HANGAIA TE URUPOUNAMU MŌ TĀTOU

HAUTANGA

Taumata 4 (Tau 7-8)

Teacher Booklet

ODD YEARS

Rapanga 1	He aha ngā momo hautanga i waenga i te $\frac{1}{4}$ me te $\frac{7}{9}$? Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. He aha ngā momo hautanga e iti iho ana i te $\frac{4}{8}$ engari he nui ake i te $\frac{1}{7}$? Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. He aha ngā hautanga e nui ake ana i te 1 engari e iti iho ana i te $1\frac{2}{3}$? Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. He aha ngā hautanga e orite ana i te $\frac{4}{5}$? Me whakamārama me te taunakihia ngā take ka hanga hautau pēnā.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA3-5:** Know fractions and percentages in everyday use. **NA4-3:** Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals. **NA4-4:** Apply simple linear proportions, including ordering fractions.
Whāinga Ako ***Learning Outcomes***	• 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.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, quarters, fourths, thirds, sixths, ninths, twelfths, eighths, whole number, equal, equivalent, greater than, less than, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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., $\frac{1}{4}+\frac{2}{9}$ is more than a quarter and less than $\frac{7}{9}$) and recorded the combinations as numbers, equations or words. **Connect:** Generate sets of fractions that are the same as $\frac{1}{4}$. Can you notice any patterns or rules for why fractions are the same as $\frac{1}{4}$? Generate sets of fractions that are the same as $\frac{4}{5}$. Can you notice any patterns or rules for how you can find fractions that are the same as $\frac{4}{5}$? Generate sets of fractions that are the same as $\frac{2}{3}$. Can you notice any patterns or rules for how you can find fractions that are the same as $\frac{2}{3}$?
Kōrero Tautoko ***Teacher Notes***	• Before the launch have the students explore and talk together about when they have used fractions outside of school. • Have fraction tiles available for the students to use to prove and justify. • Monitor for students using the words fractional numbers (not pieces or bits) and greater than, less than, the same as. • Notice students who make conjectures during connect and have students explore and prove these ideas. • Expect students to represent materials and use appropriate notation and the equal sign $(\frac{3}{4}=\frac{6}{8})$.

Ngohe whakaharatau ***Independent Tasks***	1. $\frac{1}{6}$ o te 36 = 2. $\frac{5}{6}$ o te 36 = 3. $\frac{1}{2}$ o te 200 = 4. $\frac{2}{5}$ o te 100 = 5. $\frac{3}{5}$ o te 200 = 6. $\frac{1}{4}$ o te280 = 7. $\frac{2}{9}$ o te 540 = 8. $\frac{3}{4}$ o te 1 000 = 9. $\frac{1}{3}$ o te ? = 24 10. $\frac{3}{9}$ o te ? = 27
Ngā matapae ***Anticipations***	

Rapanga 2	He nama kei waenganui i ngā nama? He aha tō whakautu? Me whakamāramahia tau whakautu. Me taunakihia au whakautu mā te whakaatu i ēnei: E 5 ngā nama i mua i te 1. 15 ngā nama i waenga i te 5 me te 6. Me tuhi he tauira mā te rārangi tau e whakaatu ana au nama.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA3-5:** Know fractions and percentages in everyday use. **NA4-3:** Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals.
Whāinga Ako ***Learning Outcomes***	• Record fractions on a number-line. • Find and associate fractions with a unique point 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.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, quarters, fourths, thirds, sixths, twelfths, eighths, equal, equivalent, mixed numbers, greater than, less than.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who have developed a representation and marked the fraction on a number-line. Draw a number-line on the board and ask all students who share to mark the fraction onto it by partitioning the number-line. **Connect:** What mixed numbers are there between 5 and 10? Mark each one on a number-line to show where they would be.
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice fractions can be represented both using a bar model (avoid circles) and on number lines. This shows that fractions may also be thought of as numbers. In the connection refer to the fractions (e.g., $3\frac{1}{2}$) as a mixed number and the whole number as a counting 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…).
Ngohe whakaharatau ***Independent Tasks***	Tuhia ētahi pātai hautau e whakamahia ana ou mōhiotanga hautanga.

Ngā matapae ***Anticipations***	

Rapanga 3	E tohe ana a Hone rāua ko Rawiri mo ā rāua mahi kāinga. Ko te mahi kāinga, ko te raupapa i ngā hautau mai te mea iti ki te mea nui ake. Ānei te raupapatanga a Hone: $\frac{3}{4}, \frac{4}{5}, \frac{7}{10}, \frac{10}{12}, \frac{12}{15}$ Kare a Rawiri e whakaae. Ka whakamārama a Rawiri ki a Hone i tētahi ara rerekē ki te raupapa ngā hautanga. Me whakaatu ētahi tauira pēnei i te rārangi tau kia raupapahia ngā hautanga.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3} = 2 \div 3$. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.
Hononga Marautanga ***Curriculum Links***	**NA3-5:** Know fractions and percentages in everyday use. **NA4-4:** Apply simple linear proportions, including ordering fractions.

Whāinga Ako ***Learning Outcomes***	• Order and compare fractions. • Find equivalent fractions.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, thirds, twelfths, eighths, fifteenths, twentieths, fraction, equal, equivalent, greater than, less than, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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:** Can you put these in order from smallest to largest? $\frac{9}{10}, \frac{1}{2}, \frac{5}{6}, \frac{14}{15}, \frac{2}{3}, \frac{4}{5}$. What pattern can you notice? Describe the rule you could use to order fractions like these? When does the rule work?
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice that the denominator represents the number of pieces the whole has been divided into and the numerator represents the number of pieces. • Expect students to represent using a range of representations including the use of a number line or rectangular blocks which are the same size. • In the connect, students may generalise that the larger the denominator the smaller the fraction piece left is, however, facilitate them to notice that this only applies to unit fractions and is not a rule for all fractions.
Ngohe whakaharatau ***Independent Tasks***	Raupapahia ēnei hautanga ki tētahi rārangi tau. 1. $\frac{5}{6}, \frac{2}{3}, \frac{7}{9}$ 2. $\frac{3}{4}, \frac{5}{8}, \frac{7}{12}$ 3. $\frac{7}{8}, \frac{11}{12}, \frac{10}{11}$ 4. $\frac{3}{8}, \frac{5}{7}, \frac{1}{2}$ 5. $\frac{5}{6}, \frac{8}{12}, \frac{7}{9}$ 6. $\frac{11}{16}, \frac{5}{8}, \frac{7}{12}$

	7. $\frac{7}{8}, \frac{2}{3}, \frac{3}{4}$ 8. $\frac{1}{4}, \frac{3}{8}, \frac{1}{3}$ He aha te ture, tauira rānei kua whakamahia e koe ki te awhi i a koe?
Ngā matapae ***Anticipations***	

Rapanga 4	Kei te raranga te whānau o Tui i tētahi korowai mā te pōtaetanga o tētahi mokopuna. I te mutunga o tērā márama kua oti $\frac{3}{8}$ o te korowai. I tērā wiki i oti $\frac{1}{3}$ o te korowai. I tēnei wiki i oti $\frac{1}{4}$ o te korowai. He aha te rahi o te korowai kua oti te whānau o Tui? He aha te toenga?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Change fractions to equivalent fractions. • Solve problems that involve adding or subtracting fractions.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, quarters, fourths, thirds, eighths, equivalent, mixed numbers, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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 are the common denominators for: $\frac{1}{4}$ and $\frac{1}{8}$ $\frac{1}{5}$ and $\frac{1}{10}$ $\frac{1}{2}$ and $\frac{1}{6}$ and $\frac{1}{8}$ $\frac{1}{9}$ and $\frac{1}{4}$ and $\frac{2}{3}$ $\frac{5}{7}$ and $\frac{2}{6}$ and $\frac{1}{3}$ What do you notice about finding a common denominator? Can you describe a rule to use when adding fractions with different denominators?

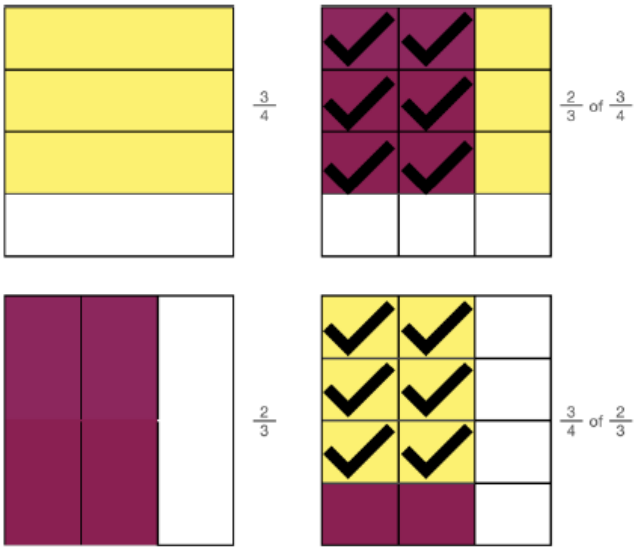
Kōrero Tautoko ***Teacher Notes***	• An Ie toga is a Samoan fine mat which is presented on ceremonial occasions and highly treasured. During the launch ensure that the students recognise these as of great cultural importance (never used as floor mats). Establish the maths norms using the concept of how a group of people work together as a family to make a fine mat. • Facilitate 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 ($\frac{3}{8}$ as $\frac{1}{8}+\frac{1}{4}$ or $\frac{6}{16}$). • In the connect develop a generalisation for rules to find a common denominator through finding a common multiple.
Ngohe whakaharatau ***Independent Tasks***	Tāpirihia ēnei hautau: 1. $\frac{1}{10}+\frac{1}{2}+\frac{1}{6}=$ 2. $\frac{1}{15}+\frac{1}{3}+\frac{1}{5}=$ 3. $\frac{2}{12}+\frac{1}{2}+\frac{3}{4}=$ 4. $\frac{2}{3}+\frac{5}{6}+\frac{6}{8}=$ 5. $\frac{2}{5}+\frac{3}{8}+\frac{1}{10}=$ 6. $\frac{3}{4}+\frac{1}{3}+\frac{4}{5}=$ 7. $\frac{1}{8}+\frac{1}{7}+\frac{1}{3}=$ He aha ngā tauira ka kite? Tuhia te ture kia kimi te taurao pātahi.
Ngā matapae ***Anticipations***	

Rapanga 5	Pehea ou pukenga whakatau tata? Ko tēhea te whakautu e tata ana? 1. $\frac{1}{12} + \frac{7}{8} =$ 20, 8, $\frac{1}{2}$, 1? 2. $\frac{8}{9} + \frac{11}{12} =$ 19, $1\frac{1}{2}$, 2, $1\frac{3}{4}$? 3. $\frac{6}{7} - \frac{1}{2} =$ $\frac{1}{2}$, 1, 5, 4. $9\frac{3}{4} - 5\frac{5}{6} =$ 4, $3\frac{1}{2}$, 3? Me taunakihia ou whakautu ki ngā tauira e rua.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3} = 2 \div 3$. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.

Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.
Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Estimate the result of an operation to the nearest whole or part of a whole number.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, sevenths, ninths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who have first estimated of the size of the fractions in the equation and then estimated the size of the overall answer rather than giving the exact answer. **Connect:** Which are greater than one or less than one? $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$ $\frac{2}{8}+\frac{2}{8}+\frac{2}{8}+\frac{2}{8}+\frac{2}{8}$ $\frac{1}{2}+\frac{3}{4}$ $\frac{19}{20}+\frac{1}{10}$ $\frac{1}{100}+\frac{1}{20}$ What do you notice? Be ready to explain and justify your reasoning.

Kōrero Tautoko ***Teacher Notes***	• Reinforce to the students that estimation is a thinking tool and it should always be used to make sense of the size of the number. • Notice students who reason out the size of the fractions rather than working through a procedure to get the exact answer.
Ngohe whakaharatau ***Independent Tasks***	Whakaoti ēnei mā te whakatau tata. Whakaatu ngā taunakitanga mo ia whakautu, haunga ngā whakautu tika. He iti, he nui ake ēnei i te hauwhā? 1. $\frac{2}{5} + \frac{1}{10}$ 2. $\frac{1}{4} + \frac{3}{8}$ 3. $\frac{1}{3} + \frac{1}{6}$ 4. $\frac{3}{7} + \frac{1}{4}$ 5. He iti, he nui ake ēnei i te 2? 6. $\frac{3}{4} + \frac{9}{12} + \frac{1}{2}$ 7. $\frac{17}{20} + \frac{7}{8} + \frac{9}{10}$ 8. $3\frac{1}{6} - 1$ 9. $3\frac{3}{4} - 1\frac{1}{2}$ Tuhia au ake whārite hautanga kia taea tō hoa ki te whakautu.
Ngā matapae ***Anticipations***	

Rapanga 6	He tiakereti tā Ava rāua ko Hariata. I kai a Ava $\frac{1}{4}$ o tana tiakereti. I te mutunga o te kura i kai a Ava $\frac{2}{3}$ o tana tiakereti ,ā, i waiho te toenga i te kapata matao. I kai a Hariata $\frac{1}{3}$ o tana tiakereti. I te mutunga o te kura i tiki te toenga o tana tiakereti. I kai $\frac{3}{4}$ o te toenga ,ā, ka waiho te toenga ki te kapata matao. Ko wai i kai te nuinga ā muri i te kura?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Multiply a fraction by a fraction. • Represent multiplication of fractions using a box model.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, thirds, tenths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who are able to explain and justify their explanations which draw on representations for example a box model to show how you can multiply a fraction by a fraction. If no students show this, then teacher models this as below.  **Connect:** Can you draw a model of: $\frac{3}{4} \times \frac{1}{2} =$ $\frac{2}{3} \times \frac{1}{2} =$ $\frac{1}{4} \times \frac{1}{8} =$ If you multiply the denominators and the numerators you get the same result as your model. Can you use them to explain why.

Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice the need to consider the fraction as part of one whole. • Monitor for students who have maintained a focus on the number of unit parts in all and recognised that the size of the parts determines the number of wholes. • Notice students who use a model to represent their reasoning. If students use a formal procedure expect them to be able to explain it in sense-making ways. • Look for students and highlight those who recognise the commutative property.
Ngohe whakaharatau ***Independent Tasks***	Whakautu ēnei mā te tauira. $\frac{6}{8} \times \frac{2}{3}$ $\frac{5}{6} \times \frac{1}{4} =$ $\frac{3}{5} \times \frac{3}{4} =$ $\frac{6}{7} \times \frac{2}{5} =$ Tuhia tētahi rapanga e hono ana ki ngā whārite.
Ngā matapae ***Anticipations***	

Rapanga 7	Kei te tapahi papa a Matene. I mua i te kai tina kua tapahi $\frac{1}{3}$. Ā muri te kai tina ka tapahi $\frac{3}{4}$ o te toenga o te papa. Pehea te rahi o te papa kua tapahi? He aha te toenga o te papa? I toha a Mere rāua ko Rangi i tētahi wai arani. I inu a Mere $\frac{1}{5}$ o te pātara wai arani. I inu a Rangi $\frac{2}{3}$ o te toenga o te pātara. He aha te hautanga o te inu i inu a Rangi?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Multiply a fraction by a fraction. • Represent multiplication of fractions using a representation.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, thirds, tenths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who are able to explain and justify their explanations which draw on representations. **Connect:** $\frac{1}{4} \text{ X } \frac{1}{2} =$ $\frac{3}{4} \text{ X } \frac{1}{8} =$ $\frac{2}{3} \text{ X } \frac{5}{6} =$ What patterns do you notice? Explain and justify why you always have to start from the whole when working with fractions.
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice the need to consider the fraction as part of one whole. • Monitor for students who have maintained a focus on the number of unit parts in all and recognised that the size of the parts determines the number of wholes. • Notice students who use a model to represent their reasoning. If students use a formal procedure expect them to be able to explain it in sense-making ways.
Ngohe whakaharatau ***Independent Tasks***	I ringi a Pere $\frac{2}{3}$ o te rita wai reka ki ngā kapu e 5. He aha te hautau o te wai reka kua ringi a Pere ki ia kapu e 5? $\frac{3}{4}$ o tētahi pizza e toe ana. Mēnā ka hoatu he $\frac{1}{3}$ ki to kaihana, he aha te hautanga o te katoa o te pizza ka hoatu ki tō teina?

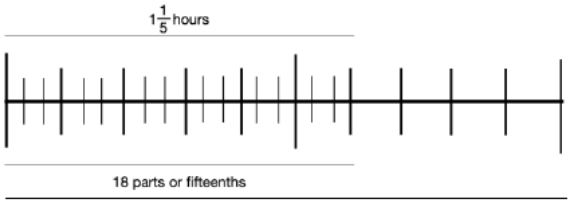
Ngā matapae ***Anticipations***	

Rapanga 8	Kei te awhi koe ki te tuitui ula lole. He pēke rare tāu(fruit bursts) kia tuitui ia ula lole. Ka hoatu tō Māmā e 4 ngā pēke me $\frac{3}{4}$ o tētahi pēke. Ko te toharite (average) o ia ula lole ko te $\frac{2}{3}$ o tētahi pēke. Ka oti te katoa o ngā rare. E hia ngā ula lole kua tuitui?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Divide a mixed number by a fraction. • Use repeated subtraction to solve division problems.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, thirds, fifths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to who use measurement division (repeated subtraction as division, e.g., $4\frac{3}{4} - \frac{2}{3} - \frac{2}{3} - \frac{2}{3} \ldots$.) or who use the inverse relationship of multiplication and division ($\frac{2}{3} \times ? = 4\frac{3}{4}$) or ($\frac{2}{3} + \frac{2}{3} + \frac{2}{3} \ldots = 4\frac{3}{4}$). 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 (repeated subtraction) or multiplication (repeated addition): It takes $\frac{1}{6}$ of a bag of minties for 1 ula lole. I have 1 bag of minties, how many ula lole can I make? I have 2 bags of minties, how many ula lole can I make? I have 10 bags of minties, how many ula lole can I make? I have a $\frac{1}{2}$ a bag of minties, how many ula lole can I make? I have a $2\frac{1}{2}$ a bag of minties, how many ula lole can I make? What pattern do you notice? Could you describe what you are doing when you are dividing by a fraction?
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice that there are multiples of the fractional number which they can subtract repeatedly. • 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. • Monitor for students who make the conjecture that when dividing by a fractional number the dividend gets bigger rather than smaller as it does when dividing by a whole number. Record and explore with students. • In the connect, press students to consider division of fractions as how many times something can got into… be subtracted

Ngohe whakaharatau ***Independent Tasks***	Kei te awhi koe ki te tuitui ula lole. He pēke rare tāu (fruit bursts) kia tuitui ia ula lole. Ka hoatu tō Māmā e 4 ngā pēke me $\frac{5}{6}$ o tētahi pēke. Ko te toharite (average) o ia ula lole ko te $\frac{4}{5}$ o tētahi pēke. Ka oti te katoa o ngā rare. E hia ngā ula lole kua tuitui? Whakamārama ki tō hoa he aha ngā tikanga o te whakawehe hautanga. Kei te awhi koe ki te tuitui ula lole. He pēke rare tāu (fruit bursts) kia tuitui ia ula lole. Ka hoatu tō Māmā e 8 ngā pēke me $\frac{3}{4}$ o tētahi pēke. Ko te toharite (average) o ia ula lole ko te $\frac{7}{9}$ o tētahi pēke. Ka oti te katoa o ngā rare. E hia ngā ula lole kua tuitui? Whakamārama ki tō hoa he aha ngā tikanga o te whakawehe hautau.
Ngā matapae ***Anticipations***	

Rapanga 9	Kōtahi hāora me te haurima tā Koro ki te whakaoti e toru ngā momo mahi. Pehea te roanga o ia mahi? Whakaatu ngā whakautu mā te rārangi tau me ngā porotiti. Nā, e hia ngā miniti o ia mahi?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.
Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.

Whāinga Ako ***Learning Outcomes***	• Divide a mixed number by a fraction. • Use repeated subtraction to solve division problems.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, fourths, quarters, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who are able to justify their explanation using number lines and counters to represent their solution. **Connect:** What fraction would you need to work with if he had: 2 jobs in $2\frac{1}{7}$ hours? 4 jobs in $3\frac{1}{5}$ hour? 7 jobs in $1\frac{1}{2}$ hours? What pattern can you notice?
Kōrero Tautoko ***Teacher Notes***	• During the launch, reinforce that the students can work out the solution using minutes, but they also need to use both a number line and counters as representations of their reasoning. • Have counters and empty number lines available. • Facilitate the students to notice that one approach is to divide each fifth into 3 parts. Number line representation is as follows:  To represent with counters, they need to divide each fifth into three parts. They use a set of 15 counters as a whole in an array of 5 lots of 3 and a second array of 3 for the part of the next hour so that they have represented $1\frac{1}{5}$ hours. They have 18 counters in all.
Ngohe whakaharatau ***Independent Tasks***	Whakaoti ēnei whārite: $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}=$ __ x __ = __ $4\times$ __ $=\frac{5}{6}+\frac{5}{6}+\frac{5}{6}+\frac{5}{6}=$ $\frac{4}{7}+?=2\times\frac{4}{7}=$

	$\frac{3}{8} \times \_\_ = \_\_ + \_\_ + \_\_$ $3 \div \frac{1}{2} =$ Tuhia he rapanga e hono ai ki ngā whārite nei: $\frac{4}{5} \times 6 =$ $\frac{2}{3} + \frac{7}{9} =$ $6 \div \frac{2}{7} =$ $5 \div \frac{5}{6} =$
Ngā matapae ***Anticipations***	

Rapanga 10	Ka whakakī tō Māmā i te waka mā te penehinu. He $\frac{1}{3}$ kē te waka i te penehinu, ā, ka whakakī 35 ngā rita ki te waka. He $\frac{4}{5}$ te penehinu i te waka inaianei E hia ngā rita e toe ana ki te whakakī te waka? Me whakamārama, me taunakihia au tauira.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.

Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• Find and compare equivalent fractions. • Add and subtract fractions. • Find fractions of a set.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, quarters, fourths, fifths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who represented the problem as $\frac{1}{3} + \_\_$ $[35] = \frac{4}{5}$ and who have used a common multiple and denominator for third and fifths to solve the problem along with representation. **Connect:** Make statements of things that you know are always true about fractions. Explore and prove these.
Kōrero Tautoko ***Teacher Notes***	• During the launch, facilitate students to notice that whole number problems and fractional number problems may be start unknown or change unknown problems and not result unknown only. • Expect the students to represent their reasoning using both diagrams (rectangular box for fractions), number-lines, and notation.
Ngohe whakaharatau ***Independent Tasks***	Kei te rākei a Marika i tētahi kēkē. 108 ngā rare ki te whakarākei. Ka hautorutia a Marika i te kēkē me te whakaaro kia whakawehe ngā rare kia rerekē te panga riterite o ngā rare. He $\frac{4}{6}$ o ngā rare ki te wāhanga tuatahi. He $\frac{2}{9}$ o ngā rare ki te wāhanga tuarua. He $\frac{1}{12}$ o ngā rare ki te wāhanga tuatoru. E hia ngā rare ki ia wāhanga?
Ngā matapae ***Anticipations***	

Rapanga 11 (Optional task)	Ina, 72 ngā pene whitau i ngā pēke $2\frac{1}{4}$. E hia ngā pene whitau i tētahi pēke? Mēnā ka oma tere koe, ka oti $3\frac{1}{2}$ ngā kiromita i tētahi hāora. Pehea te tere o tau omanga i ngā kiromita i ia hāora?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3}$ = 2 ÷ 3. On the number line, 2 ÷ 3 can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit (2 x $\frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3}$ x 2); each is associated with the same point on the number line. 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.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.
Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.

Whāinga Ako ***Learning Outcomes***	• Divide a fraction by a fraction.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, fifths, thirds, sevenths, tenths, sixths, equal, equivalent, numerator, denominator, common denominator, common multiple.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who have reasoned through using the amount of one fourth (equal partitioning) and then the value of one whole (iterating) **Connect:** In solving these two problems you had to keep thinking: How much is one? Can you explain why this was important?
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice the importance of considering the whole. • Notice students who use reasoned notation to solve the equations.
Ngohe whakaharatau ***Independent Tasks***	Ka āhei koe ki te tuhi e 3 ngā whārite hautau whakarea ,ā, me whakautu ngā whārite? Ka āhei koe ki te tuhi e 3 ngā whārite hautau whakawehe ,ā, me whakautu ngā whārite?
Ngā matapae ***Anticipations***	

Rapanga 12	Whakaoti ēnei whārite: 1. $a \times \frac{1}{4} = 2$ 2. $3 \times \frac{1}{3} + 2 \times \frac{1}{3} = b$ 3. $8 \times \frac{3}{8} = c$ 4. $d \times \frac{3}{4} = 15$ 5. $e \times 1\frac{2}{3} = 25$ 6. $\frac{1}{3} = f \times \frac{1}{6}$ 7. $\frac{2}{5} = g \times \frac{1}{10}$ 8. $\frac{3}{8} + h = \frac{1}{2}$ 9. $\frac{7}{20} = \frac{i}{15}$ 10. $\frac{1}{10} = 2 \times j$ 11. $\frac{8}{5} = k \times \frac{1}{10}$ 12. $2 \times \frac{1}{3} = l \times \frac{1}{6}$ Me maumahara ki te whakmārama me te taunakihia ngā whakautu.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = a ÷ b, a & b are integers & b - 0), and it can be interpreted on the number line in two ways. For example, $\frac{2}{3} = 2 \div 3$. On the number line, $2 \div 3$ can be interpreted as 2 segments where each is $\frac{1}{3}$ of a unit ($2 \times \frac{1}{3}$) or $\frac{1}{3}$ of 2 whole units ($\frac{1}{3} \times 2$); each is associated with the same point on the number line. Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.
Hononga ki te Marau	Ka mohio ki nga hautau (tae atu ki nga hautau nui ake i te kotahi) me nga tau a-ira: te raupapa hautau (hautahi), nga raupapa tatauranga hautau (hautekau, haurau). Ka kowhiri, ka whakamarama i te rautaki e tino whaihua ana hei whakaoti rapanga e whai wahi mai ana te tauoti, te hautau: • rautaki tatau; • rautaki whakaropu; • rautaki tohatoha orite; • rautaki tapiripiri; • rautaki whakarea mama.
Hononga Marautanga ***Curriculum Links***	**NA4-2:** Understand addition and subtraction of fractions, decimals, and integers. **NA4-4:** Apply simple linear proportions, including ordering fractions. **NA5-1:** Reason with linear proportions. **NA5-3:** Understand operations on fractions, decimals, percentages, and integers.
Whāinga Ako ***Learning Outcomes***	• 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.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, quarters, fourths, thirds, sixths, eighths, equal, equivalent, mixed numbers, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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.

Kōrero Tautoko ***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.
Ngohe whakaharatau ***Independent Tasks***	Complete an assessment task below: • Fractions/Proportion, Ratios and Decimals: NR9 • Fractions/Proportion, Ratios and Decimals: NR12 • Fractions/Proportion, Ratios and Decimals: NR13
Ngā matapae ***Anticipations***	
