

HANGAIA TE URUPOUNAMU MŌ TĀTOU

Taumata 2 (Tau 4)
Tau me te Taurangi

Teacher Booklet
ODD YEARS

<p>Rapanga 1</p>	<p>Whakaoti ēnei whārite. He aha tau kitenga?</p> <p>$165 + 32 =$</p> <p>$144 + 314 =$</p> <p>$421 + 545 =$</p> <p>Whakaatuhia ēnei mā ngā wharite me tētahi rarangi tau.</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Our number system is based on groupings of ten or base ten. Groupings of ones, tens, hundreds, and thousands can be taken apart in different ways.</p> <p>Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams, and symbols.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-4: Know how many ones, tens, and hundreds are in whole numbers to at least 1000.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-4: Know how many tenths, tens, hundreds, and thousands are in whole numbers.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Add ones, tens, and hundreds.</p> <p>Use place value to solve addition problems.</p> <p>Name the place, face, and total value of numbers.</p> <p>Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Tens, ones, hundreds, place value, face value, total value, base ten.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies that focus on the place value and what happens to the ones, tens, and hundreds. Use an empty number line to record adding in tens, hundred and combinations of these.</p> <p>Reinforce the language and concepts of nested place value (e.g., Five hundred is 5 hundreds OR twenty is 2 tens and forty is 4 tens so 2 tens and 4 tens and makes 6 tens or sixty).</p> <p>Connect:</p> <p>Introduce place value house as a model. Ask students to explain how place value could be used to solve these equations:</p> $372 + 215 =$ $621 + 357 =$
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Before you launch the task, write 359 on the board. Ask students to identify the number and describe it in as many ways as they can. Highlight the place value, face value and total value in the number. Complete this activity as a warm-up throughout the unit of work and increase the numbers up to 10 000. • Have concrete material available if needed for students to select (e.g., arrow cards, money in \$10 notes and ones, and 100s boards). • Explicitly press for place value and the face and total value. • Expect children to represent their reasoning on an empty number line and track the jumps in either tens or bigger numbers. If the students do not use an empty numberline, introduce as a representation. • Sets of tens (and tens of tens) can be perceived as single entities e.g. 30 is 3 tens; When we add 40 we are adding 4 tens; 500 is 5 hundreds. Make explicit $30 + 10$ is 3 tens plus 1 ten. This highlights the nested nature of place value. Nested other place value units, for example, tens are within hundreds, and hundreds are within thousands.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Solve the following problems:</p> $55 + 22 =$ $34 + 35 =$ $155 + 43 =$ $53 + 236 =$ $451 + 246 =$ <p>What patterns do you notice?</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 2</p>	<p>I kōhi 174 ngā anga a Urita. I hoatu 62 ngā anga ki tana hoa. E hia ngā anga e toe ana?</p> <p>I kōhi 359 ngā anga a Urita. I hoatu 126 ngā anga ki tana hoa. E hia ngā anga e toe ana?</p> <p>I kōhi 567 ngā anga a Urita. I hoatu 345 ngā anga ki tana hoa. E hia ngā anga e toe ana?</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Our number system is based on groupings of ten or base ten. Groupings of ones, tens, hundreds, and thousands can be taken apart in different ways.</p> <p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams, and symbols.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-4: Know how many ones, tens, and hundreds are in whole numbers to at least 1000.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Use place value to solve subtraction problems.</p> <p>Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Tens, ones, hundreds, subtract.</p>
<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies that have used place value:</p> <p>$174 = 100 + 70 + 4$ so to take away 62 ...</p> <p>$100 - 0 = 100$</p> <p>$70 - 60 = 10$</p> <p>$4 - 2 = 2$</p> <p>$174 - 62 = 112$</p> <p>or</p> <p>$174 - 60 = 114$</p> <p>$114 - 2 = 112$</p>

	<p>Ask students to represent or model how to represent using both equations and an empty number line</p> <p>Connect:</p> <p>Ask students to explain how you would solve the following equations using place value and linking to a place value house:</p> $284 - 162 =$ $978 - 426 =$
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Before you launch the task, write 837 on the board. Ask students to identify the number and describe it in as many ways as they can. Highlight the place value, face value and total value in the number. Complete this activity as a warm-up throughout the unit of work and increase the numbers up to 10 000. • Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in \$100, \$10 and \$1 notes). • Expect students to represent their reasoning on an empty number line and track the jumps in either 100 or 10s. If the students do not use this, introduce their use as a representation. • Also expect students to use equations to represent their reasoning. Model this if students do not use equations. • Notice students who are subtracting by using hundreds, tens, and ones.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Urita collected 97 hihi. She uses 62 hihi to make a kahoā hihi for her cousin. How many hihi does Urita have left?</p> <p>Mele collected 249 hihi. She uses 137 hihi to make some kahoā hihi for her cousins. How many hihi does Mele have left?</p> <p>Kali collected 456 hihi. She uses 232 hihi to make some kahoā hihi for her cousins. How many hihi does Kali have left?</p> <p>Jayson collected 675 hihi. He uses 351 to make some kahoā hihi for his cousins. How many hihi does Jayson have left?</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 3</p>	<p>237 ngā piere Kahurangi, 54 ngā piere kowhai a Kataraina. E hia te katoa? 468 ngā piere Kahurangi, 326 ngā piere kowhai a Kataraina. E hia te katoa? 873 ngā piere Kahurangi, 456 ngā piere kowhai a Kataraina. E hia te katoa?</p>
<p>Whakaaro Matua Pāngarau <i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing. There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship. Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga <i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions. NA2-4: Know how many ones, tens, and hundreds are in whole numbers to at least 1000. NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols. NA2-7: Generalise that whole numbers can be partitioned in many ways. NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages. NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako <i>Learning Outcomes</i></p>	<p>Decompose and recompose numbers up to 1000. Use place value to solve addition problems. Use bridging by decades to solve addition problems. Use equivalence and compensation to solve addition problems. Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau <i>Mathematical Language</i></p>	<p>Tens, ones, hundreds, thousands, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies that have bridged across a decade or used equivalence and compensation. If no student solves the task this way, then introduce either solution strategy as an alternative model previously used by other students.</p> <p>Use multiple representations to represent student solution strategies including an empty number line, equations, and tens frames.</p> <p><i>Bridging across tens and hundreds</i></p> $468 + 326 =$ $468 + 2 = 470$ $470 + 30 = 500$ $500 + 200 = 700$ $700 + 94 = 794$ $326 - 2 = 324$ $324 - 30 = 294$ $294 - 200 = 94$ <p><i>Equivalence and compensation</i></p> $468 + 326 =$ $470 + 326 = 796$ $796 - 2 = 794$ <p>Connect:</p> <p>Ask students to describe how you would solve the following equation using either bridging across a decade and equivalence and compensation:</p> $789 + 155 =$
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in hundreds, tens, and ones) to use for partial solutions (adding tens and ones) if necessary. • Notice students who are adding the numbers by bridging to the closest decade. • Notice students who are using equivalence and compensation. • Expect students to represent using an empty number line and equations.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Tiana and Hamu are playing with Lego blocks. Tiana has 236 blocks. Hamu has 58 blocks. How many Lego blocks do they have altogether?</p> <p>Soane and Frankie are playing with Lego blocks. Soane has 244 blocks. Frankie has 339 blocks. How many Lego blocks do they have altogether?</p> <p>Lily and Regan are playing with Lego blocks. Lily has 387 blocks. Regan has 338 blocks. How many Lego blocks do they have altogether?</p>

Ngā matapae

Anticipations

<p>Rapanga 4</p>	<p>I tētahi hui 143 te maha o ngā tangata, 68 he pakeke. Ko te toenga he tamaiti. E hia ngā tamariki?</p> <p>I tētahi hui 421 te maha o ngā tangata, 219 he pakeke. Ko te toenga he tamaiti. E hia ngā tamariki?</p> <p>I tētahi hui 514 te maha o ngā tangata, 386 he pakeke. Ko te toenga he tamaiti. E hia ngā tamariki?</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p> <p>Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-4: Know how many ones, tens, and hundreds are in whole numbers to at least 1000.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Decompose and recompose numbers up to 1000.</p> <p>Use subtracting in parts to solve subtraction problems.</p> <p>Use equivalence and compensation to solve subtraction problems.</p> <p>Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Hundreds, tens, ones, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Notice and select student solution strategies where they have subtracted in parts or used equivalence and compensation. Represent this using equations and on an empty number line.</p> <p><i>Subtraction in parts</i></p> $421 - 219 =$ $421 - 200 = 221$ $221 - 10 = 211$ $211 - 9 = 202$ <p><i>Equivalence and compensation</i></p> $421 - 219 =$ $421 - 220 = 401$ $401 + 1 = 402$ <p>Connect:</p> <p>Ask students to describe how you would solve the following equations using either subtracting in parts and equivalence and compensation:</p> $852 - 627 =$ <p>Use an empty line and equations to represent their ideas.</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Students may either subtract in parts or use equivalence and compensation (take away more and then adjust proportionally). • Students may solve using inverse relationships (e.g., $219 + ? = 421$). Use this to highlight the relationship between addition and subtraction. • Expect students to represent using equations and empty number lines.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Mae had 247 stickers in her collection. She used 69 to decorate her bedroom. How many stickers does she have left?</p> <p>Timo had 432 stickers in his collection. He used 215 to decorate his bedroom. How many stickers does he have left?</p> <p>Jeong Suk had 764 stickers in he collection. She used 546 to decorate her bedroom. How many stickers does she have left?</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 5</p>	<p>146 ngā āporo a Whaea Ana. I tiki a Pita i ētahi āporo anō. 214 ngā āporo a Whaea Ana inaianei. E hia ngā āporo i tiki a Pita?</p> <p>Kei te akomanga 12 tētahi pouaka pukapuka. I koha mai tētahi whanau I tētahi atu pouaka pukapuka 119 ngā pukapuka kei roto. 302 ngā pukapuka o te akomanga 12 inaianei. E hia ngā pukapuka i roto i te pouaka tuatahi?</p> <p>241 ngā āporo a Whaea Ana. I koha a Whāea Ana 88 ki tana whanau. E hia ngā āporo e toe ana?</p> <p>I tētahi makete, 241 ngā poaka poke ta Ani ki te hoko. I hoko 88 anake nareira e hia ngā pouaka me hoko inaianei?</p> <p>Kei te akomanga 12 tētahi pouaka pukapuka. I koha mai tētahi whanau I tētahi atu pouaka pukapuka 277 ngā pukapuka kei roto. 245 ngā pukapuka o te akomanga 12 inaianei. E hia ngā pukapuka i roto i te pouaka tuatahi?</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p> <p>Equations show relationships of equality between parts on either side of the equal sign.</p> <p>The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-4: Know how many ones, tens, and hundreds are in whole numbers to at least 1000.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>

<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Decompose and recompose numbers up to 500. Solve change unknown addition and subtraction problems. Solve start unknown addition and subtraction problems. Use adding or subtracting to decades or hundreds to solve addition and subtraction problems. Use equivalence and compensation to solve addition and subtraction problems. Use the inverse relationship of addition and subtraction to solve problems. Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Hundred, tens, ones, add, subtract, inverse relationship.</p>
<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select a student solution strategy which uses addition and a different one which has used subtraction. Facilitate students to compare the solution strategies and use this to highlight the inverse relationship between addition and subtraction. If no students solve the tasks using both operations, then introduce either solution strategy as an alternative model previously used by other students.</p> <p>Connect: Ask students to represent the following situations using at least two different equations for each situation: Tali had \$67 in her bank account. She spends some at the shop and has \$46 left. How much did Tali spend? Tali has some money in her bank account. She spends \$59 at the shop and has \$38 left. How much money did Tali have to start with?</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Launch these tasks one by one by asking students to act out the scenario so that they can access the structure of the tasks. • All tasks could be solved by drawing on the inverse relationships of addition and subtraction and solved using either operation. • Focus on supporting students to represent using equations and an empty number line to solve the tasks. Students may need support to access the structure of the task.

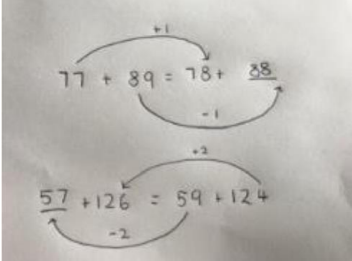
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Read each problem and write the equation to match the problem situation before you solve the task.</p> <p>The helpers at the sausage sizzle had cooked 78 sausages in the morning. They cooked some more in the afternoon. Over the day they cooked 165 cooked sausages. How many did they cook in the afternoon?</p> <p>At the drinks stall, they sold some bottles of lemonade and 236 bottles of orange. Altogether they sold 422 bottles of drinks. How many bottles of lemonade did they sell?</p> <p>The helpers at the sausage sizzle sold 437 sausages. They sold some chicken sausages and 289 pork sausages. How many chicken sausages did they sell?</p> <p>At the drinks stall they sold lots of bottles of drink. They sold 455 bottles over the day and had 161 bottles left. How many bottles did they start with?</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

<p>Rapanga 6</p>	<p>Whakaoti ēnei:</p> <p>$445 + 397 =$</p> <p>$2256 + 589 =$</p> <p>$675 - 237 =$</p> <p>$1452 - 394 =$</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p> <p>Equations show relationships of equality between parts on either side of the equal sign.</p> <p>The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Use adding or subtracting in parts to solve addition and subtraction problems.</p> <p>Use equivalence and compensation to solve addition and subtraction problems.</p> <p>Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Thousands, hundreds, tens, ones, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies where they have added or subtracted in parts or used equivalence and compensation. Represent this with equations and on an empty number line.</p> <p>Connect: Ask students to describe how you would solve the following equations using both addition/subtraction in parts or equivalence and compensation: $2977 + 439 =$ $3676 - 598 =$</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in hundreds, tens, and ones) to use for partial solutions (adding tens and ones) if necessary. • Notice students who are adding the numbers by bridging to the closest decade. • Notice students who are using rounding and compensating. • Expect students to represent using the empty number line and equations.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Solve the following problems: $1266 + 237 =$ $656 + 3128 =$ $753 - 418 =$ $3671 - 539 =$ Represent your thinking using equations and on an empty number line.</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 7</p>	<p>Kimihia te tau e ngaro ana?</p> <p>$47 + 16 = _ + 15$</p> <p>$_ + 77 = 36 + 79$</p> <p>$129 + _ = 139 + 68$</p> <p>$235 + 58 = 234 + _$</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions. NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols. NA2-7: Generalise that whole numbers can be partitioned in many ways. NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality. NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Explain and justify relationships between numbers in an equation. Solve equivalence problems and explain and justify the solutions.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Equal sign, relationship, difference, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Allow students to share misconceptions related to the equal sign (e.g., $47 + 16 = 63 + 15$) to position them to engage in argumentation.</p> <p>Select students to share who have used a relational strategy to find the missing number. If no students use a relational strategy, introduce this to them using arrows and explanations.</p>  <p>Connect:</p> <p>Ask the students to find the missing numbers by looking for the relationship across the equal sign and show this using arrows.</p> <p>$69 + \underline{\quad} = 67 + 85$ $146 + 78 = 156 + \underline{\quad}$</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Before you launch the task, ask the students to discuss these true and false number sentences and justify their thinking: $123 = 124$ $38 + 20 = 58 + 7$ $52 - 18 = 53 - 19$ Use true and false and open number sentence tasks as a warm up throughout the year. $176 - 88 = 88 - 176$ $56 = 36 + 20$ $24 + 39 = 25 + 38$ • Students may begin by demonstrating misconceptions. This can be used to position students to agree/disagree. • Some students may work out one side and then the other to equal the same number. However, the key focus should be on positioning students to use the relationships across the equal sign. • Draw attention to students who use relational types of thinking and notate the number sentences with arrows to highlight this.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Are these number sentences true or false? Justify your reasoning.</p> <p>$254 = 264 - 10$ $78 - 4 - 3 = 78 - 7$ $126 + 48 = 127 + 49$ $572 = 572$ $276 + 49 = 278 + 47$</p> <p>Write your own true and false number sentences.</p>

Ngā matapae

Anticipations

<p>Rapanga 8</p>	<p>Kimihia te tau e ngaro ana?</p> <p>$41 - 18 = _ - 16$</p> <p>$164 - 128 = 165 - _$</p> <p>$_ - 125 = 162 - 115$</p> <p>$181 - _ = 183 - 39$</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Explain and justify relationships between numbers in an equation. Solve equivalence problems and explain and justify the solutions.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Equal sign, relationship, difference, add, subtract.</p>
<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select students to share who have used a relational strategy to find the missing number. Notate the equations using arrows.</p> <p>Connect:</p> <p>Ask the students to find the missing numbers by looking for the relationship across the equal sign and show this using arrows.</p> <p>$146 - 28 = 136 - _$</p> <p>$_ - 77 = 192 - 177$</p>

<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Note that the order of directionality is different between addition and subtraction and students may adjust as you do with addition and and up with an incorrect solution such as $41 - 18 = 43 - 16$. Facilitate a discussion with the students to notice the difference between open number sentences with addition and subtraction (e.g., addition involves an adjustment of +1, -1 while subtraction involves an adjustment of +1, +1, or -1, -1). • Some students may work out one side and then the other to equal the same number. However, the key focus should be on positioning students to use the relationships across the equal sign. <ul style="list-style-type: none"> • Draw attention to students who use relational types of thinking and notate the number sentences with arrows to highlight this.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Find the missing numbers:</p> <p>$24 + 17 = _ + 18$</p> <p>$_ + 125 = 187 + 115$</p> <p>$52 - _ = 53 - 19$</p> <p>$63 - 47 = 68 - _$</p> <p>$177 + 289 = _ + 189$</p> <p>$_ - 87 = 351 - 187$</p> <p>Use arrows to show your thinking.</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 9 (Whole class option)</p>	<p>Ka whakaoti a Maryssa i $5489 + 2276 = 7765$</p> <p>Katahi ka pātai tana kaiako ki a ia ki te whakaoti ēnei whārite:</p> <p>$2276 + 5489 =$</p> <p>$7765 - 2276 =$</p> <p>$7765 - 5489 =$</p> <p>Ka whakaoti a Maryssa i $5489 + 2276 = 7765$</p> <p>Katahi ka pātai tana kaiako ki a ia ki te whakaoti ēnei whārite:</p> <p>$2276 + 5489 =$</p> <p>$7765 - 2276 =$</p> <p>$7765 - 5489 =$</p>
<p>Whakaaro Matua Pāngarau <i>Big Ideas</i></p>	<p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p>
<p>Hononga Marautanga <i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako <i>Learning Outcomes</i></p>	<p>Explain and justify the commutative property.</p> <p>Explain and justify the inverse relationship of addition and subtraction.</p>
<p>Reo Matatini Pāngarau <i>Mathematical Language</i></p>	<p>Commutative property, inverse relationship, generalisation, addition, subtraction.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>elect student solution strategies that draw on understanding the commutative property and the inverse relationship of addition and subtraction rather than calculating answers. Highlight to the students that you do not need to calculate but can use relationships to solve different equations. Ask students to consider whether this will always work and when it will not work. For example:</p> $23 + 18 = 41$ $23 - 41 \neq 18$ <p>Connect:</p> <p>If $a + b = c$</p> <p><i>Can you write three 'if and then' addition and subtraction equations that are true</i></p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Addition and subtraction are inverse operations. • Some students will want to calculate answers, support them to look for relationships and connections across operations.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Find the missing numbers:</p> $1131 - \underline{\quad} = 1012$ $\underline{\quad} + 577 = 1691$ $525 = \underline{\quad} + \underline{\quad}$ $631 = \underline{\quad} - \underline{\quad}$ $64 + 39 = \underline{\quad} + 37$ $154 - \underline{\quad} = 156 - 89$
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 10 (Whole class option)</p>	<p>Ka whakaoti a Sima i $48 + 27 + 55 = 130$</p> <p>Katahi ka pātai tana kaiako ki a ia ki te whakaoti tēnei whārite:</p> <p>$27 + 55 + 48 =$</p> <p>I āta titiro a Sima ki ngā whārite me tana whakapae “ka mōhio au ki te whakautu ēnei, kare he take mo te rautaki.</p> <p>Pehea a Sima i mōhio ai?</p> <p>Ka tika te rautaki mō ngā tau katoa? Mēnā ka tika, pehea koe e mōhio ai?</p> <p>Tuhia au ake tauira e whakamārama ana i te hononga.</p> <p>Ka tika tēnei tauira mo te tangohia, te whakarea, te whakawehe hoki?</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-6: Record and interpret additive and simple multiplicative strategies, using words, diagrams, and symbols, with an understanding of equality.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Explain and justify the associative property. Prove conjectures using material.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Associative property, conjectures, generalisation, patterns.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies that develop a justification and explanation of the associative property without completing the operation. Ask students to consider whether this will always work for every type of number (e.g., large numbers, fractions, etc).</p> <p>Connect:</p> <p>Ask students to represent their conjecture in words, a diagram (or physical model), and using variables (e.g., $a + b + c = c + a + b = b + a + c$). Support students to refine the conjecture that they make in words until it works as a definition for the associative property.</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Some students will want to calculate answers, support them to look for relationships and connections across operations rather than undertaking a calculation. • Prompt students to explore whether their conjectures will work with different types of numbers (larger ones, smaller ones including fractions, etc). • In the connect, ask the students to use different types of the concrete material to construct the models to support them to develop a concrete proof for their conjecture. • Have available to use: grid paper, multi-link cubes, counters, peg-boards, and ice block sticks.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>The following number sentence is true: $72 - 57 = 15$ Is $72 - 57 - 8 = 15 - 8$ true or false? Is $72 - 57 + 36 = 15 + 34$ true or false? How do you know? a) Do you think this will work for other numbers? Can you explain why or why not? b) Can you write your own examples with other numbers where this relationship works?</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 11 (Optional task)</p>	<p>Whakaoti ēnei whārite:</p> $2342 + 5335 =$ $675 + 1835 =$ $3978 + 2413 =$
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p> <p>Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Use place value to solve addition problems.</p> <p>Use bridging to the nearest decade to solve addition problems Use equivalence and compensation to solve addition problems. Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Thousands, hundreds, tens, ones, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies where they have used place value (including a place-value house) to add, bridging, or used equivalence and compensation.</p> <p>Connect: Ask students to describe how you would solve the following equations using place value and connecting to a place value house: $4245 + 3633 =$ $5489 + 2574 =$</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> • Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in \$100, \$10, and \$1 notes). • Notice students who are adding the numbers by using place value and help them to connect to the place value house. • Notice students who are adding the numbers by bridging to the closest decade. • Notice students who are using equivalence and compensation. • Expect students to represent using equations, the place value house, and the empty number line.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Solve the problems below and use a place value house, equations and an empty number line to show how you have solved them:</p> $3164 + 4524 =$ $4721 + 4158 =$ $1976 + 228 =$ $631 + 1899 =$
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--

<p>Rapanga 12 (Optional task)</p>	<p>Whakaoti ēnei:</p> <p>4876 - 3653 =</p> <p>2451 - 439 =</p> <p>6784 - 4669 =</p>
<p>Whakaaro Matua Pāngarau</p> <p><i>Big Ideas</i></p>	<p>Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.</p> <p>There are arithmetic properties that characterise addition and multiplication as operations. These are the commutative, associative, distributive, and identity properties. Addition and subtraction and multiplication and division have an inverse relationship.</p> <p>Equations show relationships of equality between parts on either side of the equal sign. The properties of equality are: If the same real number is added or subtracted to both sides of an equation, equality is maintained; If both sides of an equation are multiplied or divided by the same real number (not dividing by 0), equality is maintained; Two quantities equal to the same third quantity are equal to each other.</p>
<p>Hononga Marautanga</p> <p><i>Curriculum Links</i></p>	<p>NA2-1: Use simple additive strategies with whole numbers and fractions.</p> <p>NA2-6: Communicate and interpret simple additive strategies using words, diagrams (pictures) and symbols.</p> <p>NA2-7: Generalise that whole numbers can be partitioned in many ways.</p> <p>NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.</p> <p>NA3-7: Generalise the properties of addition and subtraction with whole numbers.</p>
<p>Whāinga Ako</p> <p><i>Learning Outcomes</i></p>	<p>Use subtracting in parts to solve subtraction problems.</p> <p>Use equivalence and compensation to solve subtraction problems.</p> <p>Represent reasoning using a number line and through notation.</p>
<p>Reo Matatini Pāngarau</p> <p><i>Mathematical Language</i></p>	<p>Hundred, tens, ones, add, subtract.</p>

<p>Tohatoha Whakaaro/Wā Hononga</p> <p><i>Sharing back/ Connect</i></p>	<p>Select student solution strategies where they have subtracted for the first using place value and represented this with a place value house or for the second and third subtracted in parts or used equivalence and compensation. Represent this with equations and on an empty number line.</p> <p>Connect:</p> <p>Ask students to describe how you would solve the following equations using a place value house:</p> <p>5946 - 4835 =</p> <p>9867 - 549 =</p>
<p>Kōrero Tautoko</p> <p><i>Teacher Notes</i></p>	<ul style="list-style-type: none"> ● Provide materials to help students who need it access the maths. ● Notice students who are using place value and the place value house representation to subtract the numbers. ● Notice students who are subtracting the numbers by bridging to the closest decade. ● Notice students who are using rounding and compensating. ● Expect students to represent using a place value house, the empty number line and equations.
<p>Ngohe whakaharatau</p> <p><i>Independent Tasks</i></p>	<p>Select one or more of the following assessment tasks (attached at the end of the document) as the independent activity:</p> <p>N1A: Addition and subtraction problems to solve. N1AB: Addition and subtraction problems to solve. N3A: Properties of numbers and operations. N3AB: Properties of numbers and operations.</p>
<p>Ngā matapae</p> <p><i>Anticipations</i></p>	

--	--