HANGAIA TE URUPOUNAMU MŌ TĀTOU

HAUTANGA

Taumata 3 (Tau 5-6)

Teacher Booklet

ODD YEARS

Rapanga 1	Whakamahia te rauemi hautau kia hanga te kōtahi ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga ngā wāhanga ki te kōtahi. Whakamahia te rauemi hautau kia hanga ngā hautanga he iti iho i te haurua engari he nui ake i te rua hautekau mā rua taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga ngā wāhanga e tata ana ki te kōtahi. Whakamahia te rauemi hautau kia hanga ngā hautanga nui ake I te kōtahi engari he iti iho I te 1 me te 1/2 ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga hautanga 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***	**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.
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, tenths, twelfths, eighths, fraction, fractional number, whole number, equal, equivalent, greater than, less than.
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., $\frac{1}{2}+\frac{1}{4}+\frac{1}{4}=1$) and recorded the combinations as numbers, equations or words. **Connect:** What do you notice about fractions that are less than one whole? What do you notice about fractions that are more than one whole? What is $\frac{6}{4}$ the same as? What is $\frac{75}{50}$ the same as? What is $\frac{1500}{1000}$ the same as? What patterns and relationships do you notice? What other fractions are the same as one whole and a half? [Encourage students to record using equals sign $\frac{6}{4}=\frac{75}{50}=\frac{1500}{1000}$] What is a rule for fractions that equal one whole and a half? [Record conjectures and symbolise as $\frac{n+(n\div 2)}{n}$].
Kōrero Tautoko ***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 available for the 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 $(\frac{2}{2} = 1)$ • For the independent task, you will need fraction tiles to be available for students who would like to use them.
Ngohe whakaharatau ***Independent Tasks***	He aha ētahi atu hautanga e orite ana ki te 1? Tuhi me te tā ou whakamārama. He aha ētahi hautanga e orite ana ki te hauwha? Tuhi me te tā ou whakamārama He aha ētahi hautanga e orite ana ki te hautoru? Tuhi me te tā ou whakamārama mā te pikitia me te whārite. He aha ētahi hautanga e orite ana ki te haurima? Tuhi me te tā ou whakamārama mā te pikitia me te whārite. He aha ētahi hautanga e orite ana ki te hauwaru? Tuhi me te tā ou whakamārama mā te pikitia me te whārite.
Ngā matapae ***Anticipations***	

Rapanga 2	Whakamahia te rauemi hautanga kia hanga ngā hautanga he iti iho I te ½ engari he nui ake i te ¼ ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. Whakamahia te rauemi hautanga kia hanga ngā hautanga i waenga I te 2/3 me te 7/8 ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. Whakamahia te rauemi hautanga kia hanga ngā hautanga nui ake i te 1 engari he iti iho I te 1 1/3 ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga hautanga pēnā. Whakamahia te rauemi hautanga kia hanga ngā hautanga e orite ana ki 1/5 ki ngā taputapu hautanga rerekē. Tuhia me te tā to whakaturanga. Me whakamārama me te taunakihia ngā take ka hanga hautanga 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***	**NA3-1:** 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.
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, twelfths, eighths, fraction, fractional number, 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 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 quarter? [Encourage students to record using equals sign $\frac{1}{4}=\frac{2}{8}=\frac{25}{100}$] What patterns and relationships do you notice? What is a rule to know whether fractions equal one quarter? What is a rule to know whether fractions are greater than one whole? What is a rule to know whether fractions are less than one whole?
Kōrero Tautoko ***Teacher Notes***	• Have fraction pieces for the whole, quarters, halves, eighths, thirds, sixths, twelves, fifths, tenths. • 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 $(\frac{2}{2}=1)$ 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.

Ngohe whakaharatau ***Independent Tasks***	He orite te $\frac{4}{6}$ i te $\frac{2}{3}$? He aha ai? He aha e kore ai? He orite te $\frac{3}{5}$ i te $\frac{1}{2}$? He aha ai? He aha e kore ai? He orite te $\frac{3}{4}$ ki $\frac{4}{8}$? He aha ai? He aha e kore ai? He orite te $\frac{1}{2}$ ki $\frac{2}{4}$, $\frac{3}{6}$, $\frac{4}{8}$? He aha ai? He aha e kore ai? He orite te $\frac{9}{10}$ ki $\frac{4}{5}$? He aha ai? He aha e kore ai? He nui ake te 1 ki $\frac{3}{4} + \frac{1}{2}$? He aha ai? He aha e kore ai?
Ngā matapae ***Anticipations***	

Rapanga 3	Kei te tākaro a Tiana me āna hoa i tētahi kēmu. Ko te ture matua, me whakaae, kare i whakaae rānei i ngā kōrero i raro nei: E ai ki a Tiana 15 ngā nama i waenga i te 1 me te 2. Tiani says that there are more than 15 numbers between 1 and 2. Kare I whakaae mai āna hoa, engari ka hē rātou. Ka taea e koe te hāponohia i nga 15 o ngā nama i waenga i te 1 me te 2? Whakamahia he rārangi tau kia whakaatu kei hea ngā 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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• 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.
Reo Matatini Pāngarau ***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.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who can visualise and draw a number-line and mark the positions of fractions between 1 and 2 by partitioning the number-line. **Connect:** What mixed numbers are there between 9 and 10? Mark each one on a number-line to show where they would be.
Kōrero Tautoko ***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., $3\frac{1}{2}$) 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.

Ngohe whakaharatau ***Independent Tasks***	Tuhia tāu ake reretauāki hautanga. Nā, me hāponohia ia reretauāki kia tika, kia hē rānei. Whakamahia kia rua ngā momo tauira.
Ngā matapae ***Anticipations***	

Rapanga 4	Ko wai i kai te nuinga o ngā keke? Ko wai kāre i kai te nuinga o ngā keke? A. E 9 ngā tamariki e toha ana i ngā keke 10. B. E 5 ngā tamariki e toha ana i ngā keke e 8 C. E 3 ngā tamariki e toha ana i nga keke e 5. D. E 4 ngā tamariki e toha ana i ngā keke e 7. E. E 8 ngā tamariki e toha ana i ngā keke12. F. 12 ngā tamariki e toha ana i ngā keke18. Raupapahia ēnei. Me whakamārama, me taunakihia ou whakaaro i ngā tauira rerekē.
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***	**NA3-1:** 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.

Whāinga Ako ***Learning Outcomes***	• Divide a whole number into fractions. • Compare and use different sized fractions. • Recognise and use improper fractions to represent more than one whole.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, quarters, fourths, thirds, sixths, twelfths, eighths, ninths, fifteenths, fraction, equal, equivalent, mixed numbers, greater than, less than, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to share who develop representations to justify their reasoning and either split all the doughnuts 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. $9 \div 8 = \frac{9}{8} = 1\frac{1}{8}$ $7 \div 5 = \frac{7}{5} = 1\frac{2}{5}$ $6 \div \ =$ $10 \div 7 =$ $4 \div 3 =$ $15 \div 9 =$ What patterns and relationships do you notice that can help you solve the problems?
Kōrero Tautoko ***Teacher Notes***	• Notice students who use multiplicative reasoning and relational reasoning as part of their explanation • (e.g., $9 \div 8 = \frac{9}{8}$ and $\frac{9}{8} = 1\frac{1}{8}$). • Expect students to use a range of representations including drawings and notation.
Ngohe whakaharatau ***Independent Tasks***	Kei te wānanga te tīma Poitarawhiti o Mereana kia whakarite ko wai te kaikōkiri uhunga, ā, ko wai te kaikuru uhunga. I tirohia rātou ki ngā tapeke. 10/12 ngā piro a Lisa ¾ ngā piro a Ann 3/6 ngā piro o Nevaeh 2/3 ngā piro a Aumihia Ki ou whakaaro, ko wai te kaikōkiri uhunga tika me te kaikuru uhunga tika?

Ngā matapae ***Anticipations***	

Rapanga 5	Kei te hiahia a Georgia me tana hoa ki te tākaro roroha (elastic). Engari me whiri ētahi roroha paku kia hanga tētahi mea roa rawa. Kei a Georgia $\frac{3}{4}$ o tētahi mita roroha. Kei a Lily $\frac{2}{3}$ o tētahi mita roroha. Kei a Kiwi $\frac{1}{2}$ o tētahi mita roroha. Pehea te roanga o te roroha mēnā ka whiri ngā paku roroha katoa?
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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \times \frac{4}{1}$; 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.
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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Change fractions to equivalent fractions. • Solve problems that involve adding fractions.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, quarters, fourths, thirds, 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 would be a common denominator if you were adding: $\frac{1}{2}$ and $\frac{1}{4}$ $\frac{1}{3}$ and $\frac{1}{6}$ $\frac{1}{3}$ and $\frac{1}{4}$ $\frac{1}{2}$ and $\frac{1}{5}$ $\frac{3}{4}$ and $\frac{1}{5}$ $\frac{7}{8}$ and $\frac{1}{3}$ Can you find a pattern for finding a common denominator?
Kōrero Tautoko ***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 ($\frac{3}{4}$ as $\frac{1}{2}$ + $\frac{1}{4}$ or who use equivalence relationships). • Expect students to represent using drawings and notation.

Ngohe whakaharatau ***Independent Tasks***	Kei te whare pikitia a Litea me tana hoa e rua. Ka hoko ia kotiro i tētahi pouaka kanga papa. Ka kai a Litea $\frac{4}{6}$ o tana pouaka. Ka kai a Kaea $\frac{6}{9}$ o tana pouaka. Ka kai a Rake $\frac{8}{12}$ o tana pouaka. Ka riringi te toenga o ngā kanga papa ki ngā pouaka e rua. E hia te toenga o te kanga papa?
Ngā matapae ***Anticipations***	

Rapanga 6	Kei te hanga a Jean me āna hoa i ētahi mea whakakai mā te one. E 3 ngā pākete one tā rātou. I whakamahia a Henare he $\frac{1}{4}$ o tāna pākete one. I whakamahi a Tane $\frac{2}{3}$ o tana pākete one. I whakamahia a Rangi $\frac{5}{6}$ o tana pākete one. I whakamahia a Holly i te toenga. He aha te hautanga pākete one e toe ana mā Holly?
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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3}$ x $\frac{4}{1}$; 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.
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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Find equivalent fractions. • Subtract a fraction from a whole number. • Add and subtract fractions. • Generalise how to find common denominators.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, quarters, fourths, thirds, sixths, equal, equivalent, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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: $\frac{1}{8}, \frac{1}{2}, \frac{1}{16}$ $\frac{1}{4}, \frac{1}{5}, \frac{1}{6}$ Can you find a pattern? What rule could you use to find common denominators?
Kōrero Tautoko ***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 ($\frac{3}{4}$ as $\frac{1}{2} + \frac{1}{4}$ or who use equivalence relationships). • Expect students to represent using drawings and notation.
Ngohe whakaharatau ***Independent Tasks***	He pēke $\frac{1}{2}$ māpere ta Hera. He pēke māpere $\frac{1}{4}$ tā Mere. Pehea te rahi o te pēke māpere? He pēke $\frac{1}{3}$ māpere ta Hera. He pēke māpere $\frac{1}{6}$ tā Mere. Pehea te rahi o te pēke māpere?

	He pēke $\frac{1}{3}$ māpere ta Hera. He pēke māpere $\frac{1}{4}$ tā Mere. Pehea te rahi o te pēke māpere? He pēke $\frac{1}{2}$ māpere ta Hera. He pēke māpere $\frac{1}{5}$ tā Mere. Pehea te rahi o te pēke māpere? He pēke $\frac{1}{5}$ māpere ta Hera. He pēke māpere $\frac{3}{4}$ tā Mere. Pehea te rahi o te pēke māpere? He pēke $\frac{3}{8}$ māpere ta Hera. He pēke māpere $\frac{1}{3}$ tā Mere. Pehea te rahi o te pēke māpere?
Ngā matapae ***Anticipations***	

Rapanga 7	Kei te tuitui te whānau o Tere i tētahi tivaevae. Ka whakamahia a Whāea Hana he $\frac{1}{2}$ o tētahi pōro wūru. Ka whakamahia a Whāea Reremoana i $\frac{1}{3}$ o tētahi pōro wūru. Pehea te rahi ake o te wūru o Whāea Hana? Kei te tuitui te whānau o Tere i tētahi tivaevae. Ka whakamahia a Whāea Hana he $\frac{7}{8}$ o tētahi pōro wūru. Ka whakamahia a Whāea Reremoana i $\frac{1}{3}$ o tētahi pōro wūru. Pehea te rahi ake o te wūru o Whāea Hana? Kei te tuitui te whānau o Tere i tētahi tivaevae. Ka whakamahia a Whāea Hana he $\frac{9}{10}$ o tētahi pōro wūru. Ka whakamahia a Whāea Reremoana i $\frac{5}{6}$ o tētahi pōro wūru. Pehea te rahi ake o te wūru o Whāea Hana?
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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3}$ x $\frac{4}{1}$; 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.

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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Find equivalent fractions. • Subtract a fraction from a fraction. • Generalise how to find equivalent fractions.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, thirds, sixths, eighths, tenths, equal, equivalent, 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 subtracted the fractions. **Connect:** What is the difference between: $\frac{1}{3}$ and $\frac{4}{6}$ $\frac{4}{6}$ and $\frac{10}{12}$ $\frac{3}{8}$ and $\frac{4}{4}$ $\frac{1}{7}$ and $\frac{1}{4}$ $\frac{1}{5}$ and $\frac{1}{6}$ What patterns did you use to solve these in your mind?

Kōrero Tautoko ***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.
Ngohe whakaharatau ***Independent Tasks***	1. $\frac{1}{2} - \frac{1}{4} =$ 2. $\frac{1}{3} - \frac{1}{4} =$ 3. $\frac{5}{6} - \frac{1}{2} =$ 4. $? - \frac{1}{4} = \frac{1}{8}$ 5. $? - \frac{2}{5} = \frac{3}{5}$ 6. $\frac{9}{10} - ? = \frac{1}{2}$ 7. $\frac{5}{8} - ? = \frac{1}{4}$ 8. $\frac{6}{9} = \frac{1}{2} + ?$ 9. $\frac{3}{5} = ? + \frac{1}{10}$
Ngā matapae ***Anticipations***	

Rapanga 8	Kei te awhi a Alana rāua ko Irihapeti i tā raua kaihana ki te tunu palusami. Ānei ngā kai o roto ia pākete palusami: $\frac{1}{4}$ tini o te miti kau (corned beef) $\frac{1}{8}$ o ngā rau taro $\frac{1}{3}$ o tētahi aniana paku $\frac{1}{4}$ o tētahi kāriki $\frac{1}{2}$ o tētahi kokonui soy sauce $\frac{1}{3}$ o tētahi kapu kirimi kokonati. E 9 ngā tangata e kai tahi ana. Pehea te rahi o ia kai whakauru?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = 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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3}$ x $\frac{4}{1}$; 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.

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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Multiply a mixed number by a whole number. • Multiply a fraction by a whole number.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, quarters, fourths, whole number, equivalent, mixed numbers, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	• During the launch, establish the context of the problem. Palusami is a dish common to the Pacific. The recipe for this palusami is Tuvaluan. • 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 counterintuitive 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

Kōrero Tautoko ***Teacher Notes***	Select students who either use repeated addition for the fractional numbers (e.g., add $\frac{7}{8}$ three times for the can of corned beef and get $\frac{21}{8}$); or add the thirds and get six thirds and see this as equivalent to two wholes; or solve the problem as 3 x $\frac{7}{8}$ = $\frac{21}{8}$ or 2 $\frac{5}{8}$. If the second multiplicative solution is not used, then model as another way the teacher has seen used previously. **Connect:** $\frac{1}{2}$ x 4 = $\frac{1}{2}$ x 8 = $\frac{1}{4}$ x 8 = $\frac{1}{4}$ x 20 = $\frac{1}{3}$ x 6 = $\frac{1}{10}$ x 50 = What patterns do you notice when you are multiplying fractions?
Ngohe whakaharatau ***Independent Tasks***	Kei te awhi a Alana rāua ko Irihapeti i tā raua kaihana ki te tunu palusami. Ānei ngā kai o roto ia pākete palusami: $\frac{1}{4}$ tini o te miti kau (corned beef) $\frac{1}{8}$ o ngā rau taro $\frac{1}{3}$ o tētahi aniana paku $\frac{1}{4}$ o tētahi kāriki $\frac{1}{2}$ o tētahi kokonui soy sauce $\frac{1}{3}$ o tētahi kapu kirimi kokonati. E 6 ngā tangata e kai tahi ana. Pehea te rahi o ia kai whakauru? Pehea te rahi o ngā kai whakauru mēnā 12 ngā tangata?

Ngā matapae ***Anticipations***	

Rapanga 9	I kohi a Michaela rāua ko Ava i ngā anga rerekē kia hanga he tauira i te one. I kohi 60 ngā anga tio, 120 ngā anga pipi, 66 ngā anga kutai hoki. I te tauira tuatahi, i whakawehe ngā anga i ngā wahanga e 6. E hia ngā momo anga i ia wāhanga? He aha te hautau o ngā anga ki ia wāhanga? I te tauira tuarua, i whakawehe ngā anga i ngā wahanga e 3. E hia ngā momo anga i ia wāhanga? He aha te hautau o ngā anga ki ia wāhanga? I te tauira tuatoru, i whakawehe ngā anga i ngā wahanga e 7. E hia ngā momo anga i ia wāhanga? He aha te toenga o ngā anga? He aha te hautanga o ngā anga ki ia wāhanga?
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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3}$ x $\frac{4}{1}$; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.
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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Find fractions of a set. • Generalise how to find a fraction of a set.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, quarters, fourths, thirds, sevenths, equal, equivalent, fair share, partitioning, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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., 60 ÷ 6 = ?) or have used the inverse relationship and repeated addition or multiplication (e.g., 6 x ? = 60). 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: $\frac{1}{6}$ of 60 = 10 $\quad$ 60 ÷ 6 = 10 $\frac{1}{6}$ of 120 = 20 $\quad$ 120 ÷ 6 = 20 $\frac{1}{6}$ of 66 = 11 $\quad$ 66 ÷ 6 = 11 What patterns and relationships do you notice? What is a rule for finding a fraction of a set?
Kōrero Tautoko ***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.

Ngohe whakaharatau ***Independent Tasks***	He pēke māpere 396 tāu. Ka toha koe ki au hoa e toru. He aha te hautanga? E hia ngā māpere ki ia hautanga? He pēke māpere 123 tāu. Ka toha koe ki au hoa e toru. He aha te hautanga? E hia ngā māpere ki ia hautanga? He aha te haurua o te 124? He aha te haurua o te 1240? He aha te hauwhā o te 68? He aha te hauwha o te 680? He aha te hautoru o te 141? He aha te hautoru o te 1410? He aha te haurima o te 50? He aha te rua haurima o te 50? He aha te toru haurima o te 50?
Ngā matapae ***Anticipations***	

Rapanga 10	Kei te rākei a Ana i tētahi keke huritau. 56 ngā rare ki te whakarākei te keke. Ka whakawehe te keke ki ngā wāhanga e whā, ā, ka rākei ia wāhanga ki ngā rare. Ka purua he $\frac{3}{8}$ ki te wāhanga tuatahi. Ka purua he $\frac{2}{8}$ i te wāhanga tuarua. Ka purua he $\frac{1}{8}$ i te wāhanga tuatoru. Ka purua he $\frac{1}{4}$ i te wāhanga whakamutunga. E hia ngā rare ki ia wāhanga? Kei te rākei a Ana i tētahi keke huritau. 90 ngā rare ki te whakarākei te keke. Ka whakawehe te keke ki ngā wāhanga e toru, ā, ka rākei ia wāhanga ki ngā rare. Ka purua he $\frac{1}{6}$ ki te wāhanga tuatahi. Ka purua he $\frac{1}{3}$ i te wāhanga tuarua. Ka purua he $\frac{1}{2}$ i te wāhanga tuatoru. E hia ngā rare ki ia wāhanga?
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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \times \frac{4}{1}$; also 26 x 4 = (20 + 6) x 4). Every fraction/ratio can be represented by an infinite set of different but equivalent fractions/ratios.

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***	**NA3-1:** 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.
Whāinga Ako ***Learning Outcomes***	• Find fractions of a set. • Generalise how to find a fraction of a set.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, thirds, ninths, tenths, fifths, equal, equivalent, fair share, partitioning, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***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., 56 ÷ 8 = 7 and 7 x 3 = 21) or repeated addition. **Connect:** Ask students to describe how you would solve the following problems using the same solution method: $\frac{2}{5}$ of 125 $\frac{41}{122}$ of 2543 $\frac{a}{b}$ of c = What rule can you use to find a fraction of a set?
Kōrero Tautoko ***Teacher Notes***	• Facilitate the students to notice that when the fraction is not a unit fraction ($\frac{1}{5}$), 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

Ngohe whakaharatau ***Independent Tasks***	Whakautu ēnei whārite: $\frac{1}{2}$ x 2 = $\frac{1}{2}$ x 10 = $2\frac{1}{2}$ x 2 = $2\frac{1}{2}$ x 10 $\frac{1}{4}$ x 4 = $\frac{1}{4}$ x 8 = $\frac{3}{4}$ x 4 = $\frac{3}{4}$ x 8 = $\frac{1}{3}$ x 9 = $\frac{2}{3}$ x 9 = $\frac{3}{3}$ x 9 = $\frac{1}{10}$ x 20 = $\frac{2}{10}$ x 20 = $\frac{9}{10}$ x 20 = He aha ngā tauira e kite ana koe?
Ngā matapae ***Anticipations***	

Rapanga 11 (Optional task)	I kimi a Sione rāua ko Mele tētahi punua gecko. Ka tiki rāua ngā kete kai (ngāngara me ētahi noke) i te toa kararehe. E 4 me te $\frac{1}{2}$ o ngā kete kai e toe ana. Ka kai te punua gecko i $\frac{5}{8}$ o tētahi kete ia rā. E hia ngā rā ka āhei rāua ki te whāngai te punua gecko?
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = 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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6} \div \frac{2}{8} = \frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \times \frac{4}{1}$; 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.
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***	**NA3-1:** 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.

Whāinga Ako ***Learning Outcomes***	• Use repeated subtraction as division. • Solve problems that involve dividing a mixed number by a fraction.
Reo Matatini Pāngarau ***Mathematical Language***	Whole, half, halves, eighths, whole number, equal, equivalent, section, mixed numbers, numerator, denominator.
Tohatoha Whakaaro/Wā Hononga ***Sharing back/ Connect***	Select students to who use measurement division (repeated subtraction as division, e.g., $5\frac{4}{9}-\frac{2}{3}-\frac{2}{3}-\frac{2}{3}-\frac{2}{3}-\frac{2}{3}-\frac{2}{3}-\frac{2}{3}$ ….) or who use the inverse relationship of multiplication and division ($\frac{2}{3}$ x ? = $5\frac{4}{9}$) or ($\frac{2}{3}+\frac{2}{3}+\frac{2}{3}\ldots = 5\frac{4}{9}$). 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 $\frac{1}{5}$ of a container for each day. I have 1 container. How many days can I feed the baby gecko? It takes $\frac{1}{5}$ of a container for each day. I have 2 containers. How many days can I feed the baby gecko? It takes $\frac{1}{5}$ of a container for each day. I have 10 containers. How many days can I feed the baby gecko? It takes $\frac{1}{8}$ of a container for each day. I have 1 container. How many days can I feed the baby gecko? It takes $\frac{1}{8}$ of a container for each day. I have 2 containers. How many days can I feed the baby gecko? It takes $\frac{1}{8}$ of a container for each day. I have 10 containers. How many days can I feed the baby gecko? What patterns and relationships do you notice?
Kōrero Tautoko ***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

Ngohe whakaharatau ***Independent Tasks***	Whakautu ēnei whārite: 1. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$ 2. $\_\_ = 1\frac{1}{4} + \frac{1}{2}$ 3. $? = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ 4. $3\frac{1}{3} + \_\_ = 4$ 5. $4 \times \frac{1}{4} + 3 \times \frac{1}{4} =$ 6. $\_\_ = 8 - 5\frac{3}{10}$ 7. $8 \times \frac{1}{2} =$ 8. $\frac{1}{3} - \frac{1}{10} = \_\_$ 9. $\frac{3}{4} + \frac{3}{4} = ? + \frac{1}{2}$ 10. $\frac{5}{6} - \_\_ = \frac{1}{3}$
Ngā matapae ***Anticipations***	

Rapanga 12	Whakaoti ēnei whārite: 1. $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=$ 2. $\_\_ = 1\frac{1}{10}+\frac{1}{2}$ 3. $? = \frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}$ 4. $4\frac{2}{5}+\_\_ = 6$ 5. $4\times\frac{1}{4}+3\times\frac{1}{4}=$ 6. $\_\_ = 5-2\frac{5}{7}$ 7. $8\times\frac{1}{2}=$ 8. $\frac{1}{5}-\frac{1}{12}=\_\_$ 9. $\frac{3}{4}+\frac{3}{4}=?+\frac{1}{2}$ 10. $\frac{4}{5}-\_\_=\frac{1}{3}$ Me whakamārama me te taunakihia kia rua ngā tauira.
Whakaaro Matua Pāngarau ***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 ($\frac{a}{b}$ = 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. Numerical expressions can be named in an infinite number of different but equivalent ways (e.g., $\frac{4}{6}\div\frac{2}{8}=\frac{2}{3}\div\frac{1}{4}=\frac{2}{3}\text{ x }\frac{4}{1}$; 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.

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***	**NA3-1:** 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.
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***	Choose from one of the following Assessment tasks: • NR5: Fractions/Proportion, Ratio and Decimals • NR4: Fractions (set)
Ngā matapae ***Anticipations***	