RICH MATHEMATICAL TASK BOOKLET

NUMBER & ALGEBRA

YEAR 4

Teacher Booklet

Task 1

Solve the equations. What do you notice?

165 + 32 =
144 + 314 =
421 + 545 =

Represent your thinking using equations and an empty number line.

Teacher Notes

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 place value is the idea that place value units are included in other place value units, for example, tens are within hundreds, and hundreds are within thousands.

Big Ideas

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
.
Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams, and symbols.

Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Shareback

Select student solution strategies that focus on the place value and what happens to the ones, tens, and hundreds. Select students to share who have used both vertical and horizontal equations or model this for the students. Also, use an empty number line to record adding in tens, hundred and combinations of these.

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).

Connect

IIntroduce place value house as a model and connect this to recording as a vertical equation. Ask students to explain how place value could be used to solve these equations:

372 + 215 =
621 + 357 =

Suggested Learning Outcomes

Add ones, tens, and hundreds.

Use place value to solve addition problems.

Name the place, face, and total value of numbers.

Represent reasoning using a number line and through notation.

Independent Tasks

Solve the following problems:
55 + 22 =
34 + 35 =
155 + 43 =
53 + 236 =
451 + 246 =
What patterns do you notice?

Mathematical Language

Tens, ones, hundreds, place value, face value, total value, base ten.

Anticipations

Solutions, Misconceptions

Task 2

Urita collected 174 hihi. She uses 62 hihi to make a kahoa hihi for her cousin. How many hihi does Urita have left?

Mele collected 359 hihi. She uses 126 hihi to make some kahoa hihi for her cousins. How many hihi does Mele have left?

Jayson collected 567 hihi. He uses 345 to make some kahoa hihi for his cousins. How many hihi does Jayson have left?

Teacher Notes

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.

Big Ideas

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.

Numbers are used to name specific quantities. Numbers can be decomposed into parts in an infinite number of ways without the quantity changing.

Number operations and strategies to solve number operations can be recorded using words, numbers, diagrams, and symbols.
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Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Shareback

Select student solution strategies that have used place value:

174 = 100 + 70 + 4 so to take away 62 ...
100 – 0 = 100
70 – 60 = 10
4 – 2 = 2
174 – 62 = 112
or
174 – 60 = 114
114 – 2 = 112
Ask students to represent or model how to represent using both horizontal and vertical equations and an empty number line

Connect

Ask students to explain how you would solve the following equations using place value and linking to a place value house and recording as a vertical equation:

284 – 162 =
978 – 426 =

Suggested Learning Outcomes

Use place value to solve subtraction problems.

Represent reasoning using a number line and through notation.

Independent Tasks

Urita collected 97 hihi. She uses 62 hihi to make a kahoa hihi for her cousin. How many hihi does Urita have left?

Mele collected 249 hihi. She uses 137 hihi to make some kahoa hihi for her cousins. How many hihi does Mele have left?

Kali collected 456 hihi. She uses 232 hihi to make some kahoa hihi for her cousins. How many hihi does Kali have left?

Jayson collected 675 hihi. He uses 351 to make some kahoa hihi for his cousins. How many hihi does Jayson have left?

Mathematical Language

Tens, ones, hundreds, subtract. .

Anticipations

Solutions, Misconceptions

Task 3

Talia has 237 Pokemon cards in her collection. She is given 54 more Pokemon cards. How many Pokemon cards does Talia have altogether?

Sose has 468 Pokemon cards in her collection. Her cousin gave her his collection of 326 cards. How many Pokemon cards does Sose have altogether now?

Tasi has a mega Pokemon card collection with 873 cards. He is given 456 more Pokemon cards. How many Pokem on cards does Tasi have altogether?

Teacher Notes

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.

Shareback

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.

Use multiple representations to represent student solution strategies including an empty number line, equations, and tens frames.

<u>Bridging across tens and hundreds</u>
468 + 326 =
468 + 2 = 470 326 – 2 = 324
470 + 30 = 500 324 – 30 = 294
500 + 200 = 700 294 – 200 = 94
700 + 94 = 794
<u>Equivalence and compensation</u>
468 + 326 =
470 + 326 = 796
796 – 2 = 794

Big Ideas

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.

Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Connect

Ask students to describe how you would solve the following equation using either bridging across a decade and equivalence and compensation:

789 + 155 =

Suggested Learning Outcomes

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.

Independent Tasks

Tiana and Hamu are playing with Lego blocks. Tiana has 236 blocks. Hamu has 58 blocks. How many Lego blocks do they have altogether?

Soane and Frankie are playing with Lego blocks. Soane has 244 blocks. Frankie has 339 blocks. How many Lego blocks do they have altogether?

Lily and Regan are playing with Lego blocks. Lily has 387 blocks. Regan has 338 blocks. How many Lego blocks do they have altogether?

Mathematical Language

Thousands, hundreds, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Task 4

At the family reunion, there were 143 people. There were 68 adults, and the rest were children. How many children were there?

At the family reunion, there were 421 people. There were 219 adults, and the rest were children. How many children were there?

At the family reunion, there were 514 people. There were 386 adults, and the rest were children. How many children were there?

Teacher Notes

Before you launch the task, show students coins and notes and ask them to identify them. Then give students a set of coins and notes from 10 cents to $100 and ask them to explore different ways to make target amounts combining both dollars and cents. Record their responses. Complete this activity as a warm-up throughout the unit of work.

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.

Shareback

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.

Subtraction in parts
421 – 219 =
421 – 200 = 221
221 – 10 = 211
211 – 9 = 202

Equivalence and compensation
421 – 219 =
421 – 220 = 401
401 + 1 = 402

Big Ideas

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.

Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Connect

Ask students to describe how you would solve the following equations using either subtracting in parts and equivalence and compensation:

852 – 627 =

Use an empty line and equations to represent their ideas.

Suggested Learning Outcomes

Decompose and recompose numbers up to 1000.

Use subtracting in parts to solve subtraction problems.

Use equivalence and compensation to solve subtraction problems.

Represent reasoning using a number line and through notation

Independent Tasks

Mae had 247 stickers in her collection. She used 69 to decorate her bedroom. How many stickers does she have left?

Timo had 432 stickers in his collection. He used 215 to decorate his bedroom. How many stickers does he have left?

Jeong Suk had 764 stickers in he collection. She used 546 to decorate her bedroom. How many stickers does she have left?

Mathematical Language

Hundreds, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Task 5

Tirata had made 146 coconut rolls to sell at the markets. She asked Mereana to make some more. Now Tirata has 214 coconut rolls to sell. How many coconut rolls did Mereana make?

Room 12 had a box of books to sell at the fair. They were given another box of books with 119 books in it. Now they have 302 books to sell. How many books were in the first box?

Marama had 241 containers of poke to sell at the market. She sold some and had 88 containers left. How many containers of poke did she sell?

The book stall at the fair had lots of books to sell. They sold 277 books and had 245 books left. How many books did they have to start with?

Teacher Notes

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.

Shareback

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?

Connect

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.

Big Ideas

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.

Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Suggested Learning Outcomes

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.

Mathematical Language

Hundred, tens, ones, add, subtract, inverse relationship.

Independent Tasks

Read each problem and write the equation to match the problem situation before you solve the task.

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?

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?

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?

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?

Anticipations

Solutions, Misconceptions

Task 6

Solve the following problems:

445 + 397 =

2256 + 589 =

675 – 237 =

1452 – 394 =

Teacher Notes

Before you launch the task, write numbers between 0 and 10000 on the board. Remind students of the rules for rounding numbers to the nearest ten, 100, and thousand. Ask students to identify the number and round the number to the nearest ten, hundred and thousand. Repeat with different numbers. Complete this activity as a warm-up throughout the unit of work.

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.

Shareback

Select student solution strategies where they have added or subtracted in parts, using place-value or used equivalence and compensation. Represent this with horizontal and vertical equations and on an empty number line.

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 =

Big Ideas

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.

Curriculum Links

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Add and subtract two- and three-digit numbers.

Suggested Learning Outcomes

Use adding or subtracting in parts to solve addition and subtraction problems.

Use equivalence and compensation to solve addition and subtraction problems.

Represent reasoning using a number line and through notation.

Mathematical Language

Thousands, hundreds, tens, ones, add, subtract.

Independent Tasks

Solve the following problems:

1266 + 237 =

656 + 3128 =

753 – 418 =

3671 – 539 =

Represent your thinking using equations and on an empty number line.

Anticipations

Solutions

Task 7

Can you find the missing numbers?

47 + 16 = _ + 15

_ + 77 = 36 + 79

129 + _ = 139 + 68

235 + 58 = 234 + _

Teacher Notes

Before you launch the task, ask the students to discuss these true and false number sentences and justify their thinking:

123 = 124	176 – 88 = 88 – 176	56 = 36 + 20
38 + 20 = 58 + 7	24 + 39 = 25 + 38	52 – 18 = 53 – 19

Use true and false and open number sentence tasks as a starter through-out the year.

Students may begin by demonstrating misconceptions. This can be used to position students to agree/disagree.

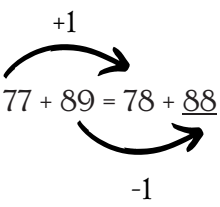
Some students may work out one side and then the other to equal the same number. However, the key focus should be on positioning students to use the relationships across the equal sign.

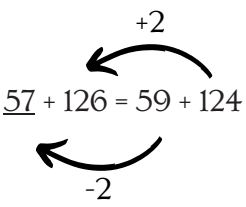
Draw attention to students who use relational types of thinking and notate the number sentences with arrows to highlight this

Shareback

Allow students to share misconceptions related to the equal sign (e.g., 18 + 6 = 24 + 5) to position them to engage in argumentation.

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.





Big Ideas

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.

Curriculum Links

Form and solve true or false number sentences and open number sentences involving multiplication and division, using an understanding of the equal sign (e.g., 5 × _ = 20; _ ÷ 3 = 6)

Connect

Ask the students to find the missing numbers by looking for the relationship across the equal sign and show this using arrows.

69 + _ = 67 + 85

146 + 78 = 156 + _

Suggested Learning Outcomes

Explain and justify relationships between numbers in an equation.

Solve equivalence problems and explain and justify the solutions.

Independent Tasks

Are these number sentences true or false? Justify your reasoning.

254 = 264 – 10

78 – 4 – 3 = 78 – 7

126 + 48 = 127 + 49

572 = 572

276 + 49 = 278 + 47

Write your own true and false number sentences.

Mathematical Language

Equal sign, relationship, difference, add, subtract.

Anticipations

Solutions

Task 8

Find the missing numbers:

41 – 18 = _ – 16

164 – 128 = 165 – _

_ – 125 = 162 – 115

181 – _ = 183 – 39

Teacher Notes

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.

Draw attention to students who use relational types of thinking and notate the number sentences with arrows to highlight this.

Shareback

Select students to share who have used a relational strategy to find the missing number. Notate the equations using arrows.

Connect

Ask the students to find the missing numbers by looking for the relationship across the equal sign and show this using arrows.

146 – 28 = 136 – _

_ – 77 = 192 – 177

Big Ideas

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.

Curriculum Links

Form and solve true or false number sentences and open number sentences involving multiplication and division, using an understanding of the equal sign (e.g., 5 × _ = 20; _ ÷ 3 = 6)

Suggested Learning Outcomes

Explain and justify relationships between numbers in an equation.

Solve equivalence problems and explain and justify the solutions.

Mathematical Language

Equal sign, relationship, difference, add, subtract.

Independent Tasks

Find the missing numbers:

24 + 17 = _ + 18

_ + 125 = 187 + 115

52 – _ = 53 – 19

63 – 47 = 68 – _

177 + 289 = _ + 189

_ – 87 = 351 – 187

Use arrows to show your thinking.

Anticipations

Solutions, Misconceptions

Task 9

Maryssa solves 5489 + 2276 = 7765

Her teacher then asks her to solve the following equations:

2276 + 5489 =

7765 – 2276 =

7765 – 5489 =

Maryssa looks at the equations and says that she already knows the answers without solving each of them.

What patterns do you think that Maryssa noticed?

Ω

Do these patterns always work?

Write your own sets of equations with addition and subtraction that use the same patterns.

Teacher Notes

Addition and subtraction are inverse operations.

Some students will want to calculate answers, support them to look for relationships and connections across operations.

Shareback

Select 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:

23 + 18 = 41

23 – 41 ≠ 18

Big Ideas

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.

Curriculum Links

Identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Connect

If a + b = c

Can you write three 'if and then' addition and subtraction equations that are true

Suggested Learning Outcomes

Explain and justify the commutative property.

Explain and justify the inverse relationship of addition and subtraction.

Independent Tasks

Find the missing numbers:

1131 − _ = 1012

_ + 577 = 1691

525 = _ + _

631 = _ − _

64 + 39 = _ + 37

154 − _ = 156 − 89

Mathematical Language

Commutative property, inverse relationship, generalisation, addition, subtraction.

Anticipations

Solutions, Misconceptions

Task 10

Sima solves 48 + 27 + 55 = 130
His teacher then asks him to solve 27 + 55 + 48 =
Sima says he already knows the answer.

1. How does he know?
2. Do you think this will work for all numbers? If so, how do you know?
3. Write your own examples with other numbers where this relationship works.
4. Would this work with other operations (subtraction, multiplication, division)?

Teacher Notes

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.

Shareback

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).

Connect

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.

Big Ideas

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.

Curriculum Links

dentify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure.

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Suggested Learning Outcomes

Explain and justify the associative property.

Prove conjectures using material.

Mathematical Language

Associative property, conjectures, generalisation, patterns.

Independent Tasks

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?

1.Do you think this will work for other numbers? Can you explain why or why not?

2.Can you write your own examples with other numbers where this relationship works?

Anticipations

Solutions, Misconceptions

Task 11

You have $12 to buy lunch from the school canteen. What are some different ways to order lunch (food and drink) from the school canteen? How much change would you have?

Drinks	
Fruit Juice	$3.50
Milk	$2
Smoothie	$7.50

Food	
Sandwiches	$5.50
Pizza Slice	$6
Mac'n'cheese	$3.70
Pie	$6.50
Sushi	$8.90
Cookie	$2.80
Slice	$3
Museli Bar	$2.50
Chips	$2

Teacher Notes

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 able to find multiple different options and ways in which lunch can be ordered and record this mathematically.

Support students to use different combinations of food and drink items and discuss the value or benefits of different combinations.

For the independent task, have play money in notes and coins available.

Big Ideas

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.

Shareback

Select students to share different ways that lunch could be ordered using the $12 and with change.

Connect

Ask students to explain which ordering combination and option, they think is the best value for money.

Suggested Learning Outcomes

Investigate authentic financial situations and make choices about purchases.
Calculate costs for whole dollar amounts.
Calculate change for whole dollar amounts.

Independent Tasks

The school is holding a sausage sizzle fundraiser. Food and drink prices are:

Sausage $2
Sausage in bread $3.50
Drink $1.50

Older students get very hungry and sometimes order more than one sausage!
Students must pay cash and change can be given.
What are some different ways to order and how might notes and coins be used to pay?

Curriculum Links

Make amounts of money using dollars and cents (e.g., to make 3 dollars and 70 cents)

Estimate and calculate the total cost and change for items costing whole-dollar amounts.

Mathematical Language

Thousands, hundreds, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Task 12

Solve the following problems:

2342 + 5335 =

4876 – 3653 =

675 + 1835 =

2451 – 439 =

3978 + 2413 =

6784 – 4669 =

Teacher Notes

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.

Shareback

For the addition equations, select student solution strategies where they have used place value (including a place-value house) to add, bridging, or used equivalence and compensation.
For the subtraction equations, select student solution strategies where they have used place value and represented this with a place value house or subtracted in parts or used equivalence and compensation. Represent all of the solutions with horizontal and vertical equations and on an empty number line.

Big Ideas

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.

Connect

Ask students to describe how you would solve the following equations using a place value house:

4245 + 3633 =

5946 – 4835 =

5489 + 2574 =

9867 – 549 =

Suggested Learning Outcomes

Use subtracting in parts to solve subtraction problems.

Use equivalence and compensation to solve subtraction problems.

Represent reasoning using a number line and through notation.

Independent Tasks

Select one or more of the following assessment tasks (attached at the end of the document) as the independent activity:

Task 1: Addition and Subtraction Problems to Solve.
Task 2: Addition and Subtraction Problems to Solve (parallel task).
Task 3: Patterns in Number Sequences.
Task 4: Patterns in Number Sequences (parallel task).

Curriculum Links

Add and subtract two- and three-digit numbers.

Use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations.

Mathematical Language

Hundred, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Assessment Task 1 - Number - Year 4

Georgia has 27 stickers in her collection. She has a sheet with another 38 stickers. How many stickers does Georgia have altogether? Prove and justify your answer.

Hamuera is playing marbles. He has 53 marbles but loses 25 marbles in the game. How many marbles does Hamuera have now? Prove and justify your answer.

Tatiana's rugby team scored 243 points over the season. They scored 86 points more than the next team in the league. What did the next team score? Prove and justify your answer.

Write one or more word problems for a friend involving addition or subtraction. Show how you would solve it.

Assessment Task 2 - Number - Year 4

Mele has 38 beads. She finds a bag with another 24 beads. How many beads does Mele have altogether? Prove and justify your answer.

Timo is collecting pinecones. He has 62 pinecones and gives 27 pinecones to his sister. How many pinecones does Timo have now? Prove and justify your answer.

Lily's netball team scored 224 points over the season. They scored 87 points more than the next team in the league. What did the next team score? Prove and justify your answer.

Write one or more word problems for a friend involving addition or subtraction. Show how you would solve it.

Assessment Task 3 - Number - Year 4

65 + 38 89 + 26 17 + 45 + 23 11 x 7

38 + 65 77 ÷ 7 90 + 25

11 + 11 + 11 + 11 + 11 + 11 + 11 20 + 30

7 x 11 50 – 20 23 + 17 + 45

Look at the number sentences above.

- Describe what patterns you can find
- Why do your patterns work?
- Do they work with other numbers?

Assessment Task 4 - Number - Year 4

19 + 67 + 52 7 x 5 78 + 44

40 + 30 35 ÷ 7 168 + 287

79 + 43 67 + 52 + 19 7 + 7 + 7 + 7 + 7

5 x 7 287 + 168 70 – 40

Look at the number sentences above.

- Describe what patterns you can find
- Why do your patterns work?
- Do they work with other numbers?