Accelerated Grade 6/7 Mathematics

Unit title	Unit 6: Reasoning with Real-Life Phenomena through Equations and Inequalities	MYP year	1	Unit duration (hrs)	25 hours total

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GA DoE Standards

Standards

6.PAR.7.1 Solve one-step equations and inequalities involving variables when values for the variables are given. Determine whether an equation and inequality involving a variable is true or false for a given value of the variable.

6.PAR.7.2 Write one-step equations and inequalities to represent and solve problems; explain that a variable can represent an unknown number or any number in a specified set.

6.PAR.7.3 Solve problems by writing and solving equations of the form $x + p = q$, $px = q$ and $x\,p = q$ for cases in which p, q and x are all nonnegative rational numbers.

6.PAR.7.4 Recognize and generate inequalities of the form $x > c$, $x > c$, $x < c$, or $x < c$ to explain situations that have infinitely many solutions; represent solutions of such inequalities on a number line.

7.PAR.3.1 Construct algebraic equations to solve practical problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Interpret the solution based on the situation

7.PAR.3.2 Construct algebraic inequalities to solve problems, leading to inequalities of the form $px + q > r$, $px + q < r$, $px + q \leq r$, or $px + q \geq r$, where p, q, and r are specific rational numbers. Graph and interpret the solution based on the realistic situation that the inequalities represent.

6.MP: Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.
MCS.Gifted.S3C   Use a variety of strategies for solving authentic, complex, real world problems through evaluative thinking and the engineering design processes.
MCS.Gifted.S4B. Recognize and examine the value of others strengths, thoughts, ideas, and feelings during collaboration.
MCS.Gifted.S4D   Respectfully collaborate and effectively communicate exchanges of constructive/critical feedback.
MCS.Gifted.S6   Students will become self-directed, independent learners.

Concepts/Skills to support mastery of standards

6.PAR.7.1	Solve one-step equations and inequalities involving variables when values for the variables are given. Determine whether an equation and inequality involving a variable is true or false for a given value of the variable.	**Strategies and Methods** • Students should be able to use algebraic reasoning to solve an equation as a process of answering an authentic question and explain their reasoning. • When solving an equation or inequality as a process of answering a question, students should be able to explain why specific values from a specified set, if any, make the equation or inequality true. • Students should use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6.PAR.7.2	Write one-step equations and inequalities to represent and solve problems; explain that a variable can represent an unknown number or any number in a specified set.	**Age/Developmentally Appropriate** • Students should be able to represent equations involving positive variables and rational numbers. • Students should have opportunities to solve relevant, mathematical problems.	**Strategies and Methods** • Students should have an opportunity to solve problem situations with variables in all positions. • Students should be able to explain that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set.
6.PAR.7.3	Solve problems by writing and solving equations of the form $x \pm p = q$, $px = q$ and $\frac{x}{p} = q$ for cases in which p, q and x are all nonnegative rational numbers.	**Strategies and Methods** • Students should have opportunities to use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and multiplication and division when solving one-step equations. • Students should be able to solve equations presented in applicable, mathematical problems involving positive rational numbers using number sense, properties of arithmetic and the idea of maintaining equality on both sides of the equation. • Students should be able to interpret a solution in the original context and assess the reasonableness of results.	
6.PAR.7.4	Recognize and generate inequalities of the form $x > c$, $x \geq c$, $x < c$, or $x \leq c$ to explain situations that have infinitely many solutions; represent solutions of such inequalities on a number line.	**Strategies and Methods** • Students should represent authentic, mathematical situations using inequalities involving variables. • Students should be able to create practical, mathematical situations corresponding to specific inequalities. • This objective includes the use of the symbols: <, >, =, ≤, ≥.	

		Strategies and Methods	Fundamentals	Terminology	Age/Developmentally Appropriate	Examples
7.PAR.3.1	Construct algebraic equations to solve practical problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Interpret the solution based on the situation.	• Students should be able to represent relationships in various practical, mathematical situations with equations involving variables and positive and negative rational numbers and explain the	• Students should be able to fluently solve equations of the specified forms presented in	• Fluently/Fluency – Students choose flexibly among methods and strategies to solve mathematical problems accurately and efficiently.	• Continue to build on 6th grade objectives of writing and solving one-step equations from a problem situation to multi-step	• Vicky and Bob went to a store to buy school supplies. Vicky spent a total of $22 on school supplies. She spent $13 on a book and spent the rest of the money on notebooks. The store sells notebooks for $1.50 each. Without using a variable,

		meaning of the solution based on the situation. • Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.	the learning objective. • Students should use the properties of equality to solve for the value of a variable.		problem situations. This is another opportunity for students to practice using rational numbers including: integers, and positive and negative fractions and decimal numbers.	determine the number of notebooks Vicky bought. • Write an equation that can be used to find the number of notebooks Vicky bought. Use the variable v for the number of notebooks. Solve the equation. Explain the similarities and differences between finding the number of notebooks Vicky bought with and without a variable, paying attention to the sequence of your operations.
7.PAR.3.2	Construct algebraic inequalities to solve problems, leading to inequalities of the form $px \pm q > r$, $px \pm q < r$, $px \pm q \leq r$, or $px \pm q \geq r$, where p, q, and r are specific rational numbers. Graph and interpret the solution based on the realistic situation that the inequalities represent.	**Strategies and Methods** • Students should be able to represent relationships in various authentic, mathematical situations with inequalities involving variables and positive and negative rational numbers. • Students should be able to fluently solve inequalities of the specified forms. To achieve fluency, students should be able to choose flexibly among methods and strategies to solve mathematical problems accurately and efficiently. • Students should use the properties of inequality to solve for the value of a variable. • When identifying a specific value for p, q, and r, any rational number can be used. • Students should be able to graph and interpret the solution of an inequality used as a model to explain real phenomena.				*Example* • As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make and describe the solutions.

Vocabulary:

K12 Mathematics Standards Glossary					
Addition Property of Equality	Inverse Operation	Multiplication Property of Equality	Solution	Division Property of Equality	Equation
Subtraction Property of Equality	Term	Inequality	Variable	Substitution	

Key concept	Related concept(s)	Global context
Logic A method of reasoning and a system of principles used to build arguments and reach conclusions.	Model, Pattern, Measurement	Globalization and Sustainability

Statement of inquiry

Expressions, equations and inequalities communicate real world scenarios through symbols, numbers, and algebraic thinking

Inquiry questions

Factual

- How do you identify equations and variables?
- How do we use substitution to find solutions to equations?
- How do you write one variable addition and subtraction equations?

Conceptual

- How are word expressions that are translated into algebraic expressions communicating the same information?
- What strategies help me to understand and represent real life situations mathematically?

Debatable

- Why do solutions to real world algebraic problems not always what they seem

MYP Objectives	Assessment Tasks

What specific MYP **objectives** will be addressed during this unit?	**Relationship** between summative assessment task(s) and statement of inquiry:	List of common formative and summative assessments.
Criteria B (Investigating Patterns)	Assessments will expect students to communicate a real world situation in symbolic format using symbols and numbers. They will have to interpret statements concerning various situations algebraically and communicate it in written format.	**Formative Assessment(s):** MYP- Lesson 4.4 Equation Enrichment from Savvas - Enrichment activity from Unit 4 lesson 4, Write and Solve Equations Unit 6 Mid-Topic Assessment (CSA) **Summative Assessment(s):** Unit 6 Summative

Approaches to learning (ATL)
Category: Social **Cluster:** Collaboration Skills **Skill Indicator:** Give and receive meaningful feedback. **Category:** Thinking **Cluster:** Critical Thinking, Creative Thinking & Transfer **Skill Indicator:** Use models and simulations to explore complex systems and issues

<table>
<tr>
<td colspan="3" align="center">**Learning Experiences**

Add additional rows below as needed.</td>
</tr>
<tr>
<th align="center">Objective or Content</th>
<th align="center">Learning Experiences</th>
<th align="center">Personalized Learning and Differentiation</th>
</tr>
<tr>
<td>**7.PAR.3.2** Construct algebraic inequalities to solve problems, leading to inequalities of the form $px + q > r$, $px + q < r$, $px + q \leq r$, or $px + q \geq r$, where p, q, and r are specific rational numbers. Graph and interpret the solution based on the realistic situation that the inequalities represent.</td>
<td>**Imbalance Equations**
In this learning plan, students will practice solving inequalities with both positive and negative coefficients, and to connect the solutions of inequalities to their graphs.
The learning goals are:
1. I can solve an inequality with rational numbers and graph the solutions.
2. I can interpret the meaning of solutions to inequalities based on the context.</td>
<td>To support learning, students can use verbal situations to construct inequalities.

To extend learning, students can work together to develop formal rules and properties and provide justifications for why those rules and properties are applicable.</td>
</tr>
<tr>
<td>**6.PAR.7.2** Write one-step equations and inequalities to represent and solve problems; explain that a variable can represent an unknown number or any number in a specified set.
 6.PAR.7.3 Solve problems by writing and solving equations of the form x ± p = q, px = q and xp = q for cases in which p, q and x are all nonnegative rational numbers.</td>
<td>SolveMe Mobiles
In this learning activity students will discover and create balanced equations. Students will then write the equations that they create and solve.</td>
<td>To support learning, students can make the mobile by hand with physical shapes.

To extend learning the website has 3 levels and they can make their own on the site to share and have a teammate try to figure them out.</td>
</tr>
<tr>
<td colspan="3" align="center">**Content Resources**</td>
</tr>
<tr>
<td colspan="3">**6-11 Savvas Correlation to 2021 standards**

GaDoe Intervention Table of Tasks/Activities

Additional Resources

- **Savvas**
- **Desmos**
- **Hands-On Math**</td>
</tr>
</table>