| **Course Name**<br>Math Connects 2 | **Marking Period:** 1-2 | **UNIT 1: Rational Numbers**<br>Duration: 8-10 weeks |
|---|---|---|

**Essential Question:** How is computation with rational numbers similar and different to whole number computation?

## Content: Rational Numbers

## Standards:

-**CC.2.1.7.E.1** Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.

## Skills:

- **Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line.**
  - Describe situations in which opposite quantities combine to make 0.
  - Understand p + q as the number located a distance /q/ from p, in the positive or negative direction depending on whether q is positive or negative.
  - Understand the subtraction of rational numbers as the additive inverse.
- **Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.**
  - Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property.
  - Understand that integers can be divided, provided that the divisor is not zero, and every quotient is a rational number.
  - Apply properties of operations as strategies to multiply and divide rational numbers.
  - Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
- **Solve real-world and mathematical problems involving the four operations with rational numbers.**

## Instructional/Engagement Activities

## Suggested Resources:

Glencoe Math, Course 2
Unit 2: Chapters 3-4

- Lesson 3-1 Absolute Value
- Inquiry Lab, Page 199 (Adding Integers)
- Lesson 3-2 Adding Integers
- *Mid- Chapter Quiz*
- Inquiry Lab, Page 215 (Subtracting Integers)
- Lesson 3-3 Subtracting Integers
- Inquiry Lab (Distance on a Number Line)
- Lesson 3-4 Multiplying Integers
- Lesson 3-5 Divide Integers
- Chapter Review
- *Chapter Test*

- Lesson 4-1 Terminating/Repeating Decimals
- Inquiry Lab, Page 279 (Adding/Subtracting on a Number Line)
- Lesson 4-2 Comparing and Ordering Rational Numbers
- Supplement: The Coordinate Plane
- *Quiz*
- Lesson 4-3 Adding and Subtracting Like Fractions
- Lesson 4-4 Adding and Subtracting Unlike Fractions
- Lesson 4-5 Adding and Subtracting Mixed Numbers
- *Mid- Chapter Quiz*
- Lesson 4-6 Multiply Fractions
- Lesson 4-7 Convert Between Systems
- Lesson 4-8 Divide Fractions
- Chapter Review
- *Chapter Test*

## Assessment:

- When two rational numbers are added is their sum rational?
- Is subtraction commutative for rational numbers?
- Use a number line to order rational numbers 2/5, -6, 5/3, and -1.6.

| **Course Name**<br>Math Connects 2 | **Marking Period**:<br>2-3 | **UNIT 2: Ratios and Proportional Reasoning**<br>Duration: 8-10 weeks |
|---|---|---|

**Essential Question(s):**

- How can you show that two objects are proportional?
- How can percent help you understand situations involving money?

**Content: Ratios and Proportional Reasoning**

**Standards:**

- **CC.2.1.7.D.1-** Analyze proportional relationships and use them to model and solve real-world problems.

**Skills:**

- **Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.**
- **Recognize and represent proportional relationships between quantities.**
  - Determine whether two quantities are proportionally related.
  - Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
  - Represent proportional relationships by equations.
  - Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r), where r is the unit rate.
- **Use proportional relationships to solve multi-step ratio and percent problems.**
  - Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease.

**Instructional/Engagement Activities**

**Suggested Resources:**

Glencoe Math, Course 2

Unit 1: Chapter 1-2

- Inquiry Lab: Intro Ratios
- Lesson 1-1 Rates/ Unit Rates
- Lesson 1-2, Complex Fractions and Unit Rate
- Lesson 1-3, Convert Unit Rates
- Inquiry Lab, Page 53 (Proportional and Non-proportional relationships)
- Lesson 1-4, Proportional/Non-proportional Relationships
- *Mid- Chapter Quiz*
- Lesson 1-5, Graph Proportional Relationships
- Lesson 1-6, Solve Proportional Relationships
- Inquiry Lab: Rate of Change
- Lesson 1-7: Constant Rate of Change
- Lesson 1-8 Slope
- Lesson 1-9 Direct Variation
- Chapter Review
- *Chapter Test*

- Lesson 2-3, Percent Proportions
- Lesson 2-5, Percent of Change
- Inquiry Lab, pg 141 (Percent of Change)
- Lesson 2-6, Tax, Tips, Markup
- Lesson 2-7, Discounts
- Lesson 2-8, Simple Interest

**Assessment:** - Write the ratio 10s:1 min in simplest form.

- Determine and prove if 15/45 and 3/15 forms a proportion.

| **Course Name**<br>Math Connects 2 | **Marking Period:**<br>2-3 | **Unit 3: Equivalent Expressions**<br>Duration: 3 weeks |
|---|---|---|

Essential Question: How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations?

- How can you use numbers and symbols to represent mathematical ideas?

Content: Equivalent Expressions

Standards:

**- CC.2.2.7.B.1** Apply properties of operations to generate equivalent expressions.

Skills:

- **Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.**
- **Understand that rewriting an expression in different forms in a problem can shed light on the problem and how the quantities in it are related.**

**Instructional/Engagement Activities**

**Suggested Resources:**

Glencoe Math, Course 2

- Lesson 5-1 Algebraic Expressions
- Lesson 5-3 Properties of Operations
- Lesson 5-4 Distributive Property
- Lesson 5-5 Simplify Algebraic Expressions
- Review: Witte Math Unit
- Lesson 5-6 Adding Linear Expressions
- Lesson 5-7 Subtracting Linear Expressions
- Inquiry Lab, Page 411 (Factoring Linear Expressions)
- Lesson 5-8 Factoring Linear Expressions
- Learn Zillion (hyperlink)

- **Assessment:**
- Is the expression 4w – 10 equivalent to 2(2w – 5)?
- Does a + 0.05a = 1.05a mean that increase by 5% is the same a multiply by 1.05a?

| **Course Name**<br>Math Connects 2 | **Marking Period:**<br>2-3 | **Unit 4: Equations and Inequalities**<br>Duration: 8 weeks |
|---|---|---|

**Essential Question:**

- How can expressions, equations, and inequalities be used to quantify, solve, model and/or analyze mathematical situations?
- What does it mean to say two quantities are equal?

**Content:** Numerical and Algebraic Expressions, Equations, and Inequalities.

**Standards:**

**- CC.2.2.7.B.3** Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Skills:

- **Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate.**
- **Use variables to represent quantities in mathematical problems and construct simple equations and inequalities to solve problems by reasoning about the quantities.**
- Solve multi-step word problems with positive and negative rational numbers in any form.
- Solve real world problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers.

**Instructional/Engagement Activities**

**Suggested Resources:**

Glencoe Math, Course 2

- Inquiry Lab, Page 433 (Solve One-Step Addition and Subtraction Equations)
- Lesson 6-1 Solve One-Step Addition and Subtraction Equations
- Inquiry Lab, Page 445 (Multiplication Equations with Bar Diagrams)
- Lesson 6-2 Multiplication Equations
- Lesson 6-3 Solve Equations with Rational Coefficients
- Inquiry Lab, Page 465 (Solve Two-Step Equations)
- Lesson 6-4 Solve Two-Step Equations
- Inquiry Lab, Page 477 (More Two-Step Equations)
- Lesson 6-5 More Two-Step Equations
- Inquiry Lab, Page 493 (Solve Inequalities)
- Lesson 6-6 Solve Inequalities by Addition or Subtraction
- Lesson 6-7 Solve Inequalities by Multiplication or Division
- Lesson 6-8 Solve Two-Step Inequalities

Assessment:

- If a woman is making $25 an hour gets a 10% raise, what will her new hourly rate be?

| **Course Name**<br>Math Connects 2 | **Marking Period:**<br>3-4 | **Unit 5: Geometric Figures**<br>Duration: 4 weeks |
|---|---|---|

**Essential Question:**

- How does geometry help us describe real-world objects?
- How do measurements help you describe real-world objects?

**Content:** Geometric Figures

**Standards:**

**CC.2.3.7.A.1** Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Skills:

- **Draw, construct, and describe geometrical figures and describe the relationships between them.**
- Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding).
- Solve problems involving scale drawings of geometric figures, including finding length and area from a scale drawing and reproducing a scale drawing at a different scale.
- Draw (freehand, ruler and protractor, or with technology) geometric shapes with given conditions.
- Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and pyramids.

**Instructional/Engagement Activities**

**Suggested Resources:**

Glencoe Math, Course 2

- Lesson 7-1 Classify Angles
- Lesson 7-2 Complementary and Supplementary Angles
- Inquiry Lab, pg 551 Create Triangles
- Lesson 7-3 Triangles
- Inquiry Lab, pg 563 Draw Triangles
- Lesson 7-4 Scale Drawings
- Inquiry Lab, pg 583 Scale Drawings
- Lesson 7-5 Draw Three-Dimensional Figures
- Lesson 7-6 Cross Sections

Assessment:

- The measure of $\angle Q$ is 49 degrees. What is measurement of its complement and supplement?
- How are vertical angles and adjacent angles different?

| **Course Name**<br>Math Connects 2 | **Marking Period: 4** | **Unit 6: Measure Geometric Figures**<br>Duration: 3 weeks |
|---|---|---|

**Essential Question:**

- How do measurements help you describe real-world objects?

**Content: Measure Geometric Figures**

**Standards:**

**- CC.2.3.7.A.1** Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Skills:

- **Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.**
  - Know the formulas for the area and circumference of a circle and use them to solve problems.
  - Solve mathematical problems involving area, volume, and surface area of two and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
  - Identify and use properties of supplementary, complementary, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

**Instructional/Engagement Activities**
**Suggested Resources:**
Glencoe Math, Course 2

- Inquiry Lab, pg. 611 Circumference
- Lesson 8-1 Circumference
- Inquiry Lab, pg 621 Area of Circles
- Lesson 8-2 Area of Circles
- Lesson 8-3 Area of Composite Figures
- Lesson 8-4 Volume of Composite Figures
- Inquiry Lab, pg. 651 Volume of Pyramids
- Lesson 8-5 Volume of Pyramids
- Inquiry Lab, pg. 661 Nets of Three-Dimensional Figures
- Lesson 8-6 Surface Area of Prisms
- Inquiry Lab, pg. 673 Relate Surface Area and Volume
- Lesson 8-7 Surface Area of Pyramids
- Inquiry Lab, pg. 685 Composite Figures
- Lesson 8-8 Volume and Surface Area of Composite Figures

Assessment:

- Find the area of a circle when given the circumference.

| **Course Name**<br>Math Connects 2 | **Marking Period: 4** | **Unit 7: Probability**<br>**Duration: 3 weeks** |
|---|---|---|
| **Essential Question:**<br>• How do we make predictions based on the outcomes of a probability experiment?<br>• How does the collection, analysis, organization, and interpretation of data help us to answer real world questions | | |
| **Content: Probability**<br><br>**Standards:**<br>**- CC.2.3.7.A.1** Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.<br><br>Skills:<br>• Predict or determine whether some outcomes are certain, more likely, less likely, equally likely, or impossible.<br>• Find the experimental probability.<br>• Find the probabilities of compound events using organized lists, tables, tree diagrams, and simulation. | **Instructional/Engagement Activities**<br>**Suggested Resources:**<br>Glencoe Math, Course 2<br><br>- Lesson 9-1 Probability of Simple Events<br>- Inquiry Lab, pg. 719 Relative Frequency<br>- Lesson 9-2 Theoretical and Experimental Probability<br>- Inquiry Lab, pg 729 Fair and Unfair Games<br>- Lesson 9-3 Probability of Compound Events<br>- Lesson 9-7 Independent and Dependent Events | |
| Assessment:<br>• Find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open end up. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies? | | |

<table>
<tr><td>Course Name<br>Math Connects 2</td><td>Marking Period:<br>2</td><td>Unit 8: Statistics<br>Duration: 3 weeks</td></tr>
<tr><td colspan="3">Essential Question:<ul><li>How can we use the mean, median, mode, and range to describe a set of data?</li><li>Why do we need three different measures of central tendency?</li></ul></td></tr>
<tr><td colspan="2">Content: Statistics<br><br>Standards:<br>CC.2.4.7.B.3 Investigate chance processes and develop, use, and evaluate probability models.<br><br>Skills:<ul><li>Compare two numerical data distributions using measures of center and variability.</li><li>Describe data using mean, median, mode and range.</li><li>Represent and interpret data using box and whisker plots.</li><li>Represent and interpret data using stem and leaf plots.</li><li>Use line plots, frequency tables, and histograms to represent data.</li></ul></td><td>Instructional/Engagement Activities<br>Suggested Resources:<br>Glencoe Math, Course 2<br><br>- Lesson 10-1 Make Predictions<br>- Lesson 10-2 Unbiased and Biased Samples<br>- Inquiry Lab, pg 809 Multiple Samples of Data<br>- Lesson 10-3 Misleading Graphs and Statistics<br>- Inquiry Lab, pg. 825 Collect Data<br>- Lesson 10-4 Compare Populations<br>- Inquiry Lab, pg 837 Visual Overlap of Data Distributions<br>- Lesson 10-5 Select an Appropriate Display</td></tr>
<tr><td colspan="3">Assessment:<ul><li>Decide whether the words in a chapter of a seventh grade science book are generally longer than the words in a chapter of a fourth grade science book.</li><li>The mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team. This difference is equal to approximately twice the variability (mean absolute deviation) on either team. On a line plot, note the difference between the two distributions of heights.</li></ul></td></tr>
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