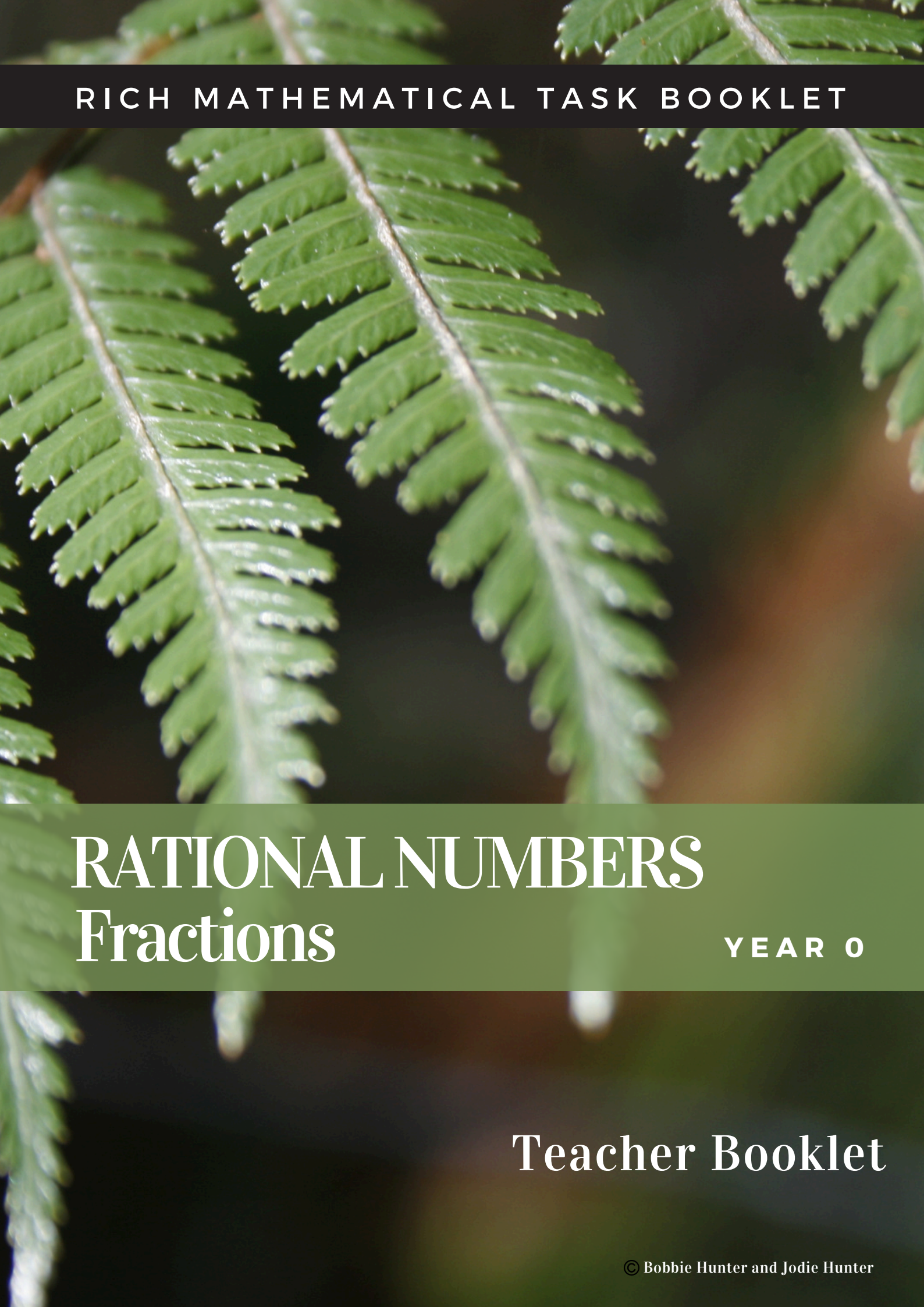

RICH MATHEMATICAL TASK BOOKLET

# RATIONAL NUMBERS
# Fractions

YEAR 0

## Teacher Booklet

## Task 1

Imagine you are like Mr Grinling and only have one whole thing left in your basket for you and Hamish to eat for lunch. Show what you would do so Hamish does not meow at you for eating more than him?

## Teacher Notes

Before the launch read The Lighthouse Keeper's Lunch by David Armitage

During the launch talk about how we all have to share something with other people and retell a story of your own about sharing something with one other person. Have students make links to times they have had to share one thing with someone else in their whanau and what they did. From there make links to how Mr Grinlin might have to share something from his lunch box with Hamish the cat fairly. Engage in a hands-on, bus stop activity where the children explore what half looks like using different media.

Have a copy of The Lighthouse Keeper's Lunch by David Armitage, playdough, ribbon or string, multilink blocks (to represent possible food items).

Facilitate the students to notice that when talking about fractions we always refer to the unit whole as one or one whole and halves (not two pieces or bits). Have them explain using materials what they did and ending with "of my one whole ..."

Monitor for students using vocabulary like two bits or two pieces and informally revoice as two halves and that they are both the same and equal.

Record using the word half before introducing notation

For the independent task, you will need playdough and cutters.

## Shareback

Select students to share who have split their whole into two equal parts.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

## Curriculum Links

***During the first year***

*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Use the playdough as one whole ball.

Cut into equal parts and ask the students to describe what you have done. Shape the playdough as a rectangular cuboid.

Cut into equal parts in different ways and ask the students to describe what you have done.

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Count or add fractional parts to make one whole.

## Independent Tasks

Use playdough balls of different sizes and shapes to explore equal sharing

Draw a picture of how you shared one playdough shape between two (or more) friends

## Mathematical Language

*Whole, one, two, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

## Task 2

Mrs Grinling shares one bottle of juice with Mr Grinling.
They have the same amount each.
How much does Mr Grinling drink?
How much does Mrs Grinling drink?

## Teacher Notes

During the launch revisit the concept of sharing something with someone else in a fair way. Link across to sharing a glass of juice with someone else. Launch the problem and then have the students engage in a hands-on, bus stop activity where they explore what half looks like using different media including liquids.

Have bottles, cups, glasses of water, playdough, ribbon or string, multilink blocks (to represent possible food and drink items).

Facilitate the students to notice that when talking about fractions we always refer to the unit whole as one or one whole and halves (not two pieces or bits). Have them explain using materials what they did and ending with "of my one whole ..."

Monitor for students using vocabulary like two bits or two pieces and informally revoice as two halves and that they are both the same and equal.

Record using the word half before introducing notation

For the independent task, you will need different sized and shaped containers, water or sand.

## Shareback

Select students to share who have split their whole into two equal parts.

## Connect

Draw a number line starting from 0 to 2 and mark one in the middle ... model putting one half on the number-line and illustrate that this number comes between 0 and one whole.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

## Curriculum Links

***During the first year***

*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Count or add fractional parts to make one whole.

## Independent Tasks

Use different sized and shaped containers that can be filled with water or sand.

Select one container and fill it with water. Pour out half of the water.
How much water is left?
Do the same with a different sized container.
What do you notice?

Draw a picture to record your actions. Show where half is on each container.

## Mathematical Language

*Whole, one, two, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

## Task 3

Mr Grinling had two whole sandwiches. The seagulls stole one sandwich out of his lunch basket. If Mr Grinling shares his sandwich with Hamish the cat, how much would they each get?

Mrs Grinling put one sandwich in the basket for Mr Grinling's lunch. If a seagull steals half of the sandwich to eat – how much will Mr Grinling have left for his lunch?

## Teacher Notes

During the launch, link back to the book and revisit notions of fair sharing

Have playdough, pieces of paper for cutting, pieces of ribbon available

Facilitate the students to notice the unit whole as one whole and halves as two equal parts that are exactly the same size.

Monitor for students using notions of fair sharing as the two pieces being the same no matter how they are split.

Notice students who use the words half and whole

Expect students to represent using materials and not just explaining. This can include drawings.

Record using the word half before introducing notation. Teacher could record notation but reinforce the way in which the bottom number relates to the pieces the whole is cut into

For the independent task, you will need student books or paper.

## Shareback

Select students to share who are able to use representations (playdough, drawings, paper) to justify their explanations.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

## Curriculum Links

***During the first year***

*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Brittany said that if Mr Grinling had a whole sandwich and cut it in half, he would have two sandwiches.

Do you agree?

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Add or count one half and one half makes one whole.

## Independent Tasks

Draw a shape. If the shape is cut into two halves, what might it look like?

Draw another shape, if the shape is cute into two halves, what might it look like?

## Mathematical Language

*Whole, one, two, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

## Task 4

Mrs Grinling has three filled bread rolls.

She sends half of these over in the basket to Mr Grinling to have for his lunch and she eats the rest.

How much of the three filled bread rolls does she eat and how much does Mr Grinling eat?

## Teacher Notes

During the launch, link back to need for use of materials to represent reasoning. Emphasise that filled bread rolls are long so to have halves they are finding half of a length.

Have playdough, lengths of paper for folding and cutting, pieces of ribbon available

Facilitate the students to notice the unit whole as one whole and halves as two equal parts that are exactly the same size.

Monitor for students using notions of fair sharing as the two pieces being the same no matter how they are split.

Notice students who use the words half and whole

Expect students to represent using materials and not just explaining. This can include drawings.

Record using the word half before introducing notation. Teacher could record notation but reinforce the way in which the bottom number relates to the pieces the whole is cut into

For the independent task, you will need sheets of paper.

## Shareback

Select students to share who model the three wholes as six halves and explain the result as three halves or who model the three wholes as one whole and one half. Make sure that students use a range of representations to model their explanation.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first year***

*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

What if Mrs Grinling had only one filled bread roll to share?

What if she had two? What if she had four? What if she had five?

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Add or count one half and one half makes one whole.

## Independent Tasks

Fold different sized pieces of paper “in half”. What do you notice?

Put together cut up halves of paper so they make one whole. What do you notice?

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

## Task 5

For a change Mrs Grinling puts five sausages in the basket for Mr Grinling and Hamish to have for lunch.
They share them equally.
How much do they each get to eat?

For a change Mrs Grinling puts seven sausages in the basket for Mr Grinling and Hamish to have for lunch. They share them equally. How much do they each get to eat?

## Teacher Notes

During the launch, link back to need for use of materials to represent reasoning. Emphasise that sausages are long so to have halves they are finding half of a length.

Have playdough, lengths of paper for folding and cutting, pieces of ribbon available

Facilitate the students to notice the unit whole as one whole and halves as two equal parts that are exactly the same size.

Monitor for students using notions of fair sharing as the two pieces being the same no matter how they are split.

Notice students who use the words half and whole

Expect students to represent using materials and not just explaining. This can include drawings.

Record using the word half before introducing notation. Teacher could record notation but reinforce the way in which the bottom number relates to the pieces the whole is cut into

For the independent task, you will need playdough and cutters.

## Shareback

Select students to share who model the five wholes as ten halves and explain the result as five halves or who model the five wholes as two whole and one half. Make sure that students use a range of representations to model their explanation.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Develop the pattern of:
One whole = ? halves, two wholes = ? halves, three wholes = ? halves, four wholes = ? halves, five wholes = ? halves...

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Count how many parts makes one whole.

## Independent Tasks

Roll six playdough sausages.

Cut each sausage in half.

What do you notice?
Count the halves. How many halves are there?

Draw a picture of your sausages and show where half is on each sausage.

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

# Task 6

Mrs Grinling has one bottle of juice left in her refrigerator. Every day she sends half a bottle of juice across to Mr Grinling to drink at lunch time. How many days can she send juice over to Mr Grinling?

Mrs Grinling has two bottles of juice left in her refrigerator. Every day she sends half a bottle of juice across to Mr Grinling to drink at lunch time. How many days can she send juice over to Mr Grinling?

Mrs Grinling has three bottles of juice left in her refrigerator. Every day she sends half a bottle of juice across to Mr Grinling to drink at lunch time. How many days can she send juice over to Mr Grinling?

## Teacher Notes

Before the launch, ask the students to participate in a choral count counting from $\frac{1}{2}$ in one half,

$\frac{1}{2}$ 1 $1\frac{1}{2}$ 2

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

Ask them to identify patterns and discuss what they notice.

During the launch, link back to need for use of materials to represent reasoning. Show the students that bottles of juice can be represented (by turning one on its side) as a long representation so to have halves they are finding half of a length.

Have bottles, water, playdough, lengths of paper for folding and cutting, pieces of ribbon available.

Facilitate the students to notice the unit whole as one whole and halves as two equal parts that are exactly the same size.

Monitor for students using notions of fair sharing as the two pieces being the same no matter how they are split. Notice students who use the words half and whole

Expect students to represent using materials and not just explaining. This can include drawings and notation.

Teacher could record notation but reinforce the way in which the bottom number relates to the pieces the whole is cut into

For the independent task, you will need a copy of the independent task problem for the students.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Shareback

Select students to share who model one whole bottle as two halves, two bottles as four halves, three bottles as six halves... Make sure that students use a range of representations to model including drawings and notation (or words) in their explanation.

## Connect

Continue the pattern of: Five wholes = ? halves...
Use bigger numbers to extend further. 100 wholes = _ halves...

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Count how many parts makes one whole.

## Independent Tasks

Mum brings five muffins home from work and says all three of you can share the muffins.

How much does each person get?

Draw a picture to record your thinking.

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fraction, share, fair, equal*

# Anticipations

Solutions, Misconceptions

## Task 7

If Mr Grinling eats 5 half sandwiches and the seagulls eat three whole sandwiches, who do you think ate more?

Why?

Mrs Grinling makes some small meat pies.
Mrs Grinling eats one whole pie.
Hamish eats three half pies. Mr Grinling eats two half pies. Who do you think ate more?
Why?

## Teacher Notes

During the launch, link back to different ways to represent reasoning. Emphasise the need to justify and prove why using because.

Have pieces of paper and pens for drawing and cutting available

Facilitate the students to notice the difference between three whole sandwiches as six halves compared to five halves.

Monitor for students using notions of fair sharing as the two pieces being the same no matter how they are split.

Notice students who see the problem as a comparison and model their response as such with explanations that use because.

Expect students to represent using materials and explanations including drawings and notation.

For the independent task, you will need different sized boxes, cubes, blocks.

## Shareback

Select students to share who show models of representations for whole sandwiches and halves of sandwiches and use them to compare the difference between five halves and three wholes.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

So, if Mr Grinling ate one whole sandwich and Mrs Grinling ate one half sandwich who ate more? Why?

So, if Mr Grinling ate one whole sandwich and Mrs Grinling ate two half sandwiches who ate more? Why?

So, if Mr Grinling ate one whole sandwich and Mrs Grinling ate three half sandwiches who ate more? Why?

## Suggested Learning Outcomes

Share a whole into equal parts.

Put two equal parts (units) together to make one whole.

Count how many parts makes one whole.

Compare half to whole.

## Independent Tasks

Fill two different sized boxes with cubes or blocks until they are half full.

What do you notice?

Record your measurement by drawing the two different sized boxes and marking where half full is.

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fraction, share, fair, equal, more than, less than, because, compare*

# Anticipations

Solutions, Misconceptions

# Task 8

Mrs Grinling has baked a small chocolate cake.
She shares the cake with three of her friends.
How much do they each get?

## Teacher Notes

During the launch have the children describe sharing cake with their family and friends when there have been more than just two. Have them talk about how this was done fairly. After briefly talking about the problem have them engage in a hands-on, bus stop activity where the children explore what fourths/quarters look like using different media.

Have available playdough, ribbon or string, multilink blocks (to represent cake), paper, scissors, pens.

Facilitate the students to notice that when talking about fractions we always refer to the unit whole as one and quarters as fourths or quarters. Have them explain using materials what they did and ending with "of my one whole ..."

Monitor for students using vocabulary like fours bits or four pieces and informally revoice as four fourths or four quarters. Emphasise that they are both the same and equal.

Record using the word quarter or fourths before introducing notation

For the independent task, you will need different sized containers and water.

## Shareback

Select students to share who have developed an explanation using representations of the whole cake cut into four equal parts.

Draw links to models showing the cake cut in the two ways.

If the students do not use a model representing cutting lengthwise as well as vertically and diagonally teacher to introduce and make links back previous representations for splitting the sausages or bottles of water.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Draw a number-line from 0 to 2 and model counting in 1/4 on the number-line. Support the students to connect this to cutting the cuboid into four equal parts. Ask the students to count between 1 and 2 in quarters (e.g., 1 and 1 quarter, 1 and 2 quarters...).

## Suggested Learning Outcomes

Share a whole into equal parts.

Put equal parts (units) together to make one whole.

Add/count how many quarters make one whole.

Compare the unit size of one-half and one-quarter.

## Independent Tasks

Fill one container with water until it is full.
Pour all of the water into a different sized container.

What do you notice?

Why do you think that is?

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fourths, quarters, fraction, share, fair, equal, more than, less than, same, because, compare.*

# Anticipations

Solutions, Misconceptions

## Task 9

Mr Grinling is sharing a bag of marshmallows with Mrs Grinling.
The bag has 6 marshmallows.
They each get half the bag so how many marshmallows do they get?

Mr Grinling is sharing a bag of jelly-beans with Mrs Grinling.
The bag has 10 jelly-beans.
They each get half the bag so how many jelly-beans do they get?

Mr Grinling is sharing a bag of jet-planes with Mrs Grinling.
The bag has 8 jet-planes.
They each get half the bag so how many jet-planes do they get?

## Teacher Notes

For the conceptual starter, ask the students to solve the following equations:
1 + 1 =
2 + 2 =
3 + 3 =
4 + 4 =
5 + 5 =

During the launch, ensure that you reinforce that each bag of candy is one whole as part of developing the context of the task.

Have counters or beans available for the students to use to represent the task context or facilitate the students to draw these.

Facilitate the students to notice that they are finding the fraction of a whole even when there are a number of items in the set. Draw attention to the denominator as naming what the whole is being divided into (e.g., two groups).

## Shareback

Select students to share who either share the groups equally by using chunks or a structured method. If no students use chunking then model this as a way that previous students have used.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Model how to record solving the fraction tasks as an equation:

$\frac{1}{2}$ of 6 = 2 $\qquad$ 6 ÷ 2 = 3

Ask students to record the equations for the next two tasks.
Ask students to discuss what they notice and support students to connect finding $\frac{1}{2}$ to dividing by two.

## Suggested Learning Outcomes

Find fractions of a set.

Find half of a set using equal sharing.

Find half of a set using grouping.

## Independent Tasks

Mr Grinling has some bags of marbles.
There are 4 marbles in a bag. One half of the marbles are blue. How many marbles are blue?

There are 8 marbles in a bag. One half of the marbles are red. How many marbles are red?

There are 6 marbles in a bag. One half of the marbles are green. How many marbles are green?

There are 10 marbles in a bag. One half of the marbles are yellow. How many marbles are yellow?

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fourths, quarters, fraction, share, fair, equal, more than, less than, same, because, compare.*

# Anticipations

Solutions, Misconceptions

## Task 10

The Grinlings are celebrating Mrs Grinling's birthday.
Mr Grinling bakes a cake and has 12 M&Ms to decorate the cake.
Mr Grinling cut the cake in two and shared the M&Ms equally.
What fraction of the M&Ms would there be on each side?
How many M&Ms would be on each side?

Mr Grinling bakes a cake and has 12 M&Ms to decorate the cake.
Mr Grinling cut the cake in four and shared the M&Ms equally.
What fraction of the M&Ms would there be on each side?
How many M&Ms would be on each side?

## Teacher Notes

During the launch, ensure that you reinforce that each set of M&Ms are one whole as part of developing the context of the task.

Have counters or beans available for the students to use to represent the task context or facilitate the students to draw these.

Facilitate the students to notice that they are finding the fraction of a whole even when there are a number of items in the set. Draw attention to the number of pieces as the denominator that names what the whole is being divided into (e.g., two groups or four groups).

## Shareback

Select students to share who either share the groups equally by using chunks or a structured method. If no students use chunking then model this as a way that previous students have used.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Connect

Ask the students to tell you what to record for the equations for the two tasks.

$\frac{1}{2}$ of 12 = 6 $\quad\quad$ 12 ÷ 2 = 6

$\frac{1}{4}$ of 12 = 3 $\quad\quad$ 12 ÷ 4 = 3

Ask students to discuss what they notice and support students to connect the denominator to division.

## Suggested Learning Outcomes

Find half of a set using equal sharing.

Find half of a set using grouping.

Find one quarter of a set using equal sharing.

Find one quarter of a set using grouping.

## Independent Tasks

The Grinlings are celebrating Mrs Grinling's birthday.
Mr Grinling bakes a cake and has 8 M&Ms to decorate the cake.
Mr Grinling cut the cake in two and shared the M&Ms equally.
What fraction of the M&Ms would there be on each side?
How many M&Ms would be on each side?

Mr Grinling bakes a cake and has 8 M&Ms to decorate the cake.
Mr Grinling cut the cake in four and shared the M&Ms equally.
What fraction of the M&Ms would there be on each side?

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fourths, quarters, fraction, share, fair, equal, more than, less than, same, because, compare.*

# Anticipations

Solutions, Misconceptions

## Task 11

Mrs Grinling has made two whole pies for their lunch.
She eats one half of a pie, and she sends one whole pie and a half pie over to Mr Grinling to share with Hamish.
They both eat the same amount.
How much do they each eat?

## Teacher Notes

During the launch revisit sharing fairly a cake between four friends. Use the language of fourths and quarters interchangeably.

Have available playdough, ribbon or string, multilink blocks (to represent cake), paper, scissors, pens.

Facilitate the students to notice that when talking about fractions we always refer to the unit whole as one and quarters as fourths or quarters. Have them explain using materials what they did and ending with "of my one whole ..."

Monitor for students using vocabulary like fours bits or four pieces and informally revoice as four fourths or four quarters. Emphasise that they are both the same and equal. Ensure that students see that the second half of the pie is half of a whole and so that pie needs to be split into quarters and described as two quarters.

Record using the word quarter or fourths before introducing notation

For the independent task, you will need different sized containers and water.

## Shareback

Select students to share who have developed an explanation using representations of the whole two pies cut into halves and the second pie cut into halves and then four equal parts, or both pies as four quarters.

## Connect

What if Mrs Grinling had made one pie and eaten a half of it and Mr Grinling and Hamish had shared the other half. How much would they each have eaten?

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Suggested Learning Outcomes

Share a whole into equal parts.

Put equal parts (units) together to make one whole.

Add/count how many quarters make one whole.

Compare the unit size of one-half and one-quarter.

## Independent Tasks

Fill one container with water.

Pour the water into a second container (different size) until it is half full of water.

What do you notice about the first container?
Which container has more water?

Draw and record the level of water in each container.

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fourths, quarters, fraction, share, fair, equal, more than, less than, same, because, compare.*

# Anticipations

Solutions, Misconceptions

## Task 12

If Hamish eats two quarters of a ham sandwich and Mr Grinling eats half a ham sandwich, who eats more? How do you know?

If Hamish eats one quarter of a ham sandwich and Mr Grinling eats half a ham sandwich, who eats more? How do you know?

If Hamish eats four quarters of a ham sandwich and Mr Grinling eats a whole ham sandwich, who eats more? How do you know?

## Teacher Notes

During the launch, link back to their need to use different ways to represent reasoning. Emphasise the need to justify and prove why using because.

Have pieces of paper and pens for drawing and cutting available

Facilitate the students to notice the relationship between one whole sandwich as two halves and four quarters/fourths and the difference between one half as greater than a quarter.

Monitor for students using notions of fair sharing as the two pieces or four pieces being the same no matter how they are split.

Notice students who see the problem as a comparison and model their response as such with explanations that use the same as, more than, less than and because.

Expect students to represent using materials and explanations including drawings and notation.

For the independent task, you will need playdough and cutters.

## Big Ideas

*Numbers can be described in many different ways including as fractions.*

*The whole is important in naming fractions. A fraction is relative to the size of the whole or unit*

*A comparison of a part to the whole can be represented using a fraction.*

*A fraction describes the division of a whole (region, set, segment) into equal parts.*

*The bottom number in a fraction tells how many equal parts the whole or unit is divided into. The top number tells how many equal parts are indicated.*

## Curriculum Links

***During the first 6 months***
*Join and separate groups of up to a total 10 objects by grouping and counting.*

*Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns.*

***During the first year***
*Identify and represent halves and quarters as fractions of sets and regions, using equal parts.*

## Shareback

Select students to share who show models of representations for whole sandwiches and halves of sandwiches and quarters of sandwiches and uses them to compare the difference between halves, and quarters and whole.

## Connect

One half is bigger/smaller/same as two quarters; One quarter is bigger/smaller/same as one half; three quarters are bigger/smaller/same as two halves.

## Suggested Learning Outcomes

Share a whole into equal parts.

Put equal parts (units) together to make one whole.

Add/count how many quarters make one whole.

Compare the unit size of one-half and one-quarter.

Add/count how many quarters make one half

Compare the unit size of one-half and two-quarters and one whole.

## Independent Tasks

Assessment Task 1 - Fractions - Year 0

## Mathematical Language

*Whole, one, two, three, four, five, half, halves, fourths, quarters, fraction, share, fair, equal, more than, less than, same, because, compare.*

# Anticipations

Solutions, Misconceptions

# Assessment Task  1 - Fractions - Year 0

Write and draw everything you know about halves and quarters.

Are there any other fractions you know that you can write and draw about?