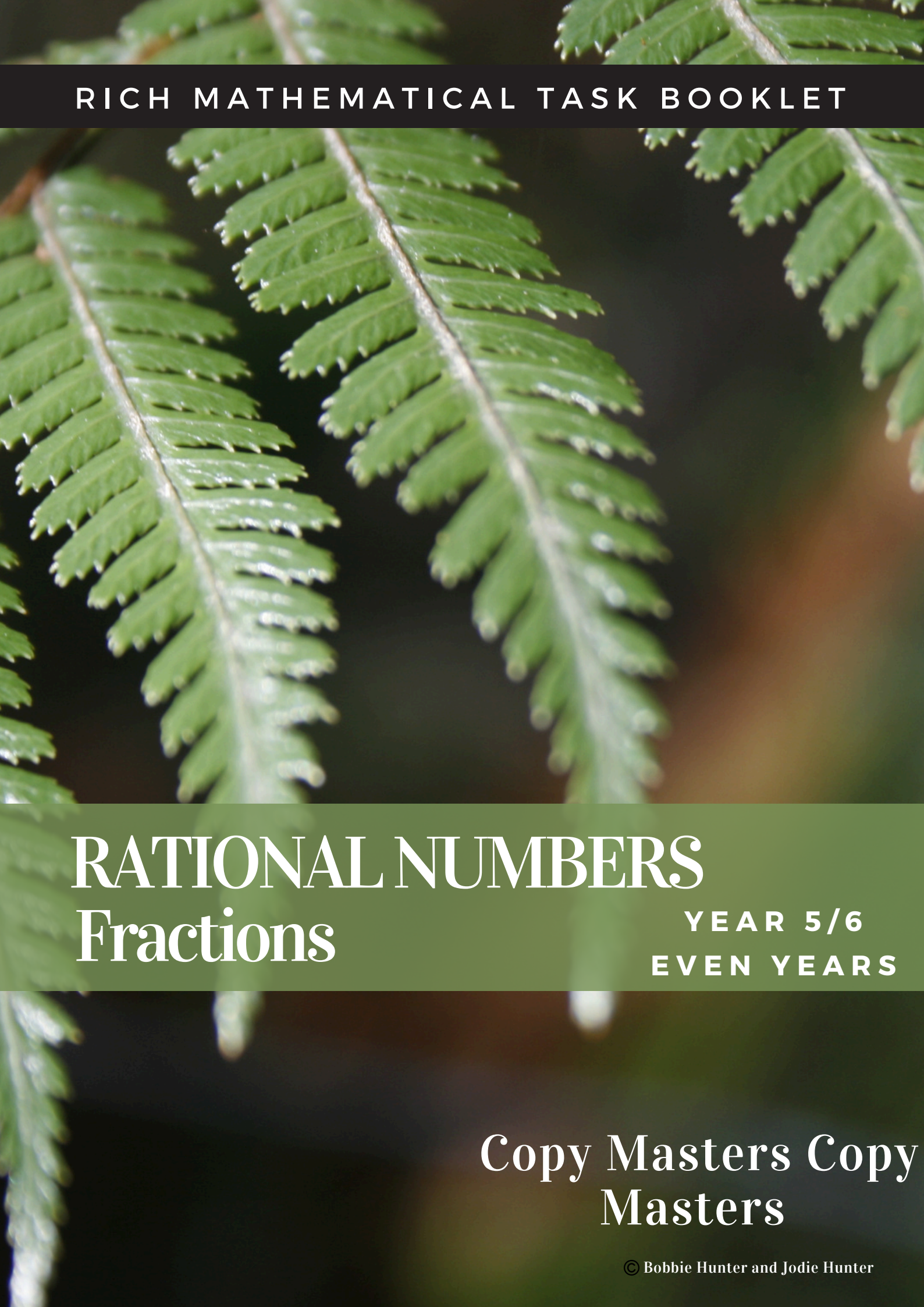

RICH MATHEMATICAL TASK BOOKLET

RATIONAL NUMBERS
Fractions

YEAR 5/6
EVEN YEARS

Copy Masters Copy Masters

Task 1

Use the fraction tiles to make one whole in different ways. Record your responses.

Use the fraction tiles to make different fractional numbers that are more than one whole and less than one whole and a third. Record your responses.

Use the fraction tiles to make different fractional numbers that are less than one half but more than two twelfths. Record your responses.

Use the fraction tiles to make different fractional numbers that are more than one whole but less than one and a quarter. Record your responses.

Use the fraction tiles to make different fractional numbers that are less than one half but more than one quarter. Record your responses.

Task 1 (independent)

What other fractions are the same as one whole?

Record these using at least three different representations (drawings, equations).

What other fractions are the same as one third?

Record these using at least three different representations (drawings, equations).

What other fractions are the same as one quarter?

Record these using at least three different representations (drawings, equations).

What other fractions are the same as one eighth?

Record these using at least three different representations (drawings, equations).

Task 2

Tupou says that she can write more than 20 numbers between 0 and 1. Hemi says that there are none, so Tupou writes them and uses a number-line to prove that they exist.

Record some numbers that you think Tupou wrote and show where you think she marked them on her number-line. Make the numbers with the fraction tiles.

Task 2 (independent)

Draw a number-line starting from 0 and finishing at 10. Put at least 15 different fractions on the number-line.

Draw a number-line starting from 0 and finishing at 5. Put at least 15 fractions on the number-line. Don't use the same fractions as you used previously.

Draw a number-line starting from 0 and finishing at 2. Put at least 10 fractions on the number-line. Don't use the same fractions as you used previously.

Use the fraction tiles to explore the tasks below:

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

Why or why not?

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

Why or why not?

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?

Why or why not?

Is $\frac{9}{10}$ of a chocolate bar bigger than $\frac{4}{5}$ of a chocolate bar?

Why or why not?

Task 3

Who gets to eat more?

A. Five people sharing 4 chocolate bars equally.
B. Three people sharing 2 chocolate bars equally.
C. Four people sharing 3 chocolate bars equally.
D. Six people sharing 5 chocolate bars equally.
E. Eight people sharing 7 chocolate bars equally.

Be ready to justify who you thinks gets to eat more and explain in multiple ways.

Task 3 (independent)

At the speed chocolate eating contest each contestant has to eat as much of a chocolate bar as they can in 15 seconds. These are the results of how much of 1 chocolate bar each contestant managed to eat:

Daniel – $\frac{2}{3}$ Leti – $\frac{7}{9}$ Georgie – $\frac{2}{5}$

Sose – $\frac{10}{16}$ Talasi – $\frac{3}{4}$ Jeni – $\frac{1}{2}$

Can you put the results in order – from who ate the most chocolate to who ate the least? Try and prove your answer in a number of different ways.

Task 4

Nixon is playing NBA 2K league on the PS4. He wants to buy a player with the best field goal percentage. He has the following options:

For every eight shots, LeBron James scores 4.

For every five shots, James Harden scores 2.

For every ten shots, Anthony Davis scores 5.

For every three shots, Hassan Whiteside scores 2.

For every twelve shots, Matthew Mooney scores 3.

Rank the players in order from the best buy to the worst buy.

Prove your answer in a variety of ways using drawings, words and numbers.

Task 4 (independent)

The soccer team all have the same sized cups. Throughout the game this is how much they drank:

Tayla drinks five quarters of a cup.

Loni drinks three halves of a cup.

Tere drinks five thirds of a cup.

Mia drinks ten eighths of a cup.

Put how much they drank in order from most to least.

Prove your solution using at least 3 different representations.

Task 5

Timo and Sesimani are having an argument about the solution to this maths problem:

Loti had two chocolate bars. She ate $\frac{1}{3}$ of one bar and $\frac{5}{6}$ of the second bar. She gave the rest to her sister. What fraction of the chocolate bars did Loti eat?

Timo says that Loti ate 1 $\frac{1}{6}$ of the chocolate bars.

Sesimani says that Loti ate $\frac{6}{9}$ of the chocolate bars.

Who is correct and why?

Develop an explanation for the correct answer and how you could prove this in different ways.

Task 5 (independent)

Litea and her two friends are at the movies. They each buy a big tub of popcorn.

Litea eats $\frac{3}{4}$ of her tub.

Kaia eats $\frac{2}{3}$ of his tub.

Gaylene eats $\frac{1}{2}$ of her tub.

They tip all the left-over popcorn into two tubs. How much is left to take home?

Task 6

Michelle and her friends are making some things out of clay. They have 3 blocks of clay.

Michelle uses $\frac{1}{4}$ of a block of clay.

Jenny uses $\frac{2}{3}$ of a block of clay.

Lelei uses $\frac{5}{6}$ of a block of clay.

Meili uses the rest.

How much does Meili have?

Task 6 (independent)

Find the solutions.

Selena has $\frac{1}{2}$ of a bag of marbles. Luke has $\frac{1}{4}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Selena has $\frac{1}{3}$ of a bag of marbles. Luke has $\frac{1}{6}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Selena has $\frac{1}{4}$ of a bag of marbles. Luke has $\frac{1}{3}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Selena has $\frac{1}{2}$ of a bag of marbles. Luke has $\frac{1}{5}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Selena has $\frac{3}{4}$ of a bag of marbles. Luke has $\frac{1}{5}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Selena has $\frac{7}{8}$ of a bag of marbles. Luke has $\frac{1}{3}$ of a bag of marbles.

How much of a bag of marbles do they have altogether?

Task 7

Alisi's aunties are making a fine Tongan mat.

Aunty Seini uses $\frac{1}{2}$ of a ball of red wool.

Aunty Hiva uses $\frac{1}{3}$ of the red wool.

How much more wool does Aunty Seini use?

Alisi's aunties are making a fine Tongan mat.

Aunty Seini uses $\frac{7}{8}$ of a ball of red wool.

Aunty Hiva uses $\frac{1}{3}$ of the red wool.

How much more wool does Aunty Seini use?

Alisi's aunties are making a fine Tongan mat.

Aunty Seini uses $\frac{9}{10}$ of a ball of red wool.

Aunty Hiva uses $\frac{5}{6}$ of the red wool.

How much more wool does Aunty Seini use?

Task 7 (independent)

Two fractions add to give $\frac{1}{2}$. What might those fractions be? Give a range of answers.

A friend of mine put these fractions into two groups but they got mixed up. What might the two groups be?

$\frac{1}{5}, \frac{2}{3}, \frac{1}{4}, \frac{8}{12}, \frac{5}{16}, \frac{2}{8}$

What might the missing fraction be?

$\_\_ < \frac{3}{4}$

$\_\_ + \_\_ = \frac{2}{5}$

$\frac{1}{\_\_} = \_\_$

Task 8

Malia is making otai. For each jug of otai she needs:

Two and a quarter cups of pineapple.

Three and half cups of watermelon.

Three quarters of a cup of coconut milk.

Three quarters of a cup of coconut water.

One quarter of a cup of lemon juice.

Malia wants to make 9 jugs of otai. How much of each ingredient will she need?

Task 8 (independent)

Malia is making otai. For each bottle of otai she needs:

1 and $\frac{3}{4}$ cups of pineapple.

2 and $\frac{1}{2}$ cups of watermelon.

1 and $\frac{1}{4}$ of a cup of coconut milk.

Three quarters of a cup of coconut water.

$\frac{1}{2}$ of a cup of lemon juice.

Malia wants to make 6 bottles of otai. How much of each ingredient will she need?

Task 9

Mereana is making a picture frame using New Zealand shells. She uses 40 pieces of paua shell, 200 pieces of spiral shells and 88 cockle shells.

For her first draft she splits her frame into 4 sections. How many of each shell does she use on each section?

For her second draft she splits her frame into 3 sections. How many of each shell does she use on each section? How many does she have left over?

For her third draft she splits her frame into 7 sections. How many of each shell does she use on each section? How many does she have left over?

Task 9 (independent)

You have a bag of 96 lollies, and you share them equally with three friends.

What fraction do you each get?

How many lollies will you each get?

You have a bag of 123 lollies, and you share them equally with two friends.

What fraction do you each get?

How many lollies will you each get?

What is a half of 124?

What is a half of 1240?

What is a quarter of 68?

What is a quarter of 680?

What is a third of 141?

What is a third of 1410?

Task 10

Kiriwai has been given a cake to decorate. She is given 40 lollies to decorate it. She decides to split the cake into three sections and decorate each section but with a different proportion of lollies on each section.

She puts $\frac{3}{10}$ of her lollies on the first section.

She puts $\frac{2}{5}$ of the lollies on the second section.

She puts $\frac{1}{10}$ of the lollies on the third section.

How many lollies does she put on each section?

How many lollies are left over?

Kiriwai has been given a cake to decorate. She is given 90 lollies to decorate it. She decides to split the cake into three sections and decorate each section but with a different proportion of lollies on each section.

She puts $\frac{2}{9}$of her lollies on the first section.

She puts $\frac{1}{3}$ of the lollies on the second section.

She puts $\frac{4}{9}$ of the lollies on the third section.

How many lollies does she put on each section?

How many lollies are left over?

Task 10 (independent)

Solve these equations:

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$ __ x __ = __

3 x __ $= \frac{2}{3} + \frac{2}{3} + \frac{2}{3} =$

$\frac{1}{4} + ? = 2 \text{ x } \frac{1}{4}$

$\frac{1}{2} =$ _/_ + _/_ + _/_

Write a story problem that would match these equations:

$\frac{4}{5}$ x 6 =

$\frac{6}{8} + \frac{2}{5} =$

$3 \div \frac{1}{2} =$

Task 11

William has spent $\frac{1}{5}$ of his pocket money which is $8. How much money does he have left to spend?

Louisa has planted 26 seeds which was $\frac{2}{3}$ of the packet of seeds. How many seeds does she have left?

Pat has given away $\frac{4}{12}$ of his rugby cards which was 20. How many cards did Pat begin with?

Task 11 (independent)

Ryka has spent $\frac{1}{6}$ of his pocket money which is $9. How much money does he have to spend?

Maria has planted 25 seeds which was $\frac{5}{15}$ of the packet of seeds. How many seeds does she have left?

Lacey has given away $\frac{4}{12}$ of her rugby cards which is 20. How many rugby cards did Lacey being with?

Task 12

Solve these equations:

1. $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} =$
2. ___ $= 1\frac{1}{8} + \frac{1}{2}$
3. __ $= \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$
4. $6\frac{5}{8} +$ __ $= 8$
5. $4 \times \frac{1}{4} =$ __
6. __ $= 6 - 3\frac{4}{6}$
7. $8 \times \frac{1}{2} =$ $80 \times \frac{1}{2} =$ $800 \times \frac{1}{2} =$
8. $\frac{1}{4} - \frac{1}{12} =$
9. $\frac{6}{8} + \frac{6}{8} = 1 + \frac{?}{?}$
10. $\frac{11}{12}$ - __ $= \frac{2}{3}$

Be ready to explain and justify your explanations using representations and/or notation.