Riya $\frac{3}{8}$ of a pizza. How much pizza had they eaten altogether? What fraction of a pizza is left?
- Vincent, Bob, Isaac, and Cullen also visited Domino's Pizza store and bought three large pizzas to share. If they ate $\frac{3}{6}$, $\frac{2}{6}$, $\frac{5}{6}$, and $\frac{4}{6}$ respectively of a pizza, what fraction have they eaten altogether? What fraction of a pizza is left?

Multiplying fractions

I am learning to multiply fractions and decimals.

Examples:

1. $\frac{1}{2}$ of $\frac{1}{2}$ is $\frac{1}{4}$ and we write this as $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
and using decimals $0.5 \times 0.5 = 0.25$

2. $\frac{1}{2}$ of $\frac{3}{5}$ is $\frac{3}{10}$ and we write this as $\frac{1}{2} \times \frac{3}{5} = \frac{3}{10}$
and using decimals $0.5 \times 0.6 = 0.3$
note also that $\frac{3}{5}$ of $\frac{1}{2}$ is $\frac{3}{10}$

3. $\frac{3}{10} \times \frac{3}{10} = \frac{9}{100}$ and using decimals $0.3 \times 0.3 = 0.09$

Exercise 1

Write the answers to these fraction multiplications (simplify if possible). Show working out;

1. $\frac{1}{2} \times \frac{1}{3}$

2. $\frac{3}{2} \times \frac{1}{2}$

3. $\frac{3}{5} \times \frac{2}{100}$

4. $\frac{8}{1} \times \frac{3}{4}$

5. $\frac{5}{2} \times \frac{3}{4}$

6. $\frac{4}{5} \times \frac{9}{100}$

7. $\frac{1}{4} \times \frac{4}{5}$

8. $\frac{6}{8} \times \frac{1}{2}$

9. $\frac{12}{5} \times \frac{3}{4}$

10. $\frac{15}{7} \times \frac{3}{4}$

11. $\frac{2}{3} \times \frac{3}{14}$

12. $\frac{12}{5} \times \frac{5}{18}$

Example

$$\frac{2}{5} \times 1\frac{1}{2} = \frac{2}{5} \times \frac{3}{2} = \frac{6}{10} = \frac{3}{5}$$

and using decimals $0.4 \times 1.5 = 0.6$

Exercise 2

Write the answer to these fraction multiplications and also write each answer using decimals;

1. $\frac{1}{10} \times \frac{1}{10}$

2. $\frac{2}{10} \times \frac{1}{2}$

3. $\frac{9}{10} \times \frac{1}{2}$

4. $\frac{7}{10} \times \frac{2}{5}$

5. $\frac{2}{5} \times 2\frac{1}{4}$

6. $1\frac{2}{5} \times \frac{3}{5}$

7. $\frac{9}{10} \times 1\frac{1}{5}$

8. $1\frac{9}{10} \times \frac{9}{10}$

9. $2\frac{4}{10} \times \frac{3}{4}$

10. $\frac{7}{8} \times \frac{3}{5}$

Exercise 3 Word Problems

1. Tony takes three quarters of a pizza and he shares this in half with his sister Jane. What fraction of the pizza does Jane get?
2. Uncle Jim gives Sam three tenths of his Lotto winnings and Sam gives his brother Tom a quarter of what he gets from his uncle Jim. What fraction of Uncle Jim's winnings does Tom get?
3. Two thirds of the teachers at a school are women and a quarter of these women have husbands who are also teachers. What fraction of all the teachers at the school are women who have husbands who are also teachers?

Extension: Multiplication of fractions by cancellation of common factors

In the example for Exercise 2, the result of the multiplication was a fraction that could be simplified:

$$\frac{2}{5} \times \frac{3}{2} = \frac{6}{10} = \frac{3}{5}$$

Instead of doing the multiplication, then the simplifying, the same result is found by "simplifying" first, then multiplying. In this case "simplifying" means finding the common factors in the numerators and denominators and recognizing that when numerator and denominator are the same this has the effect of multiplying by 1 (one). The example above would then be written:

$$\frac{2'}{5} \times \frac{3}{2'} = \frac{3}{5}$$

If the factors are contained within the numbers we can still simplify first and we write the remaining factors to be multiplied.

E.g.

$$\frac{2}{15} \times \frac{3}{4} = \frac{2'}{15_5} \times \frac{3'}{4_2} = \frac{1}{10}$$

Do these multiplications, simplifying first then multiplying:

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

2. $\frac{3}{7} \times \frac{4}{3}$

3. $\frac{9}{13} \times \frac{13}{14}$

4. $\frac{8}{17} \times \frac{3}{4}$

5. $\frac{5}{12} \times \frac{4}{15}$

6. $\frac{5}{13} \times \frac{26}{35}$

7. $\frac{17}{24} \times \frac{4}{5}$

8. $\frac{16}{27} \times \frac{9}{8}$

9. $\frac{12}{25} \times \frac{7}{4}$

10. $\frac{15}{17} \times \frac{34}{45}$

11. $\frac{28}{31} \times \frac{93}{14}$

12. $\frac{12}{65} \times \frac{13}{18}$

Decimals to Fractions

I am learning to convert decimals into fractions.

Examples: $0.45 = \frac{45}{100}$

$0.08 = \frac{8}{100}$

$0.125 = \frac{125}{1000}$

$= \frac{9}{20}$

$= \frac{2}{25}$

$= \frac{1}{8}$

Exercise 1

Change each of the following decimals into fractions, in their simplest form.

1. 0.5

2. 0.7

3. 0.25

4. 0.85

5. 0.24

6. 0.14

7. 0.04

8. 0.68

9. 0.76

10. 0.54

11. 0.32

12. 0.73

13. 0.375

14. 0.875

15. 0.075

16. 0.048

17. 0.007

18. 0.008

19. 0.096

20. 0.804

Exercise 2

Word Problems

1. A discount gives a price as only being 0.8 of the original. What fraction of the original is this? What fraction of the price has been taken off?
2. The cost of getting eyes lasered in Cairo is 0.28 of the cost in New Zealand. What is that as a fraction?
3. A container should be filled to 0.92 of its capacity; what is that as a fraction?

Comparing by Finding Rates(Linear proportions)

I am learning to make comparisons using different units.

Example:

Super Yummy Bread costs \$2.85 for 500 grams. To compare this with prices of loaves of different weights we find the cost per 100 grams, which is a rate (it compares quantities in two different units: dollars and grams).

\$2.85 for 500 grams \longrightarrow \$5.70 for 1000 grams \longrightarrow \$0.57 for 100 grams

Exercise 1

A class needs 8 kg of Wheatie Flakes for a class camp. Copy the table and fill it in, then plan the cheapest way to buy this breakfast food.

Item	Weight	Cost	Cost per 100 grams
Wheatie Flakes (Large)	750 grams	\$5.78	
Wheatie Flakes (Jumbo size)	1.6 kg	\$11.50	
Wheatie Flakes (Medium size)	400 grams	\$3.50	
Wheatie Flakes (Small size)	250 grams	\$1.51	

Plan: Show details of your working.

Exercise 2

- Michael and Kimi agree to a race of two laps. The track is 2 km long. Michael decides to travel at 100 km per hour for both laps, and Kimi decides to travel at 200 km per hour for lap one, then 50 km per hour for lap two. Each argues that his tactic will win the race. Copy and fill in the table to prove that Michael will win.

	Time for Lap 1	Time for Lap 2	Total Time
Michael	$2 \div 100 = 0.02$ hour		
Kimi	$2 \div 200 =$		

- In another race Michael again decides to do both laps at 100 km per hour, and Kimi decides to travel at 250 km per hour for lap one, then 50 km per hour for lap two. Draw up a similar table, fill it in and decide who wins.

Exercise 3

1. Five cans of Ginger Ale costs \$6.50. Find the cost per can. Then find the cost of seven cans.
2. Manuel earns \$560 for a five-day week. Find his earnings per day. Then find his pay for three days.
3. Three bricklayers build a wall in ten days. Find how long it would take for only one man. Then find how long it would take five men.
4. A car uses 10 Litres of petrol for 75 km. Find how many km it can travel on one Litre. Then find how far it could go on a full tank of 55 Litres.

Combining Ratios

I am learning to combine and simplify ratios.

Example:

Bert has twice as many marbles as Ernie. Bert has a ratio of 2 steelies to 5 milkies. Ernie's ratio is 3:4. If they combine their collections what will the ratio be?

$$2:5 + 2:5 + 3:4 \longrightarrow 7:14 = 1:2$$

We combine two ratios of 2:5 with one ratio of 3:4 and get a ratio of 1:2

Exercise 1

A large pot of paint needs to be coloured. Each recipe can be used to make the pot, but regardless of the recipe the same total amount of colour should be used.

1. Two mixtures for different shades of orange paint are:
 - X. 1 part red to 3 parts yellow (1:3)
 - Y. 2 parts red to 4 parts yellow (2:4)

If the two different shades are mixed, what is the ratio of red to yellow in the result?

2. Two mixtures for different shades of purple are:
 - X. 3 parts blue to 5 parts red (3:5)
 - Y. 5 parts blue to 7 parts red (5:7)

If the two different shades are mixed, what is the ratio of blue to red in the result?

3. Two mixtures for different shades of purple are:

- Y. 5 parts blue to 7 parts red (5:7)
- Z. 4 parts blue to 11 parts red (4:11)

If the two different shades are mixed, what is the ratio of blue to red in the result?

4. Three mixtures for different shades of purple are:
- X. 3 parts blue to 5 parts red (3:5)
 - Y. 5 parts blue to 7 parts red (5:7)
 - Z. 4 parts blue to 11 parts red (4:11)

If all three different shades are mixed, what is the ratio of blue to red in the result?

Exercise 2

1. Combine the following ratios and simplify where possible:
- a) 5:6 and 7:12
 - b) 9:4 and 7:6
 - c) 2:3 and 12:11
 - d) 8:5 and 7:5
 - e) 7:2 and 9:4
2. Combine the following ratios and simplify where possible:
- a) Twice as many of 2:5 as of 8:5
 - b) Three times as many of 7:3 as of 3:7
 - c) Two of 1:3 with three of 4:5

Exercise 3

Three university students work painting houses in the holidays to earn money. They work different hours each week. Their pay slips tell how much they earned each week.

	A	B	G
Week 1	\$800	\$380	\$620
Week 2	\$760	\$440	\$560
Week 3	\$740	\$500	\$640
Week 4	\$900	\$280	\$580

1. Combine their pays to work out the ratio of hours they worked.
2. If Algy worked for 160 hours, find how long Biggles and Ginger worked.

Fractions between Fractions

I am learning to find a number between two fractions.

Example:

$$\frac{1}{2} \text{ and } \frac{3}{5}$$

EMBED Equation.3 Equation.3	or EMBED 0.55 or 0.65
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Fractions: $\frac{1}{2} = \frac{10}{20}$ and $\frac{3}{5} = \frac{12}{20}$, so the fraction which is between them is $\frac{11}{20}$

Decimals: $\frac{1}{2} = 0.5$ and $\frac{3}{5} = 0.6$, so the decimal which is between them is 0.55

Showing your working, and using the strategy which works better for you, choose one number that is between:

Exercise 1

1. $\frac{1}{2}$ and $\frac{5}{8}$

EMBED Equation.3 Equation.3	or EMBED 0.54 or 0.45
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2. $\frac{2}{3}$ and $\frac{4}{5}$

EMBED Equation.3 Equation.3	or EMBED 0.75 or 0.85
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3. $\frac{6}{10}$ and $\frac{3}{4}$

EMBED Equation.3 Equation.3	or EMBED 0.79 or 0.72
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4. $\frac{3}{4}$ and $\frac{7}{8}$

EMBED Equation.3 Equation.3	or EMBED 0.74 or 0.80
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5. $\frac{9}{10}$ and $\frac{11}{12}$

EMBED Equation.3 Equation.3	or EMBED 0.915 or 0.92
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6. $\frac{4}{7}$ and $\frac{7}{12}$

EMBED Equation.3 Equation.3	or EMBED 0.575 or 0.585
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Exercise 2

1. Two-thirds of a strip of dog jerky strip (dried meat) still leaves Spike the dog hungry but three-quarters is too much.

Find a fraction between $\frac{2}{3}$ and $\frac{3}{4}$ that could tell you how much of a strip to feed Spike today.

2. Mark is fixing an American car and is forced to use his imperial socket set on all the bolts. Imperial sockets are always in fractions of an inch, either halves, quarters, eighths, 16ths, 32ths etc. This socket set is not well used and all the sockets are loose in an ice-cream container.

He is trying to find a socket that fits the engine block bolts.

The $\frac{5}{16}$ inch socket is too big and the $\frac{3}{8}$ socket is too small.
Find a socket size that might fit.

3. Three brothers all received \$3000 inheritance each. Barry spent $\frac{13}{15}$ of his, the most of all his brothers. His brother Larry, at $\frac{7}{12}$, spent the least of his. What fraction of his inheritance could Gary have spent?

4. Write three similar word problems with answers.

I am learning to use division to create fractions.

Examples:

One divided into two equal parts gives each part being $\frac{1}{2}$ of the original one:

$$1 \div 2 = \frac{1}{2}$$

Two shapes divided into three equal parts gives each part being $\frac{2}{3}$ of the

original shape: $2 \div 3 = \frac{2}{3}$

Exercise 1

Rewrite these divisions as fractions and simplify where possible:

- | | | | | | | | |
|----|-------------|----|-------------|----|-------------|----|--------------|
| 1. | $3 \div 4$ | 2. | $6 \div 9$ | 3. | $5 \div 10$ | 4. | $2 \div 6$ |
| 5. | $4 \div 14$ | 6. | $8 \div 18$ | 7. | $9 \div 36$ | 8. | $12 \div 72$ |

9. $15 \div 40$ 10. $18 \div 42$ 11. $24 \div 32$ 12. $36 \div 45$

Exercise 2 Word Problems

- Simon visited Demino's Pizza store and bought two large Hawaiian Pizzas. He shared the pizzas with four other friends. What fraction of a pizza did each of them get?
- Jono at Mitre 9 had to cut seven metres of timber into eight equal lengths. How long was each length?
- A recipe for scones needed three cups of flour for a batch. If there were eight scones in the batch, what fraction of a cup of flour was in each scone? If the batch made nine scones, what would the fraction have been then?
- Write three similar word problems, with answers.

Divide fractions by fractions

I am learning to divide mixed fractions.

Examples:

The number of two-thirds in four is six, so $4 \div \frac{2}{3} = 6$; and $4 \times \frac{3}{2} = 6$

The number of quarters in a half is two, so $\frac{1}{2} \div \frac{1}{4} = 2$; and $\frac{1}{2} \times \frac{4}{1} = 2$

Noticing that dividing by a fraction gives us the same result as multiplying by the reciprocal of the fraction provides a way to divide by using what we already know about multiplying.

Exercise 1

Rewrite these divisions as multiplications and work them out:

- | | | | |
|-----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. $\frac{3}{8} \div \frac{4}{5}$ | 2. $\frac{1}{4} \div \frac{3}{7}$ | 3. $\frac{3}{10} \div \frac{4}{9}$ | 4. $\frac{5}{8} \div \frac{6}{7}$ |
| 5. $\frac{2}{5} \div \frac{3}{4}$ | 6. $\frac{4}{7} \div \frac{9}{10}$ | 7. $\frac{5}{12} \div \frac{6}{11}$ | 8. $\frac{6}{11} \div \frac{7}{8}$ |
| 9. $\frac{3}{8} \div \frac{1}{5}$ | 10. $\frac{2}{3} \div \frac{5}{11}$ | 11. $\frac{4}{5} \div \frac{3}{8}$ | 12. $\frac{9}{10} \div \frac{3}{7}$ |

Exercise 2 Word Problems

1. Two thirds of an enormous Pizza was left over and reheated next day. The reheated piece was already cut into one-sixth of a pizza sized pieces. How many pieces were there?
2. A three quarter cubic metre load of gravel was to be divided up into one tenth of a cubic metre packages. How many packages could be made?
3. The scone mix made from a quarter of a bag of flour made one sixth of the required number of scones for the café for the day. How many bags of flour were needed for the day?
4. Write three similar word problems, with answers, and try them on the others in your group.

Mrs Meera Phadke