

Course Title:	Go-Math 6
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Cycle/Division:	Middle school
Grade Level:	6
Credit Unit:	1
Duration:	1 year
Course Prerequisites:	Go-Math 5

Department's Vision:	<ul style="list-style-type: none"> Produce the highest standards of excellence in teaching mathematics to prepare students to flourish and fulfill personal ambitions and career goals in an increasingly technological society.
Department's Mission:	<ul style="list-style-type: none"> Develop students' abilities to become mathematical thinkers, lifelong learners, and link learning to life through problem solving and utilizing the high-tech resources.

<u>COURSE DESCRIPTION:</u>
<p><i>Unit 1 Number system</i></p> <p><i>Whole numbers and Decimals.</i></p> <p><i>Fractions</i></p> <p><i>Rational Numbers</i></p> <p><i>Unit 2 Ratios and Proportional Relationships</i></p> <p><i>Ratios and Rates</i></p> <p><i>Percents</i></p> <p><i>Unit 3 Expressions and Equations</i></p> <p><i>Units of Measure</i></p> <p><i>Algebra: Expressions</i></p> <p><i>Algebra: Equations and Inequalities</i></p> <p><i>Algebra: Relationships Between Variables</i></p> <p><i>Unit 4 Geometry</i></p> <p><i>Area</i></p> <p><i>Surface Area and Volume</i></p>

GENERAL COURSE LEARNING OBJECTIVES:

- Understand ratio concepts and use ratio reasoning to solve problems
- Apply and extend previous understandings of multiplication and division to divide fractions by fractions.
- Compute fluently with multi-digit numbers and find common factors and multiples.
- Apply and extend previous understandings of numbers to the system of rational numbers
- Apply and extend previous understandings of arithmetic to algebraic expressions.
- Reason about and solve one-variable equations and inequalities.
- Represent and analyze quantitative relationships between dependent and independent variables.
- Solve real-world and mathematical problems involving area, surface area, and volume.
- Develop understanding of statistical variability.
- Summarize and describe distributions.

I.

STANDARDS/BENCHMARKS:

❖ Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."¹
3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
 - a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?

- c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
- d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

❖ The Number System 6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?

Compute fluently with multi-digit numbers and find common factors and multiples.

2. Fluently divide multi-digit numbers using the standard algorithm.

3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$.

1Expectations for unit rates in this grade are limited to non-complex fractions.

Apply and extend previous understandings of numbers to the system of rational numbers.

5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.

b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

7. Understand ordering and absolute value of rational numbers.

a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.

b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C .

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.

d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.

8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

❖ Expressions and Equations 6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Write and evaluate numerical expressions involving whole-number exponents.

2. Write, read, and evaluate expressions in which letters stand for numbers.

a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.

II.

RESOURCES:

- ✓ Pencils, green pens, scissors, glue, geometry tool box, and Math folder with transparent pocket sheets.
- ✓ GO-Math text book.
- ✓ Online resources
- ✓ HMH attached resources CD'S (lesson tutorial videos, power point presentations, one stop planer,.....)
- ✓ Internet.
- ✓ E-games and links
- ✓ Teacher's Handouts

III.

COURSE OUTLINE:

Semester 1:

Chapter's #	Chapter	Lesson(s)
Chapter 1	Whole numbers and Decimals.	<ul style="list-style-type: none"> • 1.1: Divide Multi Digit Numbers • 1.2 Prime Factorization • 1.3 Least Common Multiple • 1.4 Greatest Common Factor • 1.5 Problem Solving • 1.6 Add and Subtract Decimals • 1.7 Multiply Decimals • 1.8 Divide Decimals by Whole Numbers • 1.9 Divide with Decimals
Chapter 2	Fractions	<ul style="list-style-type: none"> • 2.1 Fractions and Decimals • 2.2 Compare and Order Fractions and Decimals • 2.3 Multiply Fractions • 2.4 Simplify Factors



		<ul style="list-style-type: none"> • 2.5 Model Fraction Division • 2.6 Estimate Quotients • 2.7 Divide Fractions • 2.8 Model Mixed Number Division • 2.9 Divide Mixed Numbers • 2.10 Fraction Operations
Chapter 3	Rational Numbers	<ul style="list-style-type: none"> • 3.1 Understand Positive and Negative Numbers • 3.2 Compare and Order Integers • 3.3 Rational Numbers and the Number Line. • 3.4 Compare and Order Rational Numbers • 3.5 Absolute Value • 3.6 Compare Absolute Values • 3.7 Rational Numbers and the Coordinate Plane • 3.8 Ordered Pair Relationships • 3.9 Distance on the Coordinate Plane • 3.10: Problem Solving
Chapter 4	Ratios and Rates	<ul style="list-style-type: none"> • 4.1 Investigate: Model Ratios • 4.3 Equivalent Ratios and Multiplication Tables • 4.6 Find Unit Rates
Chapter 5	Percents	<ul style="list-style-type: none"> • 5.1 Model Percents • 5.2 Write Percents as Fractions and Decimals • 5.3 Write Fractions and Decimals as Percent • 5.4 Percent of a Quantity • 5.5 Problem Solving Percents • 5.6 Find the Whole From a Percent
Chapter 6	Units of Measure	<ul style="list-style-type: none"> • 6.1 Convert Units of Lengths • 6.5 Distance, Rate, and Time Formulas

Semester 2:

Chapter's #	Chapter	Lesson(s)
Chapter 7	Algebra: Expressions	<ul style="list-style-type: none"> • 7.1 Exponents • 7.2 Evaluate Expressions Involving Exponents • 7.3 Write Algebraic Equations • 7.4 Identify Parts of an Expression • 7.5 Evaluate Algebraic Expressions and Formulas • 7.6 Use Algebraic Expressions • 7.7 Combine Like Terms • 7.8 Generate Equivalent Expressions • 7.9 Identify Equivalent Expressions
Chapter 8	Algebra: Equations and Inequalities	<ul style="list-style-type: none"> • 8.1 Solutions of Equations • 8.2 Write Equations • 8.4 Solve addition and Subtraction Equations • 8.6 Solve Multiplication and Division Equations • 8.7 Equations with Fractions • 8.8 Solutions of Inequalities • 8.9 Write Inequalities • 8.10 Graph Inequalities
Chapter 9	Algebra: Relationships Between Variables	<ul style="list-style-type: none"> • 9.1 Independent and Dependent Variables • 9.2 Equations and Tables • 9.3 Analyze Relationships • 9.4 Graph Relationships • 9.5 Equations and Graphs
Chapter 10	Area	<ul style="list-style-type: none"> • 10.1 Area of Parallelograms • 10.3 Area of Triangles • 10.4 Area of Trapezoids • 10.6 Area of Regular Polygons • 10.7 Composite Figures • 10.8 Changing Dimensions • 10.9 Figures on the Coordinate Plane
Chapter 11	Surface Area and Volume	<ul style="list-style-type: none"> • 11.1 Three Dimensional Figures and Nets • 11.2 Explore Surface Area Using Nets • 11.3 Surface Area of Prisms • 11.4 Surface Area of Pyramids • 11.5 Fractions and Volume • 11.6 Volume of Rectangular Prisms

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IV.

GRADING:

Grading Policy/ Assessment Tools:

- 1st The students will be provided with study guides or mock tests on the school website in the students portal, based on our curriculum manual, bench marks and objectives before every quiz, test, or exam.
- 2nd The students will be tested based on what they have practiced at home from the study guides or mock tests mentioned before.
- 3rd The evaluation will be based on what objectives did the students achieve, and in what objectives do they need help, through the detailed report that will be sent to the parents once during the semester and once again with the report card.
- Tests and quizzes will comprise the majority of the student's grade. There will be one major test given at the end of each chapter.
- Warm-up problems for review, textbook assignments, worksheets, etc. will comprise the majority of the daily work.
- Home Works and Assignments will provide students with the opportunity to practice the concepts explained in class and in the text.
- Students will apply the learned Math concepts in their daily lives through Sample Performance Indicators which will be prepared at home and done in class.
- Students will solve a higher-order thinking word problem on weekly basis (Problem of the Week).
- Students will keep a math notebook. In this notebook students will record responses to daily warm-up problems, lesson activities, post-lesson wrap-ups, review work, and daily textbook assignments.
- Class work is evaluated through participation, worksheets, class activities and group work done in the class.
- Passing mark 60 %



Grade Distribution:

<u>Semester -1-</u>		<u>Semester -2-</u>		<u>Final Exam</u>
<i>Assessment</i>	<i>Points/Weight</i>	<i>Assessment</i>	<i>Points/Weight</i>	
Class Work	15%	Class Work	15%	Mid-Year / Final Exam 30% Total 100
Homework	5%	Homework	5%	
Quizzes	30 %	Quizzes .	30 %	
Project Based Learning	10%	Project Based Learning	10%	
POP Quizzes	5 %	POP Quizzes	5 %	
MAP (Based on students results)	5%	MAP (Based on students results)	5%	

Cross-Curricular Project(s):

- ICT integration week
- Term projects-integrate Science with math (other subjects if applicable)