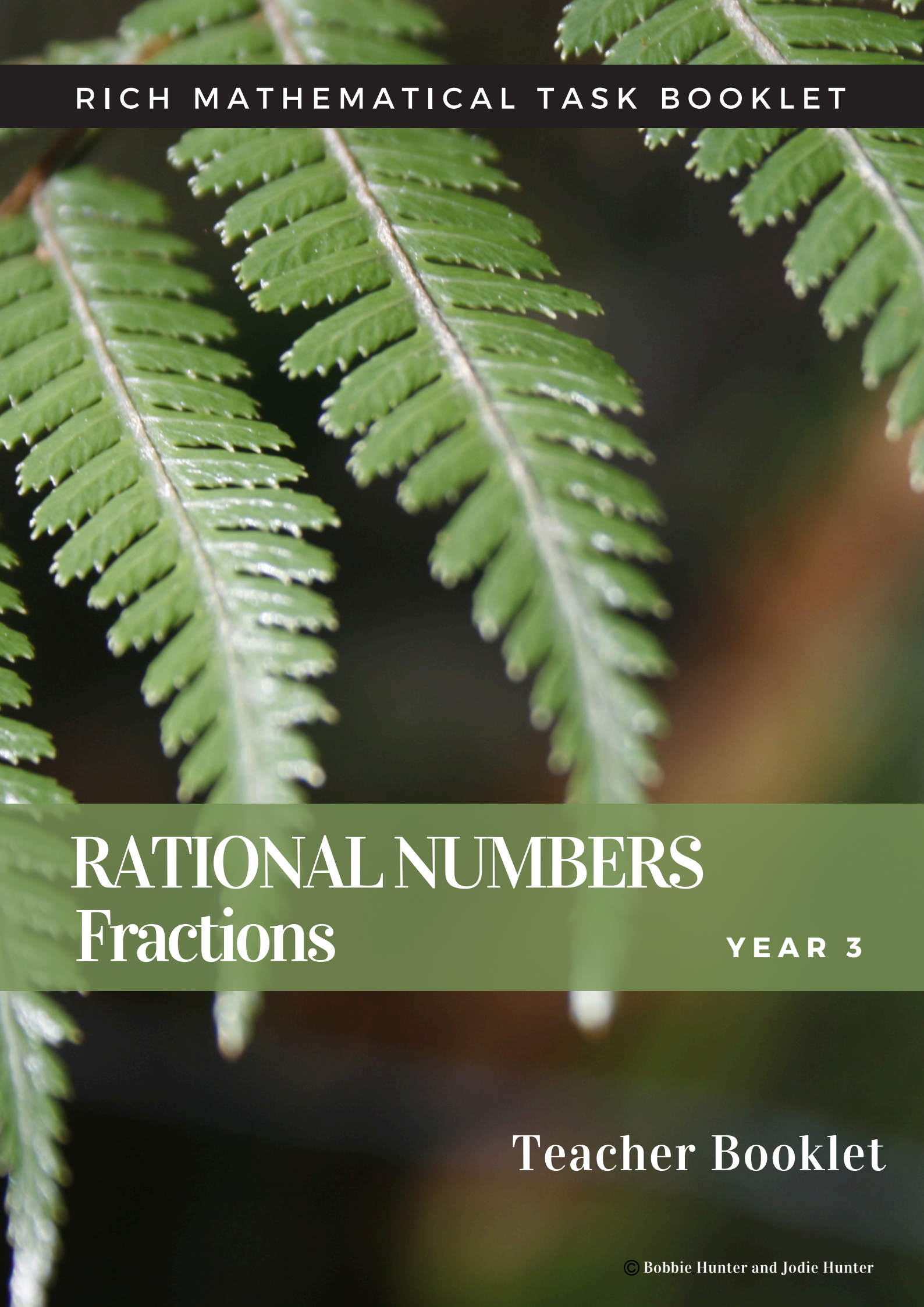


RICH MATHEMATICAL TASK BOOKLET

RATIONAL NUMBERS
Fractions

YEAR 3

Teacher Booklet

Task 1

What are all the different ways you can use the fraction tiles to equal one whole?

As you make these record them and be ready to explain and justify how they make one whole.

What are all the different ways you can use the fraction tiles to equal a fraction that is less than one whole?

As you make these record them and be ready to explain and justify why they are less than one whole.

What are all the different ways you can use the fraction tiles to equal a fraction that is more than one whole?

As you make these record them and be ready to explain and justify why they are more than one whole.

Task 1 (independent)

Use the fraction tiles to make different combinations that will equal one whole. Record these using at least three different representations (drawings, equations).

Use the fraction tiles to make different combinations that will equal less than one whole. Record these using at least three different representations (drawings, equations).

Use the fraction tiles to make different combinations that will equal more than one whole. Record these using at least three different representations (drawings, equations).

Task 2

What are all the different ways you can use the fraction tiles to equal a fraction that is less than one half?

As you make these record them and be ready to explain and justify why they are less than one half.

What are all the different ways you can use the fraction tiles to equal a fraction that is more than one half but less than one whole?

As you make these record them and be ready to explain and justify why they are more than one half and less than one whole.

What are all the different ways you can use the fraction tiles to equal a fraction that is more than one whole but less than two?

As you make these record them and be ready to explain and justify why they are more than one whole and less than two.

Task 2 (independent)

Identify which number sentences are true or false.

$20 + 20 + 70 = 40 + 70$

$\frac{1}{2} + \frac{1}{2} + \frac{1}{4} + \frac{1}{4} = \frac{2}{2} + \frac{2}{4}$

$18 + 6 = 17 + 7$

$1 = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

$2 + 2 = \frac{4}{4} + \frac{2}{2} + \frac{3}{3}$

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{1}{3} + \frac{1}{2}$

Explain and prove why you think the number sentences are true or false

Task 3

What numbers are there between 0 and 1? Be ready to put a marker on the number-line and explain what fractional number is shown.

Draw your own number-line and record on it the number you are showing with the marker.

Can you show on your number-line four numbers between 1 and 2? Record alongside the mark what number they represent.

Task 3 (independent)

Mark on the number line where you think the following mixed numbers would be.

$\frac{1}{2}$ $\frac{1}{4}$ $9\frac{1}{8}$

$5\frac{2}{4}$ $4\frac{1}{2}$ $4\frac{3}{4}$

$7\frac{2}{4}$ $8\frac{1}{2}$ $\frac{6}{8}$

$3\frac{4}{8}$ $9\frac{1}{2}$ $2\frac{1}{4}$

Can you mark any other numbers on the number-line?

Task 4

The bakery is selling banana cakes to families. All the cakes are the same size.

Jamie's family has 3 children to share one cake.

Tarani's family has 6 children to share one cake.

Daniella's family has 8 children to share one cake.

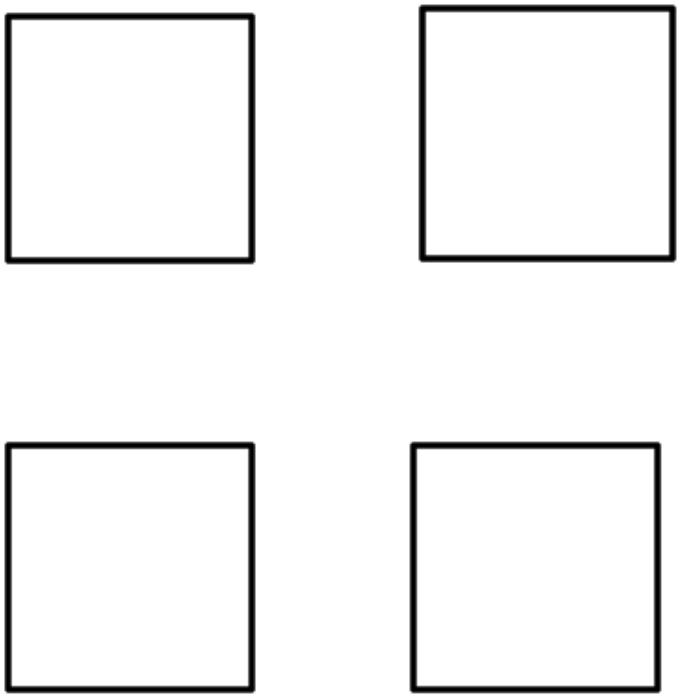
Tiare's family has 2 children to share one cake.

Timo's family has 4 children to share one cake.

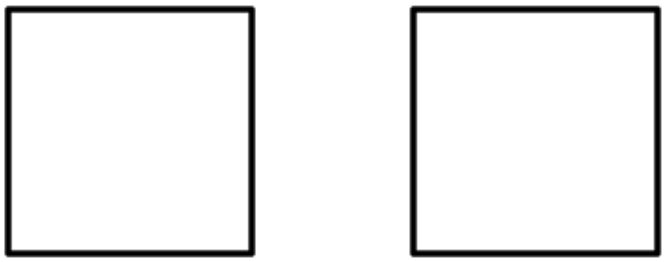
Which children would have more cake? Prove your answer using at least three different representations (numbers, drawings, a number-line)

Task 4 (independent)

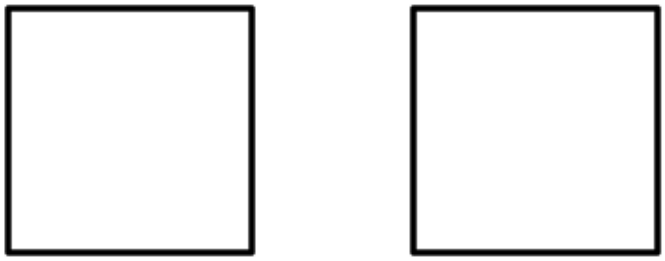
How many different ways can you split these squares into halves?



How many different ways can you split these squares into quarters?



Task 4 (independent continued)



How many different designs can you make that are $\frac{3}{4}$ red and $\frac{1}{4}$ blue?

Task 5

Tama, Lelei and Lily want to share five keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Tama, Lelei and Lily want to share seven keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Tama, Lelei and Lily want to share four keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Task 5 (independent)

Tama, Sima, Lelei and Lily want to share five keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Tama, Sima, Lelei and Lily want to share seven keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Tama, Sima, Lelei and Lily want to share nine keke pua'a so that each person gets the same amount. The keke pua'a are all the same size.

How much do they each get?

Task 6

Mireka's Nana has made panikeke and Mireka is wondering who would get more.

Two tama sharing 3 panikeke equally.

Four tama sharing 9 panikeke equally.

Make sure that you represent and justify your answer in different ways.

Task 6 (independent)

Papa has baked a banana bread loaf. Who gets to eat more?

Six tamariki sharing 10 slices equally.

Eight tamariki sharing 12 slices equally.

Four tamariki sharing 6 slices equally.

Five tamariki sharing 7 slices equally.

Make sure you represent and justify your reasoning.

Task 7

Miri wants to share her chocolate bars with her five friends.
The six of them all have one fourth of a chocolate bar.
How many chocolate bars does Miri have to share?

Miri wants to share her chocolate bars with her eight friends.
The nine of them all have one third of a chocolate bar.
How many chocolate bars does Miri have to share?

Task 7 (independent)

Miri wants to share her chocolate bars with her ten friends.
The eleven of them all have one half of a chocolate bar.
How many chocolate bars does Miri have to share?

Miri wants to share her chocolate bars with her five friends.
The six of them all have one quarter of a chocolate bar.
How many chocolate bars does Miri have to share?

Miri wants to share her chocolate bars with her 8 friends.
The nine of them all have one sixth of a chocolate bar.
How many chocolate bars does Miri have to share?

Task 8

Leilani is decorating her birthday cake with jellybeans. She has 20 jellybeans. Her mum says she has to divide the cake into quarters and put the same number of jelly beans on each section.

How many jellybeans does she put on each section?

Leilani is decorating her birthday cake with jellybeans. She has 18 jellybeans. Her mum says she has to divide the cake into thirds and put the same number of jelly beans on each section.

How many jellybeans does she put on each section?

Leilani is decorating her birthday cake with jellybeans. She has 40 jellybeans. Her mum says she has to divide the cake into fifths and put the same number of jelly beans on each section.

How many jellybeans does she put on each section?

Task 8 (independent)

You have a bag of 12 lollies, and you share them equally with your friend.

What fraction do you each get?

How many lollies will you each get?

You have a bag of 24 lollies, and you share them equally with three friends.

What fraction do you each get?

How many lollies will you each get?

What is a quarter of 8?

What is a quarter of 80?

What is a half of 10?

What is a half of 100?

What is a third of 6?

What is a third of 60?

Task 9

Tino and his 3 friends are playing with acorns. They have gathered 28 acorns. They share the acorns equally between the 4 of them. How many acorns do they each get? What fraction of the acorns do they each get?

Tino and his 5 friends are playing with acorns. They have gathered 60 acorns. They share the acorns equally between the 6 of them. How many acorns do they each get? What fraction of the acorns do they each get?

Tino and his 7 friends are playing with acorns. They have gathered 40 acorns. They share the acorns equally between the 8 of them. How many acorns do they each get? What fraction of the acorns do they each get?

Task 9 (independent)

What is a quarter of 4?

What is a quarter of 40?

What is a quarter of 400?

What is a half of 20?

What is a half of 200?

What is a half of 220?

What is a third of 9?

What is a third of 90?

What is a third of 99?

What is a quarter of 8?

What is a quarter of 40?

What is a quarter of 48?

What is a sixth of 6?

What is a sixth of 30?

What is a sixth of 36?

What is a third of 9?

What is a third of 30?

What is a third of 39?

Task 10

Te Irirangi has read $\frac{1}{3}$ of her book and is at page 22. How many pages are in her book?

Lila has collected shells on the beach and gives her brother 9 shells. This is $\frac{1}{5}$ of the shells that she collected. How many shells did she collect?

Hemi scored $\frac{1}{6}$ of all the goals for his football team for the season. He scored 6 goals. How many goals did his team score during the season?

Task 10 (independent)

Tayla has spent $\frac{1}{2}$ her pocket money and has $8 left. How much money did she start with?

Mareko has $\frac{1}{4}$ of a bag of lollies left and now has 15 lollies. How many lollies did he have to start with?

Ahmed has given away $\frac{1}{6}$ of his sticker collection which is 11 stickers. How many stickers did he start with?

Priti has read 14 pages which is $\frac{1}{5}$ of her book. How many pages does the book have in total?

Task 11

Prove and justify your answer using at least 3 different representations:

Is $\frac{2}{4}$ of a chocolate bar the same as $\frac{1}{2}$ of a chocolate bar?

Is $\frac{1}{8}$ of a chocolate bar the same as $\frac{1}{2}$ of a chocolate bar?

Is $\frac{1}{4}$ of a chocolate bar the same as $\frac{2}{8}$ of a chocolate bar?

Is $\frac{1}{2}$ of a chocolate bar the same as $\frac{2}{4}$ or $\frac{3}{6}$ or $\frac{4}{8}$ of a chocolate bar?

Is $\frac{4}{8}$ of a chocolate bar bigger than $\frac{3}{4}$ of a chocolate bar?

Is 1 chocolate bar bigger than $\frac{1}{2} + \frac{1}{2}$ chocolate bars?

Are 2 chocolate bars bigger than 2 x $\frac{1}{2}$ chocolate bars?

Is $\frac{5}{8}$ of a chocolate bar bigger than $\frac{3}{8} + \frac{3}{8}$ of a chocolate bar?

Task 11 (independent)

Put these fractions in order from smallest to biggest.

1. $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}, \frac{1}{8}, \frac{1}{6}$

2. $\frac{4}{8}, \frac{2}{4}, \frac{3}{6}, \frac{1}{2}$

3. $\frac{3}{4}, \frac{5}{8}, \frac{2}{4}, \frac{7}{8}, \frac{1}{8}$

4. $\frac{4}{4}, \frac{1}{2}, \frac{6}{8}, \frac{1}{4}, \frac{2}{8}$

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

Task 12

Susie is making an elastics to play with. She needs 3 metres of thin elastic, but her mum only has smaller pieces for her to use.

First her Mum gives her $1\frac{1}{2}$ metres. Then she finds 3 more pieces all a $\frac{1}{2}$ metre long?

How much elastic does she have altogether? Does she have enough elastic to make an elastics, to play with?

Susie is making an elastics to play with. She needs 3 metres of thin elastic, but her mum only has smaller pieces for her to use.

First her Mum gives her $2\frac{1}{4}$ metres. Then she finds 3 more pieces which are both a $\frac{1}{4}$ metre long?

How much elastic does she have altogether? Does she have enough elastic to make an elastics to play with?