DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES

Number: Fractions

Level 3 (Year 5-6)

Teacher Booklet

Task 1	What are all the different ways you can use the fraction tiles to make 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 make a fraction number that is less than one half but more than two twelfths? 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 make a fraction number that is more than one whole but less than one and 1 quarter? As you make these record them and be ready to explain and justify why they are more than 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. 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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line.
Curriculum links	NA2-1: Use simple additive strategies with whole numbers and fractions. NA2-5: Know simple fractions in everyday use. NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-4: Know how many tenths, tens, hundreds, and thousands are in whole numbers. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality.
Learning Outcomes: Students will be able to:	• Combine and recombine different units of fractions to make one whole. • Identify and make equivalent fractions.

	• Recognise and use improper fractions to represent more than one whole.
Mathematical language	Whole, half, halves, quarters, fourths, thirds, sixths, twelfths, eighths, fraction, fractional number, whole number, equal, equivalent, greater than, less than.
Sharing back/Connect	Select students to share who made combinations of the whole or other fractions using the same size pieces (e.g., halves, quarters, eighths) and recorded the combinations as numbers, equations, or words. Then, select students to share who made combinations of the whole using the unlike fraction pieces (e.g., ½ + ¼ + ¼ = 1) and recorded the combinations as numbers, equations or words. **Connect:** What is 4/4 the same as? What is 50/50 the same as? What is 1000/1000 the same as? What patterns and relationships do you notice? What other fractions are the same as one whole? [Encourage students to record using equals sign 2/2 = 5/5 = 100/100] What is a rule for fractions that equal one whole? [Record conjectures and symbolise as *n*/*n*].
Teacher Notes	• Before the launch have the students explore and talk together about the fraction pieces for a whole, halves, quarters, eighths, thirds, sixths, twelves. Work through each task and discuss before moving to the next task • Have fraction pieces for the whole, quarters, halves, eighths and introduce thirds, sixths, twelfths at the second task. • Monitor for students using the words fractional numbers (not pieces or bits) and greater than, less than, the same as. • Notice students who make generalisations (e.g., the smaller the denominator the bigger the fraction when the numerator is one). Record these as class conjectures and have students explore and prove at a later date as a warm-up activity. • Expect students to represent materials and use appropriate notation and the equal sign (2/2 = 1) • For the independent task, you will need fraction tiles to be available for students who would like to use them.
Independent Tasks	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).
Anticipations	

Task 2	What are all the different ways you can use the fraction tiles to make a fraction number that is less than one half but more than one quarter? 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 make a fraction number that is between two thirds and seven eighths? As you make these record them and be ready to explain and justify why they are between one half and one whole. What are all the different ways you can use the fraction tiles to make a fraction number that is more than one whole and less than one and a third? As you make these record them and be ready to explain and justify why they are more than one whole and less than 2. What are all the different ways you can use the fraction tiles to make fraction numbers that are the same as one fifth? What are all the different ways you can use the fraction tiles to make fraction numbers that are the same as one eighth?
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-4: Know how many tenths, tens, hundreds, and thousands are in whole numbers. NA3-5: Know fractions and percentages in everyday use.

	NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers.
Learning Outcomes: Students will be able to:	• Combine and recombine different units of fractions to make one whole. • Identify and make equivalent fractions. • Recognise and use improper fractions to represent more than one whole.
Mathematical language	Whole, half, halves, quarters, fourths, thirds, sixths, twelfths, eighths, fraction, fractional number, whole number, equal, equivalent, greater than, less than, numerator, denominator.
Sharing back/Connect	Select students to share who made combinations of fractions using the same size pieces (e.g., halves, quarters, eighths) and recorded the combinations as numbers, equations, or words. Then, select students to share who made combinations of fractions using the unlike fraction pieces and recorded the combinations as numbers, equations or words. **Connect:** What other fractions are the same as one half? [Encourage students to record using equals sign 1/2 = 5/10 = 50/100] What patterns and relationships do you notice? What is a rule to know whether fractions equal one half? What is rule to whether fractions are greater than one whole?
Teacher Notes	• Have fraction pieces for the whole, quarters, halves, eighths, thirds, sixths, twelves, fifths. • Facilitate the students to notice that the numerator names the numbers of pieces of the whole and the denominator names the number of pieces the whole has been divided into. • Monitor for students using the words fractional numbers (not pieces or bits) and justifying their statements using both fraction pieces and notation. • Notice students who identify patterns across fractions. Record these as class conjectures and have students explore and prove at a later date as a warm-up. • Expect students to represent materials and use appropriate notation and the equal sign (2/2 = 1) or less than or more than (<, >). • Have fraction tiles or strips of paper available for students to use for the independent task if they would like to use them.
Independent Tasks	Is 4/6 of a chocolate bar the same as 2/3 of a chocolate bar?

	Why or why not? Is 3/5 of a chocolate bar the same as ½ of a chocolate bar? Why or why not? Is 3/4 of a chocolate bar the same as 4/8 of a chocolate bar? Why or why not? Is ½ of a chocolate bar the same as 2/4 or 3/6 or 4/8 of a chocolate bar? Why or why not? Is 9/10 of a chocolate bar bigger than 4/5 of a chocolate bar? Why or why not? Is 1 chocolate bar bigger than ¾ + ½ chocolate bars? Why or why not?
Anticipations	

Task 3	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. Can you write some numbers you think Tupou wrote and show where you think she marked them on her number-line?
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Each fraction can be associated with a unique point on a number-line. There is no least or greatest fraction on the number line. There are an infinite number of fractions between any two fractions on the number line.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-4: Know how many tenths, tens, hundreds, and thousands are in whole numbers. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Record fractions on a number-line. • Recognise there are an infinite number of fractions between any two whole numbers or any two fractions on a number line.
Mathematical language	Whole, half, halves, quarters, fourths, thirds, sixths, twelfths, eighths, fraction, whole number, equal, equivalent, mixed numbers, equivalent, greater than, less than, numerator, denominator.

Sharing back/Connect	Select students to share who can visualise and draw a number-line and mark the positions of fractions between 0 and 1 by partitioning the number-line. **Connect:** What mixed numbers are there between 1 and 4? Mark each one on a number-line to show where they would be.
Teacher Notes	• Present the task without a launch and allow the students to struggle with comprehending what they are being asked to do. • Have large sheets of paper and pens for the students to draw their number-lines. • Facilitate the students to notice that earlier in the year, the number lines they have used only contained whole numbers (numbers that resulted from counting). The fractions they are talking about now (numbers resulting from equal splitting or partitioning) can be represented on the number line. This shows that fractions may also be thought of as numbers. In the connection refer to the fractions (e.g., 3½) as a mixed number. • Monitor for students using vocabulary which emphasises dividing or splitting equally of portioning into equal parts. • Notice students who find the concept of fractions as numbers between numbers counter intuitive. Allow them to struggle and construct reasoning through mathematical talk and using agreeing mathematically and disagreeing mathematically (e.g., I agree because…). • For the independent task, you will need the worksheet below.
Independent Tasks	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.
Anticipations	

Task 4	Who gets to eat more? A. Five people sharing four chocolate bars equally. B. Three people sharing two chocolate bars equally. C. Four people sharing three chocolate bars equally. D. Six people sharing five chocolate bars equally. E. Eight people sharing seven chocolate bars equally. Be ready to justify who you thinks gets to eat more and explain in multiple ways.
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Divide wholes into equal parts. • Divide a whole number into fractions. • Compare and order fractions.
Mathematical language	Whole, quarters, fourths, thirds, sixths, fifths, eighths, equal, equivalent, greater than, less than, numerator, denominator.
Sharing back/Connect	Select students to share who have developed multiple representations including numbers, number-line, and drawings and used these to show comparisons between the different fractions. **Connect:** Can you put these fractions in order from smallest to largest? 1/8, 1/3, 1/4, ½, 1/5, 1/10, 1/6.

	Can you identify a pattern or rule for ordering the fractions? When does this rule work?
Teacher Notes	• During the launch, model for the students that the chocolate bar should be represented as a rectangular shape. • Notice students who use the language of comparison and because as part of their justification. • Expect students to represent using real life contexts (e.g., if you were comparing slices of a cake and who had more or less then 7/8 is closer to the whole cake because 1/8 slice is a smaller slice than 1/3). • In the connect, students may generalise that the larger the denominator the smaller the fraction, however, facilitate them to notice that this only applies to unit fractions and is not a rule for all fractions.
Independent Tasks	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 – 2/3 Leti – 7/9 Georgie – 2/5 Sose – 10/16 Talasi – 3/4 Jeni – 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.
Anticipations	

Task 5	Who drinks more? Who drinks less? A. Nine children sharing 10 cans of drink equally. B. Five children sharing 9 cans of drink equally. C. Three children sharing 5 cans of drink equally. D. Four children sharing 7 cans of drink equally. E. Eight children sharing 12 cans of drink equally. F. Twelve children sharing 18 cans of drink equally. Put them in order and be ready to explain in multiple ways.
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Divide a whole number into fractions. • Compare and use different sized fractions. • Recognise and use improper fractions to represent more than one whole.
Mathematical language	Whole, quarters, fourths, thirds, sixths, twelfths, eighths, ninths, fraction, equal, equivalent, mixed numbers, greater than, less than, numerator, denominator.
Sharing back/Connect	Select students to share who develop representations to justify their reasoning and either split all the cans of drink into the fractional amounts or share as a whole and fractional amount. If the second solution is not used, then model as another way the teacher has seen used previously.

	Connect: Record the matching equations for each problem and model the first two then ask students to solve the rest. 10 ÷ 9 = 10/9 = 1 1/9 9 ÷ 5 = 9/5 = 1 4/5 5 ÷ 3 = 7 ÷ 4 = 12 ÷ 8 = 18 ÷ 12 = What patterns and relationships do you notice that can help you solve the problems?
Teacher Notes	• During the launch, model for the students that the cans of drink should be represented as a rectangular block. • Notice students who use multiplicative reasoning and relational reasoning as part of their explanation (e.g., 10 ÷ 9 = 10/9 and 10/9 = 9/9 = 1 1/9). • Expect students to use a range of representations including drawings and notation.
Independent Tasks	Who drinks more? Who drinks less? A. Six children sharing 8 cans of drink equally. B. Ten children sharing 11 cans of drink equally. C. Four children sharing 6 cans of drink equally. D. Three children sharing 4 cans of drink equally. E. Nine children sharing 11 cans of drink equally. F. Eight children sharing 10 cans of drink equally. Put them in order and be ready to explain in multiple ways.
Anticipations	

Task 6	Sisilia's netball team is trying to work out which players should be the goal attack and goal shooter. They look at the results from the first game. Lisi scored ten twelfths of her attempts Ana scored three quarters of her attempts Crystal scored three sixths of her attempts Shannon scored two thirds of her attempts
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-4: Know how many tenths, tens, hundreds, and thousands are in whole numbers. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Compare and order fractions. • Find equivalent fractions.
Mathematical language	Whole, quarters, fourths, thirds, sixths, twelfths, equal, equivalent, greater than, less than, numerator, denominator.
Sharing back/Connect	Select students to share who converted fractions to equivalent fractions using informal methods with representations before they compared the fractions. If any students changed all the fractions to a common denominator than select them to share last. **Connect:** Which is bigger? 3/5 or 7/10 2/3 or 5/6 or 8/12

	What patterns and relationships did you use to find equivalent fractions to compare them? Can you come up with a rule to change fractions but keep them equivalent?
Teacher Notes	• Monitor for students using vocabulary of equivalence and relational thinking. Students may notice that to compare fractions accurately the denominators need to be the same • Expect students to represent using notation and drawings to justify equivalences.
Independent Tasks	The soccer team all have the same sized cups. At the end of 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.
Anticipations	

Task 7	Litea and her two friends are at the movies. They each buy a big tub of popcorn. Litea eats ¾ of her tub. Kaia eats 2/3 of his tub. Gaylene eats ½ of her tub. They tip all the left-over popcorn into two tubs. How much is left to take home?
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals. Fractions with unlike denominators are renamed as equivalent fractions with like denominators to add and subtract.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Subtract a fraction from a whole number. • Change fractions to equivalent fractions. • Solve problems that involve adding fractions.

Mathematical language	Whole, half, halves, quarters, fourths, thirds, equivalent, mixed numbers, numerator, denominator.
Sharing back/Connect	Select students to share who converted fractions to equivalent fractions using informal or more formalised methods (multiplication for example) before they added the fractions. **Connect:** What would be a common denominator if you were adding: ½ and ¼ 1/3 and 1/6 1/3 and ¼ ½ and 1/5 ¾ and 1/5 7/8 and 1/3 Can you find a pattern for finding a common denominator?
Teacher Notes	• Facilitate the students to notice that to add fractions the denominators need to be the same • Monitor for students using vocabulary of equivalence and relational thinking • Notice students who show relational understanding (¾ as ½ + ¼ or who use equivalence relationships). • Expect students to represent using drawings and notation.
Independent Tasks	Litea and her two friends are at the movies. They each buy a big tub of popcorn. Litea eats 4/6 of her tub. Kaia eats 6/9 of his tub. Gaylene eats 8/12 of her tub. They tip all the left-over popcorn into two tubs. How much is left to take home?
Anticipations	

Task 8	Michelle and her friends are making some things out of clay. They have 3 blocks of clay. Michelle uses ¼ of a block of clay. Jenny uses 2/3 of a block of clay. Lelei uses 5/6 of a block of clay. Meili uses the rest. How much does Meili have?
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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals. The effects of operations for addition and subtraction with fractions and decimals are the same as those with whole numbers. Fractions with unlike denominators are renamed as equivalent fractions with like denominators to add and subtract.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Find equivalent fractions. • Subtract a fraction from a whole number. • Add and subtract fractions.

	• Generalise how to find common denominators.
Mathematical language	Whole, quarters, fourths, thirds, sixths, equal, equivalent, numerator, denominator.
Sharing back/Connect	Select students to share who converted fractions to equivalent fractions using informal methods with representations or formal methods before they added the fractions. **Connect:** What are the common denominators between these numbers: ½, 1/3, ¼ ½, 1/5, 1/10 Can you find a pattern? What rule could you use to find common denominators?
Teacher Notes	• Facilitate the students to notice that to add fractions the denominators need to be the same • Monitor for students using vocabulary of equivalence and relational thinking • Notice students who show relational understanding (¾ as ½ + ¼ or who use equivalence relationships). • Expect students to represent using drawings and notation.
Independent Tasks	Find the solutions. Selena has ½ of a bag of marbles. Luke has ¼ of a bag of marbles. How much of a bag of marbles do they have altogether? Selena has 1/3 of a bag of marbles. Luke has 1/6 of a bag of marbles. How much of a bag of marbles do they have altogether? Selena has 1/4 of a bag of marbles. Luke has 1/3 of a bag of marbles. How much of a bag of marbles do they have altogether? Selena has 1/2 of a bag of marbles. Luke has 1/5 of a bag of marbles. How much of a bag of marbles do they have altogether? Selena has 3/4 of a bag of marbles. Luke has 1/5 of a bag of marbles. How much of a bag of marbles do they have altogether? Selena has 7/8 of a bag of marbles. Luke has 1/3 of a bag of marbles. How much of a bag of marbles do they have altogether?

Anticipations	

Task 9	Alisi's aunties are making a fine Tongan mat. Aunty Seini uses 1/2 of a ball of red wool. Aunty Hiva uses 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 7/8 of a ball of red wool. Aunty Hiva uses 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 9/10 of a ball of red wool. Aunty Hiva uses 5/6 of the red wool. How much more wool does Aunty Seini use?
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals. The effects of operations for addition and subtraction with fractions and decimals are the same as those with whole numbers. Fractions with unlike denominators are renamed as equivalent fractions with like denominators to add and subtract.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.

Learning Outcomes: Students will be able to:	• Find equivalent fractions. • Subtract a fraction from a fraction. • Generalise how to find equivalent fractions.
Mathematical language	Whole, half, halves, thirds, sixths, eighths, tenths, equal, equivalent, numerator, denominator.
Sharing back/Connect	Select students to share who converted fractions to equivalent fractions using informal or more formalised methods (multiplication for example) before they subtracted the fractions. **Connect:** What is the difference between: ½ and ¾ 2/5 and 3/10 7/8 and ¾ 1/5 and 1/3 1/7 and 1/8 What patterns did you use to solve these in your mind?
Teacher Notes	• Have paper and pens available, fraction strips, numberlines • Facilitate the students to notice that to subtract fractions they need to find a common denominator • Monitor for students using vocabulary of equivalence and relational thinking.
Independent Tasks	Two fractions add to give ½. 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? 1/5, 2/3, ¼, 8/12, 5/16, 2/8 What might the missing fraction be? __ < ¾ __ + __ = 2/5 1 /__ = __/__ 12/10 = 1/__
Anticipations	

Task 10	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?
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Multiply a mixed number by a whole number. • Multiply a fraction by a whole number.
Mathematical language	Whole, half, halves, quarters, fourths, whole number, equivalent, mixed numbers, numerator, denominator.
Sharing back/Connect	Select students who either use repeated addition for the fractional numbers (e.g., add ¼ nine times for the lemon juice and get 9/4); or add the fourths and get nine fourths and see this as equivalent to two wholes and one fourths; or solve the problem as 9 x ¼ =

	9/4 or 2 1/4. If the second multiplicative solution is not used, then model as another way the teacher has seen used previously. Connect: ½ x 2 = ½ x 10 = ¼ x 4 = ¼ x 8 = 1/3 x 9 = 1/10 x 20 = What patterns do you notice when you are multiplying fractions?
Teacher Notes	• During the launch, establish the context of the problem. Otai is a drink common to the Pacific. The recipe for this otai is Tongan. • Facilitate the students to notice that there are multiples of the fractional number which they can add or multiply • Notice students who use multiplicative thinking. Also notice and allow students to struggle with the counter intuitive principle of multiplying a whole number by a fractional number where the product gets smaller rather than larger. • Have concrete material available if needed for students to select (e.g., fraction tiles). • Expect students to represent using drawings, number-line or fraction pieces to represent parts of the whole and explain these using notation
Independent Tasks	Malia is making otai. For each bottle of otai she needs: 1 and 3/4 cups of pineapple. 2 and 1/2 cups of watermelon. 1 and 1/4 of a cup of coconut milk. Three quarters of a cup of coconut water. 1/2 of a cup of lemon juice. Malia wants to make 6 bottles of otai. How much of each ingredient will she need?
Anticipations	

Task 11	Lauasi and Samas were making sapasui with their Dad. To make enough sapasui for their family of four they need: 1/8 of a bottle of soy sauce 1/ 5 of a bottle of peanut oil 5/6 of a cup of water ⅔ of a tablespoon of garlic ½ a bag of chicken pieces 2¼ packets of vermicelli noodles. They are having Sunday lunch with the rest of their fono. They want to make enough sapasui for 24 people. Write a list of the ingredients they will need to cook enough sapasui to feed everyone.
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Multiply a mixed number by a whole number. • Multiply a fraction by a whole number.
Mathematical language	Whole, half, halves, quarters, fourths, thirds, sixths, eighths, fraction, fractional number, whole number, equal, equivalent, mixed numbers, numerator, denominator.
Sharing back/Connect	Select students who either use repeated addition for the fractional numbers (e.g., add 5/6 6 times for the water and get 30/6); or add

	the 5/6 and get 30/6 and see this as equivalent to five wholes; or solve the problem as 6 x 5/6 = 30/6 or 5. If the second multiplicative solution is not used, then model as another way the teacher has seen used previously. Connect: Record the solution for parts of the task: 2¼ + 2¼ + 2¼ + 2¼ + 2¼ + 2¼ = 6 x 2 ¼ = 12 6/4 = 13 2/4 2/3 + 2/3 + 2/3 + 2/3 + 2/3 + 2/3 = 6 x 2/3 = 12/3 = 4 How would you record the following two situations: Lauasi and Samas are making sapasui for 48 people so they need to multiply the ingredients by 12. How would they work out how much garlic they need? [2/3 x 12 = ? or repeated addition] How would they work out how much vermicelli noodles they need? [2 ¼ x 12 = ?]
Teacher Notes	• During the launch, establish the context of the problem. Sapasui is a form of chop suey common to the Pacific. • Facilitate the students to notice that there are multiples of the fractional number which they can add or multiply • Notice students who use multiplicative thinking. Also notice and allow students to struggle with the counter intuitive principle of multiplying a whole number by a fractional number where the product gets smaller rather than larger. • Have concrete material available if needed for students to select (e.g., fraction tiles). • Expect students to represent using drawings, numberline or fraction pieces to represent parts of the whole and explain these using notation.
Independent Tasks	Solve these equations: ½ x 2 = ½ x 10 = 2 ½ x 2 = 2 ½ x 10 ¼ x 4 = ¼ x 8 =

	¾ x 4 = ¾ x 8 = 1/3 x 9 = 2/3 x 9 = 3/3 x 9 = 1/10 x 20 = 2/10 x 20 = 9/10 x 20 = What patterns and relationships do you notice? Record your ideas.
Anticipations	

Task 12	You are helping to paint your fence. The fence is divided into sections. Mum and Dad give you 4½ cans of paint and tell you that it takes ⅝ of a can of paint to paint each section. How many sections of the fence can you paint?
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Use repeated subtraction as division. • Solve problems that involve dividing a mixed number by a fraction.
Mathematical language	Whole, half, halves, eighths, whole number, equal, equivalent, section, mixed numbers, numerator, denominator.
Sharing back/Connect	Select students to who use measurement division (repeated subtraction as division, e.g., 4 ½ – 5/8 – 5/8 – 5/8 – 5/8 – 5/8 - 5/8 – 5/8) or who use the inverse relationship of multiplication and division (5/8 x ? = 4 1/4) or (5/8 + 5/8 + 5/8… = 4 1/2). If either solution is not used, then model as another way the teacher has seen used previously. Connect:

	Ask students to describe how you would solve the following problems using division and subtraction or multiplication (addition): It takes ¼ of a pot of paint for a section. I have 1 bucket, how many sections can I paint? It takes ¼ of a pot of paint for a section. I have 2 buckets, how many sections can I paint? It takes ¼ of a pot of paint for a section. I have 10 buckets, how many sections can I paint? It takes 1/3 of a pot of paint for a section. I have 1 bucket, how many sections can I paint? It takes 1/3 of a pot of paint for a section. I have 2 buckets, how many sections can I paint? It takes 1/3 of a pot of paint for a section. I have 10 buckets, how many sections can I paint? What patterns and relationships do you notice?
Teacher Notes	• Facilitate the students to notice that there are multiples of the fractional number which they can add or multiply • Notice students who use relationships to solve these word problems. (For example, most students will repeatedly add or subtract but notice the students who see the relationship as groups of in multiplicative ways). • Expect students to represent using drawings and notation
Independent Tasks	Solve these equations: ½ + ½ + ½ + ½ = __ x __ = __ 3 x __= 2/3 + 2/3 + 2/3 = ¼ + ? = 2 x ¼ ½ = _/_ + _/_ + _/_ Write a story problem that would match these equations: 4/5 x 6 = 6/8 + 2/5 =

	$3 \div 1/2 =$
Anticipations	

Task 13	Solve these equations: __ = 1 ¼ + ½ 3 1/3 + __ = 4 __ = 8 – 5 3/10 1/3 – 1/10 = __ 5/6 – __ = 1/3 __ = 1/7 x 1/3 3/10 x __ = 3 3/5 x 5 = __ __ = 2 ÷ ½ 3 ÷ __ = ¼ 10 ÷ 1/5 = __ Be ready to explain and justify your explanations using representations and/or notation.
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios. The real-world actions for addition and subtraction of whole numbers are the same for operations with fractions and decimals. The effects of operations for addition and subtraction with fractions and decimals are the same as those with whole numbers. Fractions with unlike denominators are renamed as equivalent fractions with like denominators to add and subtract.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers.

	NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Solve missing number problems that involve fractions. • Solve addition problems involving fractions. • Solve subtraction problems involving fractions. • Solve multiplication problems involving fractions. • Solve division problems involving fractions. • Use operational laws to solve missing number problems that involve fractions.
Mathematical language	Whole, half, halves, quarters, fourths, thirds, sixths, eighths, equal, equivalent, mixed numbers, numerator, denominator.
Sharing back/Connect	Select students to share who are able to draw on number properties and operational laws including the understanding of the equals sign to solve the problems. **Connect:** Draw on student solution strategies to highlight operational laws that the students used to solve the problems (e.g., inverse relationship, commutative property). Connect back to number and algebra unit to highlight that the properties work with all numbers including fractions.
Teacher Notes	• Facilitate the students to draw on the relationships they have identified in addition, subtraction, multiplication and division. • Notice students who are able to generalise patterns across denominators
Independent Tasks	Write two fraction equations which begin with the solution (e.g., t = 1 ¼ + ½). Using proper fractions add two fractions so the answer will be more than 1. Using proper fractions add two fractions so the answer will be less than 1. Write down ten fractions between 1/3 and 2/3. _/_ < 5/6 Write a variety of fractions that the missing number might be. What fractions have a difference of ¾?
Anticipations	

Task 14	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?
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.
Learning Outcomes: Students will be able to:	• Find fractions of a set. • Generalise how to find a fraction of a set.

Mathematical language	Whole, quarters, fourths, thirds, sevenths, equal, equivalent, fair share, partitioning, numerator, denominator.
Sharing back/Connect	Select students to share who have used a representation split into fraction parts and then have either used partitive division (e.g., 200 ÷ 4 = ?) or have used the inverse relationship and repeated addition or multiplication (e.g., 4 x ? = 200). If either solution is not used, then model as another way the teacher has seen used previously. **Connect:** Record the solution for each of the problems: ¼ of 40 = 10 40 ÷ 4 = 10 ¼ of 200 = 50 200 ÷ 4 = 50 ¼ of 88 = 22 88 ÷ 4 = 22 What patterns and relationships do you notice? What is a rule for finding a fraction of a set?
Teacher Notes	• During the launch, ensure that you reinforce that each set of shells are one whole as part of developing the context. • Facilitate the students to notice that they are finding a fraction of a whole even when there are a number of items in that set. Also, draw attention to the denominator as naming what the whole is divided into. • Monitor for students using vocabulary of the whole and parts of the set.
Independent Tasks	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?
Anticipations	

Task 15	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 3/10 of her lollies on the first section. She puts 3/5 of the lollies on the second section. She puts 1/10 of the lollies on the third section. How many lollies does she put on each section? 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 2/9 of her lollies on the first section. She puts 1/3 of the lollies on the second section. She puts 4/9 of the lollies on the third section. How many lollies does she put on each section?
Big ideas	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. A fraction describes division (a/b = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, 2/3 = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is 1/3 of a unit (2 x 1/3) or 1/3 of 2 whole units (1/3 x 2); each is associated with the same point on the number line. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., 4/6 ÷ 2/8 = 2/3 ÷ 1/4 = 2/3 x 4/1; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.
Curriculum links	NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-5: Know fractions and percentages in everyday use. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA4-2: Understand addition and subtraction of fractions, decimals, and integers. NA4-4: Apply simple linear proportions, including ordering fractions.

Learning Outcomes: Students will be able to:	• Find fractions of a set. • Generalise how to find a fraction of a set.
Mathematical language	Whole, thirds, ninths, tenths, fifths, equal, equivalent, fair share, partitioning, numerator, denominator.
Sharing back/Connect	Select students to share who have used a representation split into fraction parts and then have either used partitive division (e.g., 40 ÷ 10 = 4 and 4 x 3 = 12) or repeated addition. **Connect:** Ask students to describe how you would solve the following problems using the same solution method: 3/5 of 155 29/123 of 1369 a/b of c = What rule can you use to find a fraction of a set?
Teacher Notes	• Facilitate the students to notice that when the fraction is not a unit fraction (1/5), then they have to use a multiplicative relationship to consider the sets of that fractional number • Monitor for students using vocabulary of numerator and denominator
Independent Tasks	Select one or more of the following assessment tasks (attached at the end of the document) as the independent activity: NR5: Ordering fractions. NR4: Finding fractions of a set.
Anticipations	

DMIC

DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES
ASSESSMENT TASK

NUMBER – FRACTIONS/PROPORTION, RATIOS & DECIMALS: LEVEL 3 Task NR5

Put these fractions in order from smallest to biggest.

$\frac{2}{3}$ $\frac{3}{4}$ $\frac{5}{10}$ $\frac{3}{9}$ $\frac{8}{12}$ $\frac{5}{6}$

Explain and show how you know this.

DMIC

DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES
ASSESSMENT TASK

NUMBER – FRACTIONS (set): LEVEL 3 Task NR4

Josh, Tamati and Emelia planted seeds in the garden.

Josh planted two thirds ($\frac{2}{3}$) of a bag of 39 seeds.

Tamati planted three quarters ($\frac{3}{4}$) of a bag of 32 seeds.

Emelia planted three eighths ($\frac{3}{8}$) of a bag of 48 seeds.

Who planted the most seeds? Who planted the least?

Explain and show how you know this.