

Curriculum Planning & Assessment Resource

Mathematics Grade 4



**Alberta Regional Professional
Development Consortia**

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opportunities at the local, regional and provincial levels*



Curriculum Planning & Assessment Resource

Mathematics

Grade 4 - Algebra

About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it in their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgment in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact info@arpdc.ab.ca to report any error or omissions.

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Acknowledgements

Thank you to all the teachers, numeracy specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

Grade 4 - Algebra

Organizing Idea:

Algebra: Equations express relationships between quantities.

Guiding Question:

How can equality create opportunities to reimagine number?

Learning Outcome:

4A1 Students represent and apply equality in multiple ways.

Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- *Understanding/making sense of a novel context from the real world using one or more concepts (eg. "How are place value and money related?").*
- *Understanding/making sense of a novel context using one or more understandings (eg. Students use money to model the conversion of base 10 values and relate them to base 10 block').*
- *Being able to describe why (linking concepts) something is true, a result, or what might be an extension using learned concepts and understandings.*
- *Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s).*
- *Construct arguments by taking a position and verifying/proving it with known understandings.*

Transfer/Summative Samples: [\[understanding surface vs deep vs transfer\]](#)

[4A1 Sample Summative](#)



KUSP 4A1.1

Prerequisite Knowledge

Students know that the meaning of equality and that numbers can be expressed in many different ways $6 + 4 = 2 + 8$ ' students understand the process that each of the four operations represents; knowledge of math facts to 12×12 should continue to be reviewed.

Pre-Assessment

Nelson Pre-Assessments 3 : Finding Each Students Pathway

- Addition Facts - p.8
- Adding Mentally - p.9
- Subtracting Facts - p.12
- Subtracting Mentally - p.13
- Missing Numbers - p.25

Nelson Pre-Assessments 4 : Finding Each Students Pathway

- Solving Equations - p. 44

Nelson Pre-Assessments 5 : Finding Each Students Pathway

- Solutions for Equations - p.44

Vocabulary

- **Order of operations:** a specified sequence in which mathematical operations are to be performed: first, multiplication and division in the order from left to right; second, addition and subtraction in order from left to right
- **Expression:** is a general term that ultimately represents a number. An expression can consist of numbers, variables and operations such as (+, -, x, ÷). It does not have an equal sign or a not equal sign; for example: $3 + 7$ or 7×8 , $9y + 6$
- **Numerical expression:** a mathematical phrase containing only numbers or numbers and operator symbols, with no equal sign (e.g., $7 - 2 \times 6$)
- **Multiplication:** an operation that combines equal groups; repeated addition; for example, 3×4 represents 3 groups of 4
- **Division:** an operation that involves equal sharing/grouping of a quantity; repeated subtraction; for example, $12 \div 4$ represents sharing 12 equally among 4 groups, or grouping 12 into groups of 4
- **Addition:** an operation that puts two or more numbers together
- **Subtraction:** an operation where one number or amount is taken away from another
- **Operation:** addition, subtraction, multiplication, and division are all operations
- **Evaluate:** to calculate or find the value of.
- **Value:** a number, or the result of a calculation.

I Know Statements | Metacognition

- I know that when evaluating an expression, I must follow the order of operations.
- I know many expressions can represent the same number

I Can Statements | Skills

- I can use the order of operations to evaluate an expression.
- I can create different expressions to represent the same number using one or more operations.

Learning Recovery

- *Please consider sharing any great activities and ideas you have!*

Enhancement

- *Please consider sharing any great activities and ideas you have!*

Learning Outcome					
4A1.1 Students represent and apply equality in multiple ways.					
Knowledge	Understanding	Skills & Procedures	Achievement Indicators	Illustrative Examples	Assessments (Explainer)
<p>An expression can include multiple operations.</p> <p>The conventional order of operations provides a set of rules for evaluating expressions, including the following:</p> <ul style="list-style-type: none"> • Multiplication and division are performed before addition and subtraction. • Multiplication and division are performed in order from left to right. • Addition and subtraction are performed in order from left to right. 	<p>There are infinitely many expressions that represent the same number.</p> <p>The order in which operations are performed can affect the value of an expression.</p>	<p>Evaluate expressions according to the order of operations. (a)</p>	<p>Explain, using examples, why there is a need to have standardized order of operations.</p> <p>Use the order of operations to evaluate numerical expressions including multiplication, division, addition and subtraction.</p> <p>Identify and correct mistakes involving the order of operations.</p> <p>Solve problems that involve evaluating expressions using the order of operations.</p>	<p>Teacher Notes:</p> <ul style="list-style-type: none"> • All expressions should involve whole numbers to introduce the order of operations. <p>After students have a better understanding of the order of operations you can expand to:</p> <ul style="list-style-type: none"> • Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms • decimal addition and subtraction limited to hundredths. <p>Students should not be introduced to an acronym for order of operations at this point because they do not use Brackets (Parentheses or exponents)</p> <ul style="list-style-type: none"> • Consider reading through Khan Academy's website of Order of Operations - using Concepts rather than a confusing Acronym which offers a slightly different approach (no acronym) to the order of operations. It will use terms such as 'repeater' (multiplication - repeated addition or division - repeated subtraction) $12 + 3 \times 8 \div 2 - 14 =$ <p style="text-align: center;">Mark the Repeaters & Calculate ...same way you read a sentence.</p> $12 + 12 - 14 =$ <p style="text-align: center;">Only Singles remain (again, L → R)</p> <p>(Khan Academy)</p> <p>Activity:</p> <p>Activity 1: Shopping List Students use a real-life situation to establish the need for an agreed convention to govern the order in which mathematical operations must be performed when there is more than one operation.</p> <ul style="list-style-type: none"> • Discuss the notion of an 'operation' in the mathematical sense as a process of combining numbers. Use the term 'operations' to describe those operations already known to students, ie addition, subtraction, multiplication and division. Students should be made aware that in future years of their mathematics study they will be introduced to other operations, such as 'squaring' a number. • As a class, students create a shopping list of items for a class celebration, choosing items advertised in supermarket catalogs and/or takeaway food menus. For the activity to work, students will need more than one of some items. • Discuss ways in which the total cost of the shopping list could be calculated, then form small groups to calculate the total cost. If necessary, students can be prompted to consider each of the operations and how they may (or may not) be used to find the total cost.. • Groups create and write down possible number sentences to calculate the total cost. Students should be encouraged to write a few words to explain each part of their number sentences and keep track of what has already been calculated. Each group should create at least two different number sentences for the calculation. 	<p>Add/Subtract/Multiply Order of Operations - Surface Worksheet B Worksheet C Source: K5Learning.com</p> <p>4A1.1 Order is Everything! - Deep</p>

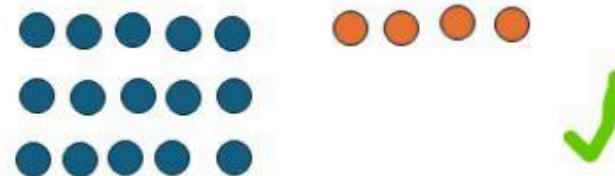
- A member of each group writes their number sentences on the board. As a class, discuss the similarities and differences between each group's number sentences. It should be possible to identify two basic approaches:
 - the use of addition to add each item individually
 - the use of multiplication to calculate the cost of multiple items and then addition to obtain the total of each part.
- The teacher summarizes these approaches for comparison on the board by writing a single number sentence for each, working from left to right across the board, eg:
 - addition only: $\$5 + \$3 + \$3 + \$3 + \$3 + \$6 + \$6 + \$10 + \$10 + \8
 - with multiplication: $\$5 + 4 \times \$3 + 2 \times \$6 + 2 \times \$10 + \$8$
- Discuss how to go about using these number sentences to calculate the correct total cost, and how the numbers may be misinterpreted to give an incorrect total cost. Possible prompts include:
 - How can you calculate the correct total cost using the first number sentence? (Responses could include: 'Just add them up', 'Add from left to right' and 'Add in any order'.)
 - How can you calculate the correct total cost using the second number sentence? (Responses could include: 'You have to do the multiplication first' and 'Work out all the multiplications and then add them up'.)
 - What happens if you just work from left to right in each number sentence? Will you get the same total cost?
- As a class, determine that there is a need for an agreed convention to govern the order in which mathematical calculations are performed when there is more than one operation. Introduce the 'order of operations' as the convention used for the order in which operations are to be performed. Conclude that the class has just discovered one of the rules of the order of operations, i.e. that multiplication is performed before addition.

[\(K-6 Math S3 Order of Operations \(UOW\).DOC pp. 2 - 3\)](#)

Example:

4 + 3 x 5 - Using order of

Calculation 1: Using order of operations Multiply 3 times 5 and then add 4 or add 4 to the product of 3 x 5



The value is 19

Calculation 2: Add 4 + 3 then multiply by 5



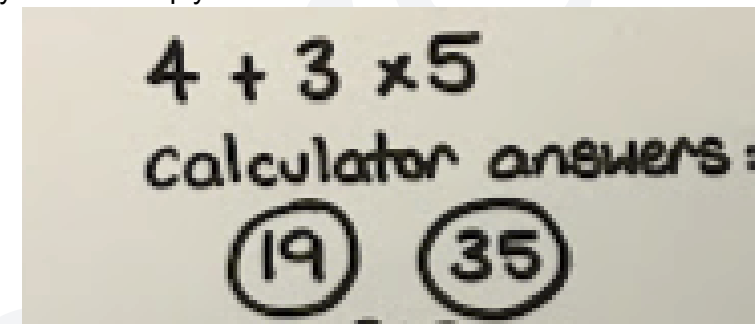
The value is 35

Symbolically

Correct order	Wrong order (error)
$4 + 3 \times 5$ $4 + 15$ 19	$4 + 3 \times 5$ 7×5 35
$4 + 3 \times 5$ $4 + 15$ 19	$4 + 3 \times 5$ 7×5 35

Source: (ARPDC created)

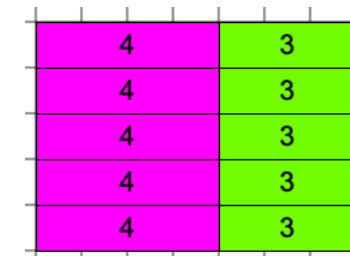
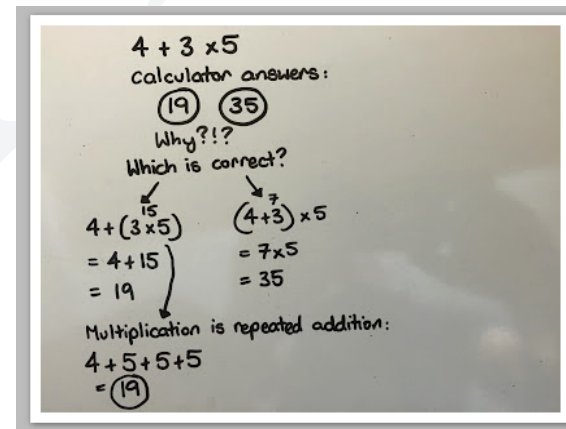
Discussion: Why do we Multiply before we Add?



Which is correct and WHY?

Solution:

Show symbolically or visually using cuisenaire rods.



(Enquiry-Based Maths)

Example:
Evaluate the expression.
a. $2 + 8 - 6$
b. $4 \times 6 \div 2$
c. $12 \div 3 \times 2 + 5$
d. $10 - 2 \times 5 + 11$
(ARPDC created)

Example:
Is the following answer correct? If not, identify the mistake and correct the work.
 $15 - 6 \div 3$
 $9 \div 3$
 3
(ARPDC created)

Example:
Maria went to the supermarket and bought 6 bottles of water and 1 litre of milk.
If a bottle of water costs 2 dollars and a liter of milk costs 3 dollars, how much money does Maria owe to the cashier?

Answer: The numerical expression for this word problem is $6 \times 2 + 3$.
Multiplication performed before addition: $6 \times 2 + 3 = 15$
(ARPDC created)

Create various expressions of the same number using one or more operations.b

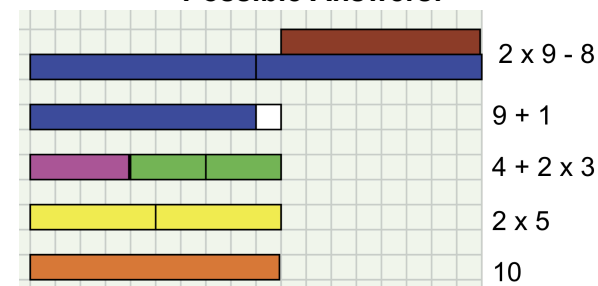
Write different expressions for the same number using one or more operations.

Activity: Equivalent Expressions using Cuisenaire Rods

Using cuisenaire rods show me different ways to represent the number 10
Write the expressions.



Possible Answers:

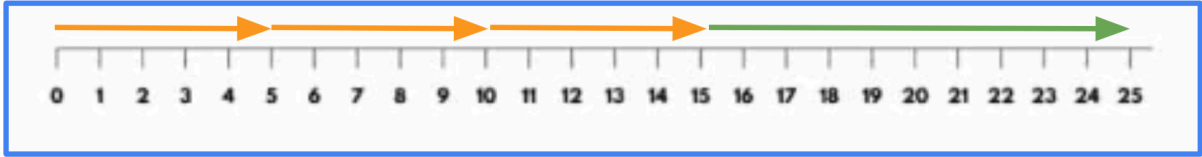


(diagrams www.hand2mind.com and pbslearningmedia.com)

4A1.1b Showing It Multiple Ways - Deep

Formative Assessment:

Provide students with a target number and have them write four different numerical expressions that represent that number.- **Deep**

			<p>Example:</p> <p>Show 4 different expressions that will equal 25.</p>  <p style="text-align: center;">3 x 5 + 10</p> <p><i>(ARPDC created)</i></p> <p>Video: Show the Kyle Pearce video: Order of Operations: Beyond BEDMAS - Visualizing 3 + 6 [SILENT SOLUTION] (disregard 3^2 as students in grade 4 do not do exponents)</p> <p>Example: Show using money 3 different ways to represent \$525. Use more than 2 operations in your expression. <i>(ARPDC created)</i></p> <p>Activity: Writing Expressions for a Given Number Create a one-operation expression for the number 54 using multiplication, division, addition and subtraction. For example 9×6</p> <p>Create a two-operation expression for the number 54 using multiplication, division, addition or subtraction. <i>(ARPDC created)</i></p>	
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Resources

Mathology

[K - 3 Little Books and Correlation Documents](#)
[Link to Grade 4 New Curriculum Correlation](#)

Mathology Activities

- Patterning Unit 2: Variables and Equations 6: Investigating Equality and the Order of Operations
- Patterning Unit 2: Variables and Equations 12: Consolidation

Math UP

Under development.

AB_Algebra will be available in September 2024.

<p>Mathology Practice Workbook 4</p> <ul style="list-style-type: none"> Unit 17 Questions 9-11 (pp. 115-116) <p>Mathology Interactive Tools</p> <ul style="list-style-type: none"> Pan Balance 	
<p>Existing Textbooks</p> <p>Math Focus 6 - Chapter 3, lesson 9 - pages 98 - 106 (Note: do not select questions with parentheses. These are grades 5 & 6)</p> <p>Math Makes Sense 6 - Unit 2 Lessons 6 & 7- pages 68 - 73 (Note: do not select questions with parentheses. These are grades 5 & 6)</p>	<p>NCETM (teacher guides and resources)</p> <p>NCETM Order of Operations (Year 6; Unit 12, Slides 2 - 16) (all of the money examples are in English currency, if using those examples, change to Canadian money)</p>
<p>Websites & Resources to Support Learning</p> <p>Website: Order of Operations - PEMDAS (Mathisfun) - how to use order of operations Website: 12 Fun Activities to Teach and Practice Order of Operation (Teachingexpertise.com)</p> <p>Worksheet: Fourth Grade Math Practice (I Know It) - use the Basic Algebra links for: Order of Operation; Writing Algebraic Expression; and Evaluating Algebraic Expressions Use the Word Problems link for: Multi-step Word Problems - two operations. Worksheet: Solving One-Step Equations - (Geogebra) - online worksheet that students will get immediate feedback from Dice Game: Dice Roll - This game can be adapted to a Grade 4 level by removing some of the dice.</p>	<p>Websites and Resources to Support Planning</p> <p>Inclusion - An inclusive approach to maths teaching Inclusion - Good Practices on Inclusive Curricula in Mathematics Sciences Differentiation: Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.</p>
<p>Gizmos New Learn Alberta (Teacher Login Required) Order of Operations (Note - Not all questions in this GIZMO are Grade 4 appropriate) For access to additional resources login to Gizmos account. Request an account alberta@explorelarning.com</p>	<p>Resources Developed by School Divisions/Educational Institutions</p> <p>Edmonton Catholic Pacing Guides Edmonton Catholic Curriculum Crates LearnAlberta Curriculum APRDC New Curriculum Professional learning Resources Alberta Teachers Association Library Grades 4-6 Mathematics & General Mathematics Resources Mathematics and Numeracy - New Curriculum Toolkit</p>
<p>Indigenous Lesson Plans and Resources</p> <p>Numeracy Promising Practices videos, Empowering the Spirit, by Alberta Regional Professional Development Consortia (ARPD)</p> <p>Shared Learnings. Integrating BC Aboriginal Content K-10. BC Ministry of Education, p. 45</p> <p>Math Catcher Outreach Program: Mathematics through Aboriginal Storytelling, from Simon Fraser University</p> <p>Math First Peoples Teacher Resource Guide, First Nations Education Steering Committee (FNESC) and First Nations Schools Association (FNSA)</p>	<p>Problem Solving</p> <p>Grade 4 Math Tasks (Calgary Board of Education) - These tasks were curated by the Calgary Board of Education. Tasks listed in these documents support teaching and learning related to the learning outcomes from the 2022 Mathematics Curriculum for Grade 5.</p>



KUSP 4A1.2

Prerequisite Knowledge

Students should be able to use the order of operations to evaluate an expression; create different expressions to represent the same number using one or more operations; know the meaning of Expression, Evaluate, Solve, Numerical Expression, Equal (meaning & symbol); Equality; Unequal (meaning & symbol & interpretation of the image of a balance scale); Addition (meaning & symbol); Subtraction (meaning & symbol)

Pre-Assessment

Nelson Pre-Assessments 3 : Finding Each Students Pathway

- Addition Facts - p.8
- Adding Mentally - p.9
- Subtracting Facts - p.12
- Subtracting Mentally - p.13
- Missing Numbers - p.25

Nelson Pre-Assessments 4 : Finding Each Students Pathway

- Solving Equations - p. 44

Nelson Pre-Assessments 5 : Finding Each Students Pathway

- Solutions for Equations - p.44

I Know Statements | Metacognition

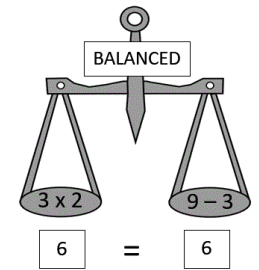
- I know that to preserve equality, I have to do the same thing to both sides of an equation.
- I know that to solve an equation, I find the value of the symbol that makes the equation true.

Learning Recovery

- *Please consider sharing any great activities and ideas you have!*

Vocabulary

- **Preservation of Equality:** keeping equality by changing each side of an equation in the same way
- **Equation:** a number sentence that shows that two expressions are equal. An equation has an equal sign; for example, $13 + 5 = 18$
- **Solve:** determine the value of the variable that makes both sides of the equation equal
- **Equal:** having the same amount or value
- **Operation:** addition, subtraction, multiplication, and division are all operations
- **Expression:** is a general term that ultimately represents a number. An expression can consist of numbers, variables and operations such as (+, -, x, ÷). It does not have an equal sign or a not equal sign; for example: $3 + 7$ or 7×8 , $9y + 6$






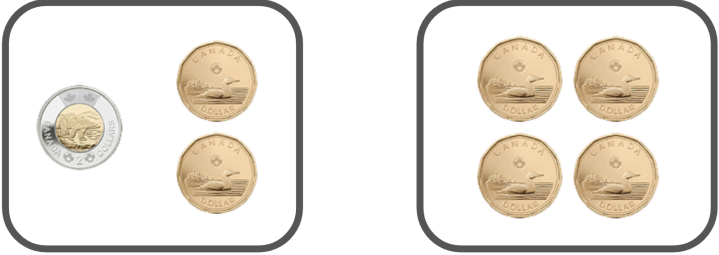
I Can Statements | Skills

- I can use the balance model to represent preservation of equality.
- I can write an equation to represent a situation.
- I can apply preservation of equality to determine an unknown value in an equation.
- I can solve problems using equations.

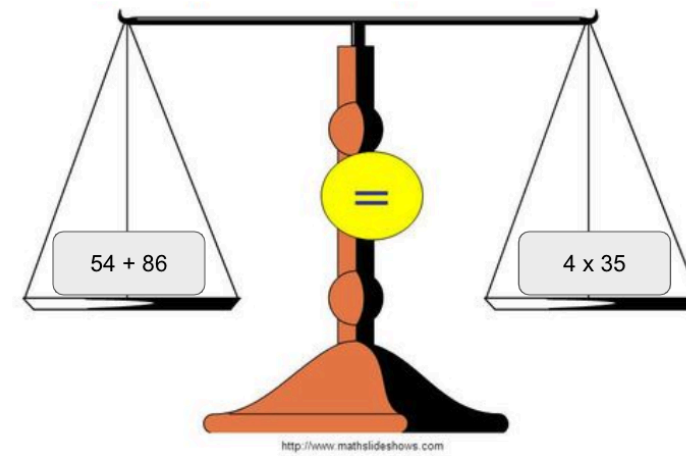
Enhancement

- *Please consider sharing any great activities and ideas you have!*

Learning Outcome		4A1.2 Students represent and apply equality in multiple ways.			
Knowledge	Understanding	Skills & Procedures	Achievement Indicators	Illustrative Examples	Assessments (Explainer)
Equations can be solved through a process of adding, subtracting, multiplying, or dividing the same number on both sides of the equation (preservation of equality)	An equation is solved by determining an unknown value that makes the left and right sides of the equation equal	Write equations involving one operation to represent a situation. (a)	Using context, write an equation with no unknowns limited to one operation.	<p>Teacher Notes:</p> <p>Equations have three necessary components. The most important being an equal sign. There must be an expression on the left hand side and an expression on the right hand side. To be an equation, those expressions must EQUAL each other in value.</p> <p>For example: $2 + 3 = 5$ is an equation, since $2 + 3$ is an expression, 5 is an expression and it has an equal sign that shows that the two sides are equal.</p> <p>Preservation of Equality: keeping equality by changing each side of an equation in the same way</p> <hr/> <p>Example: Write an equation that represents the amount of money shown below.</p>  <p>(graphic from Mathies Money)</p> <p>Example: You have a string that is 30 cm long. It is cut into two pieces.</p>  <p>a. Write an equation that can represent the situation. b. Can you write a different equation?</p> <p>(graphic from dreamstime.com)</p>	<p>Halloween Yummies! You are making Halloween treat bags. Your mom thinks that 50 children will come to the door and she wants to put 5 treats in each bag. Write an equation that represents the total number of treats needed to be ready for Halloween. Deep (ARPDC created)</p> <p>Fundraiser You and two friends each have your own charities that you like to donate to. The three of you decide to bake cookies and cupcakes and sell them at the market. If your total sales for the day were \$123.00 and you are dividing it equally among you, how much will each of you get to donate to your charities? Deep (ARPDC created)</p>

				<p>Example: Betty has 520 colored pencils and loses 115 colored pencils by the end of the year.</p>  <p>Write an equation that represents how many crayons Betty has at the end of the year. <i>(picture from Amazon.ca)</i></p>	
		<p>Investigate preservation of equality using a balance model.</p> <p>Investigate preservation of equality using an equation without an unknown value. (b)</p>	<p>Model the preservation of equality for each of the four operations, using concrete materials, or, using pictorial representations.</p> <p>Investigate preservation of equality</p>	<p>Example: Money Mats (Investigation) Below are two money mats.</p>  <ol style="list-style-type: none"> Do the two money mats equal in value. Write an equation. If I remove 1 loonie from both money mats are they still equal in value? Write the equation. If I add \$5.00 to both money mats are they still equal in value? Write the equation. If I divide the value of the money on each mat in $\frac{1}{2}$ are both money mats still equal in value? Write the equation. If I triple the value of each money mat are they still equal in value? Write the equation. <p><i>(ARPDC created, graphics from Mathies Money)</i></p>	<p><u>4A1.2b It's a Balancing Act Round 1 - Deep</u></p>

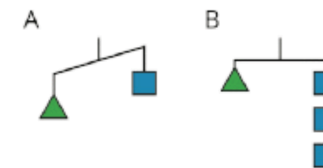
Example:



- Explain why this can be considered an equation.
- If I divide both sides of the scale by 4 is it still an equation?
(graphic adapted from mathslideshows.com)

Example:

3.1: Hanging Around



For diagram A, find:


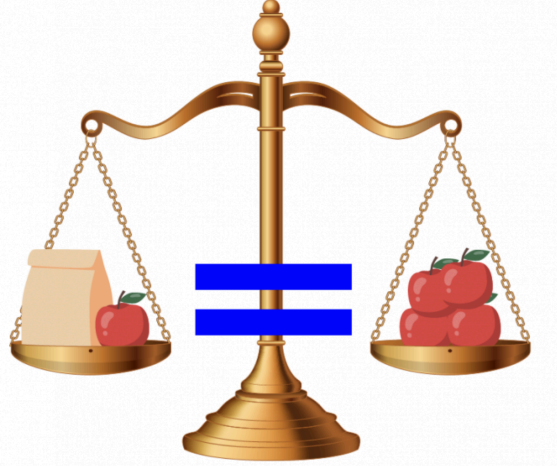
- One thing that *must* be true
- One thing that *could* be true or false
- One thing that *cannot possibly* be true

(Core Knowledge: Grade 6 Unit 6 Expressions and Equations, p. 13)

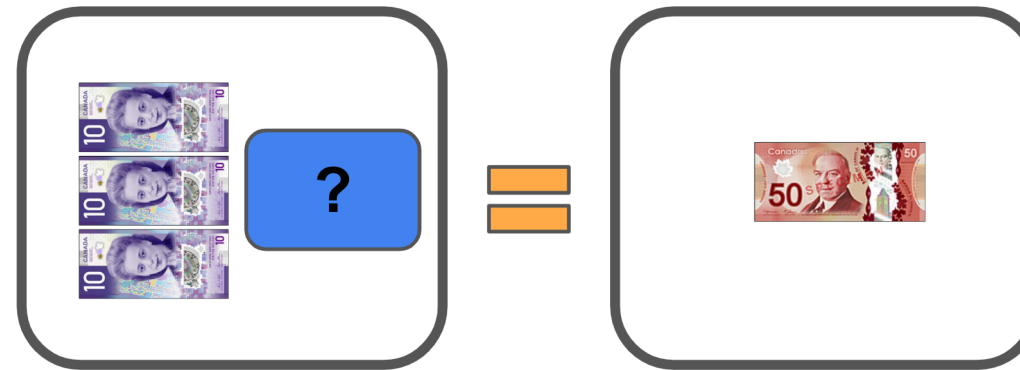
Example:



- Write the equation that the balance scale represents.
- Explore different expressions on the left hand pan that will still keep the scale balanced.
- Explore different expressions on the right hand pan that will still keep the scale balanced.
- Show a balance scale that does NOT represent an equation.
(ARPDC created)

				<p>Example: Write the equation $1450 + 3400 = 2005 + 2845$. Then say, "Present a visual of a balance model to illustrate whether or not the statement is true." (ARPD created)</p>	
		<p>Apply preservation of equality to determine the unknown value in an equation, limited to equations with one operation. (c)</p>	<p>Using preservation of equality, solve unknown values in an equation. (Limit to one operation)</p>	<p>Teacher Notes:</p> <ul style="list-style-type: none"> • There is no mention that students are expected to know the word variable. So use "?" or \square or other symbols to represent the unknown value. • Although the use of manipulatives is encouraged to introduce determining unknown values in an equation they are limited to whole numbers. We can incorporate prior learning outcomes of adding and subtracting decimals (tenths) and multiplying and dividing three digit numbers by one digit numbers in this Skill and Procedure when solving for unknown values symbolically. • The focus on solving equations is on preservation of equality not showing symbolically the inverse operations. (that is a grade 5 skill and procedure) <hr/> <p>Example:</p> <p>Each of these tug-of-war teams has the same total mass. Suppose a girl with mass 48 kg joins Team A. What could be done to keep the match fair?</p>  <p>(Math Makes Sense 6, WNCP edition, p. 36, Pearson Education Canada)</p> <p>Example: How many apples are in the bag? Which strategies did you use?</p>  <p>(Let's Talk Science)</p>	<p>4A1.2c Love Those Numbers! - Surface/Deep</p> <p>4A1.2c Solve the Equation - Exit Ticket - Surface</p>

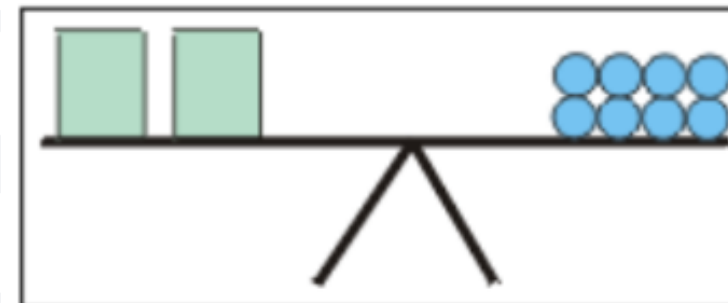
Example: Money Mats



- a. Solve for the missing value.
 - b. Write the equation
 - c. What strategy did you use?
- (ARPDC created, graphics from [Mathies Money](#))*

Example:

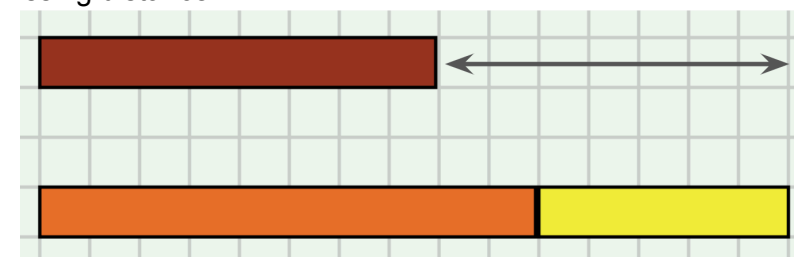
How many blue balls are equal to the mass of one green rectangle?



Adapted from ([Mr. Martinez's Math Virtual Classroom - ih](#))

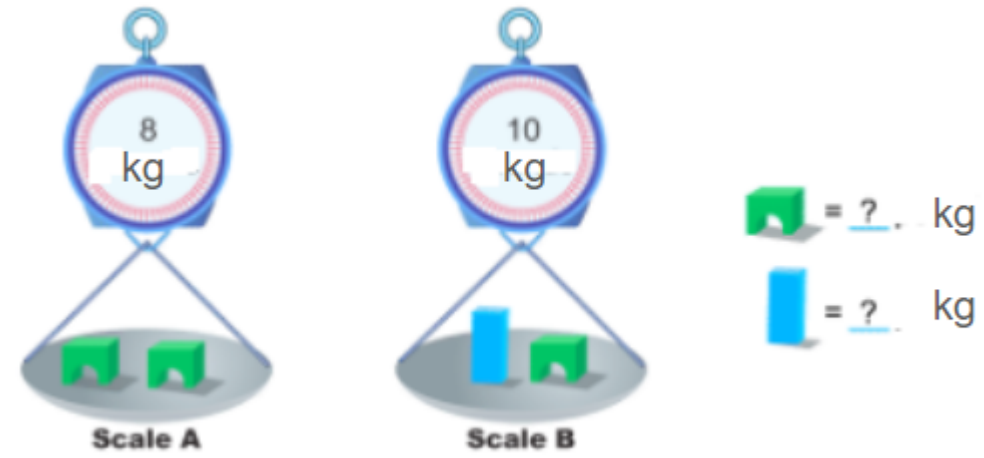
Example:

Solve for the missing distance.



(graphic created using [PBSlearningmedia.org](#))

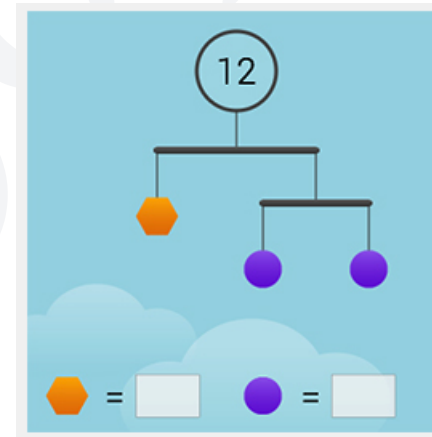
Example:
Find the missing weights.



Adapted from ck12.org lesson 5.6 Write Equations

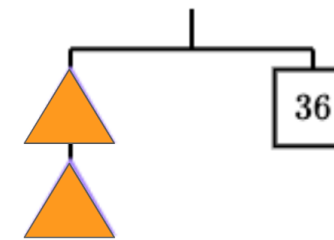
Activity: SolveMe Mobiles

Have students work in groups to do some SolveMe Mobiles.





(Solveme.edc.org)

Example:
Solve for one orange triangle.



(Khan Academy.org)

			<p>Example:</p> <p>The Grade 4 class was given the following problem: There are 49 students in the two Grade 4 classrooms. If there are 24 students in the first room, how many are in the second room?</p> <p>Jill wrote:</p> $49 - 24 = \triangle$  <p>John wrote:</p> $49 - 24 = \square$  <p>Who is correct? Explain your thinking. Explanation should include the following:</p> <ul style="list-style-type: none"> Both students are correct. It doesn't matter what symbol you use to represent the unknown. <p>Source: Manitoba Ministry of Education. p.29</p> <p>Example: Solve the equations.</p> <ol style="list-style-type: none"> $5.6 + \underline{\quad} = 18.9$ $? + 1688 = 5831$ $8 \times \triangle = 448$ $\square \div 9 = 121$ <p>(ARPDC created)</p>	
		<p>Solve problems using equations, limited to equations with one operation. (d)</p>	<p>Solve a given problem by applying preservation of equality.</p> <p>Infusing Indigenous Knowledge into Curriculum</p> <p>Equations with Symbols from Star Quilts (uregina.ca) - Aboriginal Perspectives Website - Creating equations using indigenous star quilt patterns.</p> <p>Example: My mother's age is 4 more than my dad's age. My mother is 46 years old. How old is my dad? Write an equation and solve. (adapted from <i>Math Makes Sense 7</i>, WNCP edition, p. 237, Pearson Education Canada)</p> <p>Example:</p>	<p>4A1.2d Math in the Real World - Deep</p>



In a basketball game between the Central City Cones and the Park Town Prisms, the lead changed sides many times. Write, then solve, an equation to solve each problem.

- a) Early in the game, the Cones had one-half as many points as the Prisms. The Cones had 8 points. How many points did the Prisms have?
- b) Near the end of the first half, the Cones were 12 points ahead of the Prisms. The Prisms had 39 points. How many points did the Cones have?

(Math Makes Sense 7, WNCP edition, p. 241, Pearson Education Canada)

IN Progress

Resources

Mathology

[ARPDG Math Little Books for Alberta Curriculum](#)
[Link to Grade 4 New Curriculum Correlation](#)

Mathology Activities

- Patterning Unit 2: Variables and Equations 7: Using Symbols
- Patterning Unit 2: Variables and Equations 8: Solving Equations Concretely
- Patterning Unit 2: Variables and Equations 9: Solving Addition and Subtraction Equations
- Patterning Unit 2: Variables and Equations 10: Solving Multiplication and Division Equations
- Patterning Unit 2: Variables and Equations 11: Using Equations to Solve Problems
- Patterning Unit 2: Variables and Equations 12: Consolidation

Mathology Practice Workbook 4

- Unit 17 Questions 1 - 7, and 11 (pp. 111-116)

Mathology Interactive Tools

- [Counters](#)
- [Number Lines](#)
- [Pan Balance](#)

Math UP

Grade 4 Algebra

- Lesson 1: Using an Equation to Describe a Balance
- Lesson 2: Using Equations to Represent Situations
- Lesson 3: Solving Equations

Existing Textbooks

Math Makes Sense 4 Unit 1: Lesson 4 & 5 - p. 18 - 25
 Math Focus 4 - Chapter 1: Lesson 5 - p. 20 -30

NCETM (teacher guides and resources)

[NCETM: Algebraic Thinking](#)

(Assessment Materials - Materials for exploring algebra with KS3 students)

[NCETM: Solving Problems with Two Unknowns](#)

(Year 6 - Unit 11) (there are examples one unknown for Grade 4 level)

[Core Knowledge](#): Grade 6 Unit 6 Expressions and Equations

(most of the examples have variables, but there are some great mobile questions suitable for Grade 4)

Websites & Resources to Support Learning

Manipulative: [Virtual Cuisenaire Rods](#) (PBS Learningmedia)

Manipulative: [Balance Scale Online Manipulative](#) - Use this tool to strengthen understanding and computation of numerical expressions and equality. In understanding equality, one of the first things students must realize is that equality is a relationship, not an operation

Website: [Planning Guide: Solving Equations](#) (learnalberta.ca)

Websites and Resources to Support Planning

Inclusion - An [inclusive](#) approach to maths teaching

Inclusion - [Good Practices](#) on Inclusive Curricula in Mathematics Sciences

Differentiation: Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.

Resources Developed by School Divisions/Educational Institutions

[Edmonton Catholic Pacing Guides](#)

Website: [Conservation of Number and Equality](#) (Mathematical Framework) - K - 6 Lessons on how to progress through conservation of Equality.

Video: [Algebra Basics: Solving Basic Equations \(part 1 - addition and subtraction\)](#) (Math Antics) - Shows how to rearrange addition and subtraction equations to solve for a single variable.

Video: [Algebra Basics: Solving Basic Equations \(part 2 - multiplication and division\)](#) Math Antics - Same as above but with multiplication and division.

Video: [Equality Youtube Video](#) (Shelley Mckenna) - An edmonton teacher using the Edmonton Public School Resource (*Math Makes Sense 6*, Unit 1 Lesson 8 page 36) to teach preservation of equality

Worksheet: [Learn grade 4 math](#) (IXL.ca)

- Gr 4: I.8 - I10, I.13 & I.14 - Mix operations with concrete pictorials
- Gr 4: J1 - J7 - Variable Expression
- Gr 4: K.1 - K.6 - Logic Problems

Worksheet: [Learn grade 5 math](#) (IXL.ca)

- Gr 5: CC.2, CC.6 - Equations
- Gr 5: W.3 - multi step problems

Worksheet: [IXL.ca - Grade 6](#) (IXL.ca) - this quiz assists students in writing an equation to represent a situation involving one variable.

[Edmonton Catholic Curriculum Crates](#)
[LearnAlberta Curriculum](#)
 APRDC [New Curriculum Professional learning Resources](#)
 Alberta Teachers Association Library [Grades 4-6 Mathematics](#) & [General Mathematics Resources](#)
 Mathematics and Numeracy - [New Curriculum Toolkit](#)

Gizmos

New Learn Alberta (Teacher Login Required)

[Chocomatic \(Multiplication, Arrays, and Area\)](#)
[Finding Factors with Area Models](#)
[Function Machines 1 \(Functions and Tables\)](#)
[Function Machines 3 \(Functions and Problem Solving\)](#)
[Using Algebraic Equations](#)

For access to additional resources, login to Gizmos account. Request an account [alberta@explorelarning.com](#)

Indigenous Lesson Plans and Resources

[Numeracy Promising Practices videos](#), Empowering the Spirit, by Alberta Regional Professional Development Consortia (ARPDC)

[Shared Learnings, Integrating BC Aboriginal Content K-10, BC Ministry of Education, p. 45](#)

[Math Catcher Outreach Program: Mathematics through Aboriginal Storytelling](#), from Simon Fraser University

[Math First Peoples Teacher Resource Guide](#), First Nations Education Steering Committee (FNESC) and First Nations Schools Association (FNSA)

Problem Solving

[Grade 4 Math Tasks](#) (Calgary Board of Education) - These tasks were curated by the Calgary Board of Education. Tasks listed in these documents support teaching and learning related to the learning outcomes from the 2022 Mathematics Curriculum for Grade 5.

- Order of Operations (p.7)
- Solving Equations (p.7)

Click to jump!

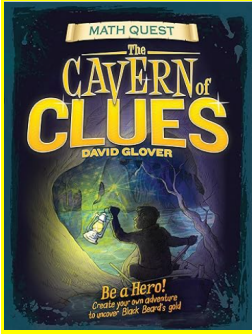


[KUSP 4A1.1](#)

[KUSP 4A1.2](#)

[Literature Connections](#)

Literature Connections

Title and Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher ISBN	Notes
<p><i>Cavern of Clues: Be a hero!</i> By David Glover</p> <p>A mathematical mystery of calculations.</p> <p>The fearsome pirate Black Beard has buried his gold, and you have the map that leads the way. If you fail, you will be trapped inside the Cavern forever!</p> <p>Make your way through these thrilling adventure, using your math skills to decide how the plot unfolds. Complete your mission and become a math whiz at the same time! Finding the answers will enable readers to advance through an exciting adventure story.</p>	Picture Book	QEB Publishing; Reprint edition (September 1, 2016) 10 - 1682970078, 13 - 978-1682970072	
<p>Indigenous Math Library from the Alberta Teachers' Association</p>			