RICH MATHEMATICAL TASK BOOKLET

NUMBER & ALGEBRA

YEAR 3

Teacher Booklet

Task 1

Solve the equations. What do you notice?

30 + 10 =

26 + 20 =

54 + 30 =

39 – 10 =

99 – 10 =

Represent your thinking using an empty number line.

Teacher Notes

Before you launch the task, write 147 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 use increase the numbers up to 1000.

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 10's or bigger numbers. If the students do not use these 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.

Shareback

Select student solution strategies that focus on the place value and what happens to the tens and ones. Use an empty number line to record adding in tens or larger numbers.

Reinforce the language and concepts of nested place value (e.g., Sixty is 6 tens and twenty is 2 tens and 6 tens and 2 tens makes 8 tens or eighty).

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

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

Identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure.

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500

Connect

Ask students to solve the following and use place value language to describe their solutions:

300 + 100 =

360 + 100 =

360 + 20 =

360 + 300 =

360 + 320 =

Suggested Learning Outcomes

Add and subtract groupings of tens.

Represent equations on an empty number line.

Use place value to solve addition/subtraction problems.

Independent Tasks

Solve the following problems:

40 + 20 =

36 + 20 =

55 + 40 =

78 + 10 =

89 – 20 =

What patterns do you notice?

Mathematical Language

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

Anticipations

Solutions, Misconceptions

Task 2

What do you notice?

54 + 35 =

126 + 42 =

39 – 15 =

265 – 33 =

Represent your thinking using equations and an empty number line.

Teacher Notes

Before you launch the task, write 654 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 use increase the numbers up to 1000.

Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in $10 notes and ones, and 100s boards).

Explicitly press for place value and the face and total value, also press for what happens to the ones when you add a ten to a number.

Expect children to represent their reasoning on an empty number line and using equations.

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. Highlight 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

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

Identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure.

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500

Shareback

Highlight student solution strategies where place value was used. Model how this can be linked to a place value house and then model how this can be recorded vertically and connected to place value.

Connect

Ask students to explain how place value could be used to solve these equations:

115 + 62 =
254 + 34 =

Suggested Learning Outcomes

Add and subtract ones, tens, and hundreds.

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

Represent reasoning using a number line and through notation.

Independent Tasks

Solve these problems:

33 + 11 =

23 + 25 =

442 + 35 =

48 – 16 =

56 – 12 =

168 – 25 =

Mathematical Language

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

Anticipations

Solutions, Misconceptions

Task 3

Rena collected 56 stickers. She gave 24 stickers to her friend.
How many stickers does Rena have left?

Asa collected 168 stickers. She gave 31 stickers to her friend.
How many stickers does Asa have left?

Kelly collected 399 stickers. She gave 73 stickers to her friend.
How many stickers does Kelly have left?

Teacher Notes

Before you launch the task, give show students coins and notes and ask them to identify them. Then give students a set of coins and notes from $1 to 100 and ask them to explore different ways to make $10. Record their responses. Complete this activity as a warm-up throughout the unit of work and use increase the target amount numbers up to 100.

Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in $10 notes and ones, and 100s boards).

Expect students to represent their reasoning on an empty number line and track the jumps in either 10's or bigger numbers. If the students do not use these 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 tens and ones.

Big Ideas

Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

Identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure.

Use estimation to predict results and to check the reasonableness of calculations.

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Shareback

Select student solution strategies that have used place value:

168 = 100 + 60 + 8 so to take away 31 ...

100 – 0 = 100

60 – 30 = 30

8 – 1 = 7

168 – 31 = 137

or

168 – 30 = 138

138 – 1 = 137

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:

78 – 34 =
165 – 42 =

Suggested Learning Outcomes

Use place value to solve subtraction problems.

Represent reasoning using a number line and through notation.

Independent Tasks

May-Lee had 88 beads. She made a necklace for her cousin and used 56 beads. How many beads does May-Lee have left over?

Beth had 237 beads. She made a necklace for her cousin and used 21 beads. How many beads does Beth have left over?

Dakota had 456 beads. She made a necklace for her cousin and used 32 beads. How many beads does Dakota have left over?

Mathematical Language

Tens, ones, hundreds, subtract.

Anticipations

Solutions, Misconceptions

Task 4

Monty is sorting his marbles into colours. He has 56 blue marbles and 29 red marbles. How many marbles does Monty have altogether?

Pauli is sorting his marbles into colours. He has 227 black marbles and 25 orange marbles. How many marbles does Pauli have altogether?

Jade is sorting her marbles into colours. She has 39 yellow marbles and 138 green blocks. How many marbles does Jade have altogether?

Teacher Notes

Have concrete material available if needed for students to select (e.g., arrow cards, pre-printed tens frames, money in $10 notes and ones, and 100s boards).

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.

Bridging across tens
39 + 138 =
138 – 100 = 38
39 + 1 = 40
40 + 30 = 70
70 + 7 = 77
100 + 77 = 177

Equivalence and compensation
39 + 138 =
39 + 140 = 179
79 – 2 = 177

Big Ideas

Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

Identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure.

Use estimation to predict results and to check the reasonableness of calculations.

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Connect

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

58 + 119 =
455 + 27 =

Suggested Learning Outcomes

Decompose and recompose numbers up to 500.

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

Jack and Jill collected acorns in the playground. Jack has 65 acorns and Jill has 27. How many acorns do they have altogether?

Dallas and Vegas collected acorns in the playground. Dallas has 118 acorns and Vegas has 46. How many acorns do they have altogether?

Roman and Elias collected acorns in the playground. Roman had 59 acorns and Elias had 238. How many acorns do they have altogether?

Mathematical Language

Tens, ones, hundreds, add, subtract.

Anticipations

Solutions, Misconceptions

Task 5

Manu was helping at the sausage sizzle. They cooked 56 sausages and sold 28 sausages. How many sausages do they have left over?

Sepi was helping at the sausage sizzle. They cooked 182 sausages and sold 69 sausages. How many sausages do they have left over?

Don was helping at the sausage sizzle. They cooked 174 sausages and sold 137 sausages. How many sausages do they have left over?

Teacher Notes

Before you launch the task, write numbers between 0 and 1000 on the board. Explain to students the rules for rounding numbers to the nearest ten, less than 5 round down and more than 5 round up. Ask students to identify the number and round the number to the nearest ten. Complete this activity as a starter 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 $10 notes and ones, and 100s boards).

Students may either subtract in parts or use equivalence and compensation (take away more and then adjust proportionally).

Students may solve using inverse relationships. 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 these using equations and on an empty number line.

Subtraction in parts
56 – 28 =
56 – 20 = 36
36 – 6 = 30
30 – 2 = 28

Equivalence and compensation
56 – 28 =
56 – 30 = 26
26 + 2 = 28

Big Ideas

Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

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, and write whole numbers up to at least 1,000, and represent them using base 10 structure.

Use estimation to predict results and to check the reasonableness of calculations.

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Connect

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

92 – 38 =

186 – 129 =
Use an empty line and equations to represent their ideas.

Suggested Learning Outcomes

Decompose and recompose numbers up to 500.

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

Ana had 51 loom bands. She used 27 to make a bracelet for her friend. How many loom bands does she have left?

Tina has 148 loom bands. She used 39 to make a bracelet for her friend. How many loom bands does she have left?

Sam has 152 loom bands. She used 126 to make a bracelet for her friend. How many loom bands does she have left?

Mathematical Language

Hundreds, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Task 6

Aunty had 24 feijoas. She asked Tama to pick some more. Now Aunty has 51 feijoas. How many feijoas did Tama pick?

Dad had 44 nails in his toolbox. He found some more in the garage. Now he has 172 nails. How many nails did Dad find in the garage?

Mei had 116 Pokemon cards in her collection. She was given some cards for her birthday. Now Mei has 145 Pokemon cards. How many cards was Mei given?

Teacher Notes

Before you launch the task, write numbers between 0 and 1000 on the board. Explain to students the rules for rounding numbers to the nearest hundred, less than 50 round down and more than 50 round up. Ask students to identify the number and round the number to the nearest hundred. Complete this activity as a starter throughout the unit of work.

Launch these tasks by asking students to act out the scenario so that they can access the structure of the tasks.

Have concrete material available if needed for students to select (e.g., pre-printed tens frames, money in $10 notes and ones, and 100s boards).

Students may draw on the inverse and solve using addition or subtraction.

Focus on supporting students to represent using equations and an empty number line to solve the tasks.

Shareback

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 student solves the task this way, then introduce either solution strategy as an alternative model previously used by other students.

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.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Connect

Ask students to represent the following situation using at least two different equations and operations:

Ana had 61 mandarins. She keeps some mandarins but gives 16 to her neighbour. How many mandarins did Ana keep?

Record as 61 – 16 =
Or 16 + _ = 61

Then use prompt "if you know that 61 – 16 = 45, what other number sentences could you write?"
Ask students to discuss what they notice and make a conjecture.

Suggested Learning Outcomes

Make and identify groupings for numbers from 0-10.

Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.

Independent Tasks

Uncle had 22 feijoas in one bag and 14 feijoas in another bag. How many feijoas does uncle have altogether?

Mona picked 54 strawberries and her cousin picked some more. Now they have 92 strawberries. How many did cousin pick?

Mere has 37 pink beads in one bag. She also has some yellow beads in another bag. Altogether she has 76 beads. How many yellow beads does she have?

Mathematical Language

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

Anticipations

Solutions, Misconceptions

Task 7

Can you find the missing numbers?

18 + 6 = _ + 5
35 + 19 = 36 + _
19 + _ = 17 + 25
_ + 86 = 19 + 85

Teacher Notes

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

188 = 188	99 + 255 = 256 + 99	78 = 88 – 10
29 + 30 = 59 + 8	28 + 26 = 29 + 25	250 = 261

Use true and false and open number sentence tasks as a starter throughout the year.

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

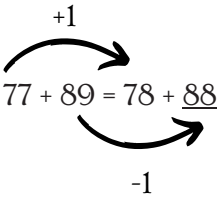
Some students may work out one side and then the other to equal the same number. However, the key focus should be on positioning students to use the relationships across the equal sign.

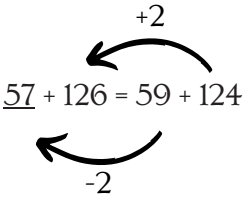
Draw attention to students who use relational types of thinking and notate the number sentences with arrows to highlight this.

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

Solve true or false number sentences and open number sentences involving addition and subtraction, using an understanding of the equal sign

Connect

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

77 + 89 = 78 + _

_ + 126 = 59 + 124

Suggested Learning Outcomes

Explain and justify relationships between numbers in an equation.

Solve equivalence problems and explain and justify the solutions.

Independent Tasks

Solve the following problems:

126 + 57 =

122 – 72 =
74 + 168 =
137 + 85 =
192 – 65 =

Mathematical Language

Equal sign, relationship, difference, add, subtract.

Anticipations

Solutions, Misconceptions

Task 8

Find the missing numbers:

23 – 17 = _ – 15

46 – 28 = 45 – _

_ – 36 = 71 – 26

143 – _ = 43 – 29

Teacher Notes

Note that the order of directionality is different between addition and subtraction and students may adjust as you do with addition and end up with an incorrect solution such as 23 – 17 = 25 – 15. 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.

34 – 17 = 35 – _

_ – 89 = 126 – 99

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

Solve true or false number sentences and open number sentences involving addition and subtraction, using an understanding of the equal sign

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:

18 + 15 = _ + 16

_ + 27 = 14 + 29

123 + _ = 133 + 18

64 + 38 = 62 + _

157 + 178 = _ + 168

Use arrows to show your thinking.

Anticipations

Solutions, Misconceptions

Task 9

Jonty said "When you are adding two numbers together, it doesn't matter which order you use to add them, the answer will be the same".

Work in a group and explore whether you agree or disagree with this statement.

Can you prove that it works for all numbers?

Does what Jonty said also work for subtraction, multiplication, and division?

Teacher Notes

Students may begin by testing different examples with numbers and different types of numbers (e.g., large, small, fractions). After they have explored multiple examples, prompt them by asking whether they can prove it would work with every number.

Have appropriate equipment for students to build concrete models to prove their conjectures (e.g., counters, grid paper, peg boards).

Look for students drawing on the commutative property and understanding that it works for addition and multiplication but not for subtraction and division.

Students may generate counter examples to prove the commutative property does not apply to subtraction or division. Students may also generate special cases (e.g., 5 – 5 = 5 – 5)

Shareback

Select groups that have built concrete models to share their generalisations.

Highlight to students that letters or symbols can be used in maths to represent any numbers.

Connect

Generalise: Can you represent the conjectures that you have made using a statement, a diagram and a number sentence (e.g., Δ + □ = □ + Δ)?

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

Use estimation to predict results and to check the reasonableness of calculations

Recall addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves.

Suggested Learning Outcomes

Explain and justify the commutative property.

Use different representations including concrete material, representations, and notation to represent a conjecture.

Independent Tasks

Find the missing numbers:
46 – 18 = _ – 16

67 – 49 = _ – 48

_ – 25 = 63 – 15

193 – _ = 93 – 29

Mathematical Language

Commutative property, conjecture, proof, generalisation, addition, subtraction, multiplication, division.

Anticipations

Solutions, Misconceptions

Task 10

What do you know about odd and even numbers?

Use the equipment to build models of odd and even numbers.

What patterns do you notice related to odd and even numbers? Does this always work?

Teacher Notes

After students have shared what they know about odd and even numbers, record all of the statements on the board. Ask the students to use the concrete material to build models of odd and even numbers to see whether the statements work.

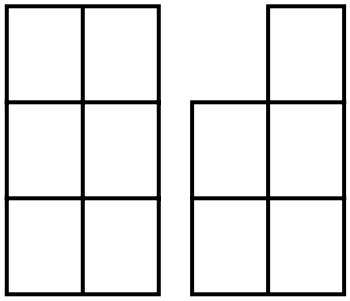
Ask the students to use different types of the concrete material to construct the models to support them to begin thinking about the structure of the numbers.

Have available to use: grid paper, multi-link cubes, counters, peg-boards, and ice block sticks.

Support students to develop correct mathematical definitions (e.g., an even number can be divided by two and you will end up with the same whole number in both groups. When you divide an odd number by two you end up with one left over.

Shareback

Select student solution strategies that use a concrete model that can be used to justify the definition of an odd or even number. Ask students to develop a definition and consider whether this will always work for every odd number or every even number.



Model of even and odd numbers

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. Relationships can be described and generalisations made for mathematical situations that have numbers or objects that repeat or grow in predictable ways.

Curriculum Links

Identify, read and write whole numbers up to at east 1000 and represent them using base 10 structure.

Connect

Ask students to use their definitions to see whether the following numbers are odd or even:

312 544 2867 1002 9836 2345

Support students to notice that the final digit determines the oddness or evenness of the number and highlight this to all students.

Suggested Learning Outcomes

Explain the structure of odd and even numbers.

Use concrete material to justify conjectures about odd and even numbers.

Develop definitions of odd and even numbers.

Independent Tasks

Solve the following problems:

27 + 125 =

156 − __ = 13

__ + 72 = 188

13 + 155 =

50 = ___ + ___

46 = ____ + ____

52 + 19 =

36 + 152 =

Mathematical Language

Odd numbers, even numbers, generalisation, patterns.

Anticipations

Solutions, Misconceptions

Task 11

Solve the following problems:

56 – 37 =

183 – 138 =

54 + 37 =

139 + 46 =

Teacher Notes

Have concrete material available if needed for students to select (e.g., pre-printed tens frames, money in $10 notes and ones, and 100s boards).

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 the empty number line and equations.

Shareback

Select student solution strategies where they have subtracted in parts, used place value to add or used equivalence and compensation. Model how the solution strategies could be recorded vertically and horizontally as equations while also maintaining the explanation of place-value.
.

Connect

Ask students to describe how you would solve the following equations using place value, bridging to the nearest decade, subtraction in parts or equivalence and compensation:

73 – 24 =
39 + 163 =

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.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

Suggested Learning Outcomes

Use subtracting in parts to solve subtraction problems.

Use place value to solve addition problems.

Use bridging to the nearest decade to solve addition problems

Use equivalence and compensation to solve subtraction and addition problems.

Represent reasoning using a number line and through notation.

Independent Tasks

Solve the problems below:

63 – 19 =

45 – 26 =

82 – 57 =

43 + 118 =

112 + 98 =

Use an empty number line and equations to show how you have solved them.

Mathematical Language

Number words (e.g., one, two, three...).

Anticipations

Solutions, Misconceptions

Task 12

Solve the following problems:

59 + 64 =

657 + 35 =

94 – 37 =

153 – 49 =

121 – 68 =

Teacher Notes

Provide materials to help students who need it access the maths.

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.

Also have printed or empty tens frames available for students to model their solution strategy.

Shareback

Select student solution strategies where they have subtracted in parts or used equivalence and compensation.

Represent this with equations and on an empty number line.

Connect

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

165 – 59 =
113 – 87 =

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.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patters (e.g., 400 + 300 = __, 350 + __ = 500).

Add and subtract numbers up to at least 100 (e.g., 43 – 28, 37 + 18).

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).

Mathematical Language

Hundred, tens, ones, add, subtract.

Anticipations

Solutions, Misconceptions

Assessment Task 1 - Number - Year 3

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 3

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 3

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 3

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?