Unifying Concept:
Ratio / Proportional Relationships and Rational Numbers

<table>
<thead>
<tr>
<th>Enduring Understandings:</th>
<th>Essential Questions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A scale factor can be used to determine the length/area of a similar shape.</td>
<td>• How would you use a ratio to compute unit rates?</td>
</tr>
<tr>
<td>• Graphs, tables, charts, diagrams, and equations can represent proportional relationships.</td>
<td>• How can you visually represent a math problem involving unit rate?</td>
</tr>
<tr>
<td>• Numbers are compared by their relative value.</td>
<td>• What strategies would you use if the ratio contained fractions or unlike units?</td>
</tr>
<tr>
<td>• Ratios provide us a mathematical way to quantify and describe relationships.</td>
<td>• What mathematical language and representation can be used when examining proportional relationships?</td>
</tr>
<tr>
<td>• You can apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.</td>
<td>• How can you use scale factors to help determine the length/area of a similar figure?</td>
</tr>
<tr>
<td>• The value of any real number can be determined by applying the operations of addition, subtraction, multiplication or division of two or more specific numbers.</td>
<td>• How can proportional reasoning be used to efficiently solve real world problems involving rational numbers?</td>
</tr>
<tr>
<td>• Rational numbers can be converted to a decimal using long division; know that the decimal form of a rational number terminates to a 0 or eventually repeats</td>
<td>• How can previous mathematical understanding of number operations apply to adding, subtracting, multiplying, and dividing rational numbers? How can you describe such situations in real-world context?</td>
</tr>
<tr>
<td></td>
<td>• What is absolute value and how is it useful when working with integers?</td>
</tr>
<tr>
<td></td>
<td>• How is subtracting a number the same as adding the opposite?</td>
</tr>
</tbody>
</table>

Standards

Mathematically Proficient Students:
SMP 1 Make sense of problems and persevere in solving them.
SMP 2 Reason abstractly and quantitatively.
SMP 4 Model with mathematics.
SMP 6 Attend to precision.
SMP 7 Look for and make use of structure.

Mathematical Practices Poster

Highly-Leveraged Standards¹

7.EE.B.4 Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems.
a. Solve word problems leading to equations of the form px+q = r and p(x+q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
2019-2020 Mathematics Curriculum Map, Grade 7, Q1

b. Solve word problems leading to inequalities of the form px+q > r or px+q < r, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

7.NS.A.1 Add and subtract integers and other rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

a. Describe situations in which opposite quantities combine to make 0.

b. 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. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world context.

c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world context.

d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.2 Multiply and divide integers and other rational numbers.

a. 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, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world context.

b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then −(p/q) = (−p)/q = p/(−q). Interpret quotients of rational numbers by describing real-world context.

c. Apply properties of operations as strategies to multiply and divide rational numbers.

d. Convert a rational number to decimal form using long division; know that the decimal form of a rational number terminates in 0’s or eventually repeats.

7.RP.A.1 Compute unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.

7.RP.A.2 Recognize and represent proportional relationships between quantities.

a. Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.

d. 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.

7.RP.A.3 Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).

7.RP.A.3 Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error).

**Supporting Standards**

7.G.A.1 Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
### Constant Standards

7.EE.B.4a. Solve word problems leading to equations of the form px+q = r and p(x+q) = r, where p, q, and r, are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7.NS.A.1.d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.

### Social Justice Standards

6-8 Anchor Standards and Grade Level Outcomes Pages 8-9:

**Diversity:**
- DI.6-8.6 I interact with people who are similar to and different from me, and I show respect to all people.
- DI.6-8.8 I am curious and want to know more about other people’s histories and lived experiences, and I ask questions respectfully and listen carefully and non-judgmentally.
- DI.6-8.9 I know I am connected to other people and can relate to them even when we are different or when we disagree.

**Teaching Tolerance Website**
[https://www.tolerance.org/](https://www.tolerance.org/)

### Adopted Texts and Materials

**Textbook:**
- Eureka Math/ Engage NY:
  - Module 1: Lessons 1-22
  - Module 2: Lessons 1-16
  - Module 3: Lesson 7

**Additional Resources:**
- Illustrative Mathematics
- inside mathematics
- Learnzillion
- PBS Learning Media
- National Library of Virtual Manipulatives
- NY Math Standards
- Three Act Tasks - Dan Meyer
- Three Act Task - Dueling Discounts
- Khan Academy
- Math-Aids
- MAP MathShell
- Marble Mania
- Random Drawing Tool
**Holt Mathematics Course 2:**
Directions for Holt Digital
Holt: *This resource will need to be supplemented to fully meet the standards.*
Holt: Mathematics Course 2

**7.RP.A.1-3:**
Chapter 5 – Sections 1, 2, 3, 4, 6
Chapter 6 - Section 4 - 5

**7.NS.A.1-2:**
Chapter 2 - Sections 1 – 4, 10
Chapter 3 - Sections 3, 4, 5, 10, 11

**Multicultural/Culturally Responsive Connections**

**Culturally Responsive Teaching:**
- TUSD SPARKS
- SPARKS Strategies

**Modeling in Math Resources:**
- Math Modeling Projects
- Dan Meyer Three Act Tasks

**Multicultural Math Connections:**
- Global Math Stories
- Lessons from the Mayas
- Multicultural Education and Math
- Multicultural Mathematics
- Teaching Mathematics through Multicultural Literature
- Integrating Mathematics of Worldwide Cultures into K-12 Instruction
- A Course in Multicultural Mathematics
- Critical Multicultural Pavilion: Links to Sites for Multicultural Education and Math

**Instructional and Assessment Guides**
- SPARKS Strategies
- DOK Levels
- DOK Stems
- Hess's Matrix
- Bloom's Taxonomy
- Table 1
- AZMerit
- AZMerit End of Course Resources
- AZMerit Support Materials
- Achieve the Core Assessments
- Mathematics Assessment Project

**Additional Instructional Resources**
- The Mathematics Common Core Toolbox
- Inside Mathematics: Tools for Educators
- MARS Lessons
- Achieve the Core
- Standards Toolkit
- Math Vocabulary
- Illustrative Mathematics
- Cpalms Tool Kit
- Inside Mathematics
- CCSS Tool Box
- ADE Mathematics Glossary
- orglib
- Balsz District, Formal Exit Ticket Assessment
### Unifying Concept:
Expressions / Equations

#### Enduring Understanding:
- Depending on the outcome, it may be necessary to apply one or more of the mathematical operations to solve a problem in the real world.
- There are infinite ways to express a number or expression.
- Simplifying and expanding terms can be helpful in solving problems.
- Using estimation, rounding, and mental computation to check the reasonableness of a solution is a way to ensure accuracy and identify errors.
- An equation can model and solve word problems.
- Inequalities help to model the context of a problem or mathematical situation.

#### Essential Questions:
- What strategies can be applied to add, subtract, factor and expand linear equations?
- Why would you want to factor out a number from a given expression or equation?
- When is it appropriate to convert between forms of rational numbers?
- How can using various tools help to solve real-life and mathematical problems with rational numbers?
- How to solutions to expressions and equations differ?
- What is the difference between one solution and many solutions? What type of mathematical statements give single or multiple solutions?

### Standards

#### Standards for Mathematical Practice

Mathematically Proficient Students:
- SMP 2 Reason abstractly and quantitatively.
- SMP 4 Model with mathematics.
- SMP 6 Attend to precision.
- SMP 7 Look for and make use of structure.
- SMP 8. Look for and express regularity in repeated reasoning.

[Mathematical Practices Poster](#)

#### Highly-Leveraged Standards

1. **7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
2. **7.EE.A.2** Rewrite an expression in different forms, and understand the relationship between the different forms and their meanings in a problem context. For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."
3. **7.EE.B.3** Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. For example, if a woman making $25 an hour gets a 10% raise, she will make an additional $2.50, for a new salary of $27.50 per hour.
4. **7.EE.B.4** Use variables to represent quantities in mathematical problems and problems in real-world context, and construct simple equations and inequalities to solve problems.
   a. Solve word problems leading to equations of the form $px+q = r$ and $p(x+q) = r$, where $p$, $q$, and $r$ are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.
b. Solve word problems leading to inequalities of the form px+q > r or px+q < r, where p, q, and r are rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

7.NS.A.3 Solve mathematical problems and problems in real-world context involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions where a/b ÷ c/d when a,b,c, and d are all integers and b,c, and d ≠ 0.

Supporting Standards

7.G.B.4 Understand and use the formulas for the area and circumference of a circle to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

7.G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure.

7.G.B.6 Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms.

Constant Standards

7.EE.B.4.a. Solve word problems leading to equations of the form px+q = r and p(x+q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7.NS.A.1.d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.

Social Justice Standards

6-8 Anchor Standards and Grade Level Outcomes Pages 8-9:

Diversity:

- DI.6-8.6 I interact with people who are similar to and different from me, and I show respect to all people.
- DI.6-8.7 I can accurately and respectfully describe ways that people (including myself) are similar to and different from each other and others in their different groups.

Teaching Tolerance Website
https://www.tolerance.org/
## Adopted Texts and Materials

### Textbook:

**Eureka Math / Engage NY:**
- **Module 2:** Lessons 17-23
- **Module 3:** Lessons 1-26

**Holt:** This resource will need to be supplemented to fully meet the standards.

- **Holt: Mathematics Course 2**
  - **7.NS.A.3:** Chapter 3 - Sections 6 - 12
  - **7.EE.A.1:** Chapter 1 - Sections 7 – 9- 12
  - **7.EE.A.2:** Supplemental Materials needed
  - **7.EE.B3-4:** Chapter 2 - Sections 1 – 5 (integers), 9-11 (ordering numbers)
  - Chapter 12 - Sections 2- 3, 4 – 7

### Additional Resources:

- Illustrative Mathematics
- inside mathematics
- Learnzillion
- PBS Learning Media
- National Library of Virtual Manipulatives
- NY Math Standards
- Three Act Tasks - Dan Meyer
- Three Act Task - Dueling Discounts
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- MAP MathShell
- Marble Mania
- Random Drawing Tool

## Multicultural/Culturally Responsive Connections

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</table>
## Unifying Concept:
Proportional Relationships with Percent / Statistics and Probability

<table>
<thead>
<tr>
<th>Enduring Understanding:</th>
<th>Essential Question:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers are compared by their relative value. (Including percent)</td>
<td>How does a ratio describe the relationship between two quantities? Why is it important to understand the comparison of two numbers as a ratio?</td>
</tr>
<tr>
<td>Ratios provide us a mathematical way to quantify and describe relationships.</td>
<td>Why do you find a unit rate? How would knowing a unit rate be helpful?</td>
</tr>
<tr>
<td>The percent of a number is a ratio that compares a number to 100.</td>
<td>What is the relationship between ratios and percentages?</td>
</tr>
<tr>
<td>General conclusions can be made about a set of data from an appropriate set of questions.</td>
<td>How is it useful to look at quantity as a percent?</td>
</tr>
<tr>
<td>Different sampling methods of the same size can help define the variation in the prediction.</td>
<td>Why is it important to select an appropriate sample to make an inference?</td>
</tr>
<tr>
<td>The potential for bias is eliminated through random sampling, which allows a person to draw inferences about the population.</td>
<td>What makes a sample random? What benefit does random sampling provide when collecting data for a survey?</td>
</tr>
<tr>
<td>Random samplings create sample populations, which mimic the demographics of a larger population that are used to collect and generalize information.</td>
<td>How does the variation in samples relate to the sampling method used for the survey?</td>
</tr>
<tr>
<td>The chance of an event occurring can be described numerically and can be used to make predictions.</td>
<td>Which sampling method provides the most accurate sample?</td>
</tr>
<tr>
<td>The probability of events can be determined by chance and/or skill using numbers from 0 to 1 to indicate the likelihood of the event occurring in terms of decimals, fractions, and percents.</td>
<td>What factors can affect the outcome of events?</td>
</tr>
<tr>
<td>Probability of 0 is impossible, 1 is certain likelihood of an event occurring.</td>
<td>What is an example of a compound event and what makes it a compound event?</td>
</tr>
<tr>
<td>Sample spaces for compound events are represented using organized lists, tables and tree diagrams.</td>
<td>What efficient strategies can be used to help determine the likeness of compound events to occur?</td>
</tr>
<tr>
<td>Actual probabilities, simple or compound, are the fraction of outcomes in the sample space for which the event or compound event occurs.</td>
<td>How do you design and use a simulation to generate frequencies for compound events?</td>
</tr>
<tr>
<td>Experiments and simulations are used to collect data to determine the chance probability.</td>
<td>What is the relationship between theoretical and experimental probability?</td>
</tr>
<tr>
<td>The more times an experiment or simulation is done the closer the chance probability should be to the actual probability, simple or compound.</td>
<td></td>
</tr>
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### Standards

**Mathematically Proficient Students:**

SMP 1 Make sense of problems and persevere in solving them.
SMP 2 Reason abstractly and quantitatively.
SMP 3 Construct viable arguments and critique the reasoning of others.

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**Quarter 3**
SMP 4 Model with mathematics.
SMP 5 Use appropriate tools strategically.
SMP 6 Attend to precision.
SMP 7 Look for and make use of structure.
SMP 8 Look for and express regularity in repeated reasoning

**Mathematical Practices Poster**

### Highly-Leveraged Standards

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<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>7.EE.B.3</td>
<td>Solve multi-step mathematical problems and problems in real-world context posed with positive and negative rational numbers in any form. Convert between forms as appropriate and assess the reasonableness of answers. For example, if a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50 per hour.</td>
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<td>7.RP.A.1</td>
<td>Compute unit rates associated with ratios involving both simple and complex fractions, including ratios of quantities measured in like or different units.</td>
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</table>
| 7.RP.A.2 | Recognize and represent proportional relationships between quantities.  
  a. Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).  
  b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.  
  c. Represent proportional relationships by equations. For example, if total cost $t$ is proportional to the number $n$ of items purchased at a constant price $p$, the relationship between the total cost and the number of items can be expressed as $t = pn$.  
  d. 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. |
| 7.RP.A.3 | Use proportional relationships to solve multi-step ratio and percent problems (e.g., simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error). |

### Supporting Standards

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<td>7.G.A.1</td>
<td>Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</td>
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<tr>
<td>7.SP.A.1</td>
<td>Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.</td>
</tr>
<tr>
<td>7.SP.A.2</td>
<td>Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.</td>
</tr>
<tr>
<td>7.SP.C.5</td>
<td>Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.</td>
</tr>
</tbody>
</table>
**7.SP.C.6** Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.

**7.SP.C.7** Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies. If the agreement is not good, explain possible sources of the discrepancy.

- Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.
- Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

### Constant Standards

7.EE.B.4.a. Solve word problems leading to equations of the form px+q = r and p(x+q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7.NS.A.1.d. Apply properties of operations as strategies to add and subtract rational numbers.

7.NS.A.2.c. Apply properties of operations as strategies to multiply and divide rational numbers.

### Social Justice Standards

6-8 Anchor Standards and Grade Level Outcomes Pages 8-9:

#### Diversity:
- DI.6-8.7 I can accurately and respectfully describe ways that people (including myself) are similar to and different from each other and others in their different groups.
- DI.6-8.8 I am curious and want to know more about other people's histories and lived experiences, and I ask questions respectfully and listen carefully and non-judgmentally.
- DI.6-8.9 I know I am connected to other people and can relate to them even when we are different or when we disagree.

#### Identity:
- ID.6-8.3 I know that overlapping identities can combine to make me who I am and that none of my group identities on their own fully defines me or any other person.

**Teaching Tolerance Website**

[https://www.tolerance.org/](https://www.tolerance.org/)
Adopted Texts and Materials

**Textbook:**

- **Eureka Math / Engage NY:**
  - **Module 4:** Lessons 1-18
  - **Module 5:** Lessons 1-20

**Holt: Mathematics Course 2:** *This resource will need to be supplemented to fully meet the standards.*

**Additional Resources:**

- Illustrative Mathematics
- inside mathematics
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- National Library of Virtual Manipulatives
- NY Math Standards
- Three Act Tasks - Dan Meyer
- Three Act Task - Dueling Discounts
- Khan Academy
- Math-Aids
- MAP MathShell
- Marble Mania
- Random Drawing Tool

**RP (focus on ratios and percent)**

### 7.RP.A.1
- Chapter 5 - Sections 2, 6

### 7.RP.A.2:
- Chapter 5 - Section 4

#### 7.RP.A.2a
- Chapter 5 - Sections 3, 4

#### 7.RP.A.2b
- Chapter 5 - Sections 2, 3
- Chapter 6 - Section 5

#### 7.RP.A.2c
- Chapter 6 - Section 5

### 7.RP.A.2d, 7.RP.A.3
- Chapter 6 - Sections 4 - 6

### 7.SP.A.1-2
- Chapter 11 - Sections 1 - 5

### 7.SP.C.8a
- Chapter 11 – Section 6

### 7.SP.C.8b-c
- Chapter 11 – Section 3
### Multicultural/Culturally Responsive Connections

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- **TUSD SPARKS**
- **SPARKS Strategies**

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### Instructional and Assessment Guides

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- **TUSD SPARKS**
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- **Standards Toolkit**
- **Math Vocabulary**
- **Illustrative Mathematics**
- **Cpalms Tool Kit**
- **Inside Mathematics**
- **CCSS Tool Box**
- **ADE Mathematics Glossary**
### Unifying Concept:
Comparing Populations and Geometry

#### Enduring Understandings:
- Measures of center and measures of variability are used to determine informal (generalizations) or formal (numerical) differences between two data sets with similar variability.
- Scale drawings are proportional to actual objects and can be used to find actual measurements.
- Given constraints for triangles will determine whether a unique triangle, more than one triangle, or no triangle can be constructed.
- When you slice through a solid, you create a cross section that can be described as a two-dimensional figure.
- Pi is derived by finding the ratio of the circumference to the diameter for any circle.
- The circumference of a circle is $2\pi r$ or $\pi d$.
- Using the fact that circumference of a circle is $2\pi r$; the area formula of a circle can be derived to be $\pi r^2$.
- Equations can be written and used to find the value of missing angles in multi-step problems involving complementary, supplementary, adjacent and vertical angles.
- The volume of a prism is calculated by taking the area of the base times the height ($V = B \times h$).
- Surface area of prisms and pyramids is calculated by finding the sum of the area of each of its faces.

#### Essential Questions:
- What statistical processes help gain understanding about the relationship of two populations?
- What measure of center or measure of variability would you use to compare two data sets and why?
- How can you use a proportion to help determine the actual measurements of a scaled object?
- How are scale drawings used in the real world?
- How do you know if the conditions you have been given will produce one triangle, two triangles, or no triangle?
- What shapes are created when planar cuts are made diagonally, perpendicularly, and parallel to the base in a rectangular prism or rectangular pyramid?
- How do you derive the value of pi given any circle?
- How do you derive the area formula for a circle from the formula for the circumference of a circle?
Mathematically Proficient Students:

SMP 1 Make sense of problems and persevere in solving them.
SMP 2 Reason abstractly and quantitatively.
SMP 3 Construct viable arguments and critique the reasoning of others.
SMP 4 Model with mathematics.
SMP 5 Use appropriate tools strategically.
SMP 6 Attend to precision.
SMP 7 Look for and make use of structure.

**Mathematical Practices Poster**

**Highly-Leveraged Standards**

No Highly-Leveraged Standards this Quarter

**Supporting Standards**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.G.A.1</td>
<td>Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</td>
</tr>
<tr>
<td>7.G.A.2</td>
<td>Draw geometric shapes with given conditions using a variety of methods. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</td>
</tr>
<tr>
<td>7.G.A.3</td>
<td>Describe the two-dimensional figures that result from slicing three-dimensional figures.</td>
</tr>
<tr>
<td>7.G.B.4</td>
<td>Understand and use the formulas for the area and circumference of a circle to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</td>
</tr>
<tr>
<td>7.G.B.5</td>
<td>Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problems to write and solve simple equations for an unknown angle in a figure.</td>
</tr>
<tr>
<td>7.G.B.6</td>
<td>Solve mathematical problems and problems in a real-world context involving area of two-dimensional objects composed of triangles, quadrilaterals, and other polygons. Solve mathematical problems and problems in real-world context involving volume and surface area of three-dimensional objects composed of cubes and right prisms.</td>
</tr>
<tr>
<td>7.SP.B.3</td>
<td>Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</td>
</tr>
<tr>
<td>7.SP.B.4</td>
<td>Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, 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.</td>
</tr>
</tbody>
</table>
### Constant Standards

**7.EE.B.4.a.** Solve word problems leading to equations of the form \( px+q = r \) and \( p(x+q) = r \), where \( p, q, \) and \( r \) are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

**7.NS.A.1.d.** Apply properties of operations as strategies to add and subtract rational numbers.

**7.NS.A.2.c.** Apply properties of operations as strategies to multiply and divide rational numbers.

### Social Justice Standards

6-8 Anchor Standards and Grade Level Outcomes Pages 8-9:

**Identity:**
- ID.6-8.3 I know that overlapping identities combine to make who I am and that none of my group identities on their own full defines me or any other person.
- ID.6-8.5 I know there are similarities and differences between my home culture and the other environments and cultures I encounter, and I can be myself in a diversity of settings.

**Teaching Tolerance Website**
[https://www.tolerance.org/](https://www.tolerance.org/)

### Adopted Texts and Materials

**Textbook:**

- **Eureka Math / Engage NY:**
  - **Module 5:** Lessons 21-23
  - **Module 6:** Lessons 1-27

**Holt Mathematics Course 2:** *This resource will need to be supplemented to fully meet the standards.*

**7.G.A.2**
Chapter 10 Extension, page 612

**7.G.B.4**
Must be supplemented for this standard

**7.G.B.5**

8-3 Must be supplemented for this standard

### Additional Resources:

- Illustrative Mathematics
- inside mathematics
- Learnzillion
- PBS Learning Media
- National Library of Virtual Manipulatives
- NY Math Standards
- Three Act Tasks - Dan Meyer
- Three Act Task - Dueling Discounts
- Khan Academy
- Math-Aids
- MAP MathShell
- Marble Mania
- Random Drawing Tool
### Multicultural/Culturally Responsive Connections

#### Culturally Responsive Teaching:
- TUSD SPARKS
- SPARKS Strategies

#### Modeling in Math Resources:
- Math Modeling Projects
- Dan Meyer Three Act Tasks

#### Multicultural Math Connections:
- Global Math Stories
- Lessons from the Mayas
- Multicultural Education and Math
- Multicultural Mathematics
- Teaching Mathematics through Multicultural Literature
- Integrating Mathematics of Worldwide Cultures into K-12 Instruction
- A Course in Multicultural Mathematics
- Critical Multicultural Pavilion: Links to Sites for Multicultural Education and Math

### Instructional and Assessment Guides

- TUSD SPARKS
- SPARKS Strategies
- DOK Levels
- DOK Stems
- Hess’s Matrix
- Bloom’s Taxonomy
- Table 1
- AZMerit
- AZMerit End of Course Resources
- AZMerit Support Materials
- Achieve the Core Assessments
- Mathematics Assessment Project
- orglib
- Balsz District, Formal Exit Ticket Assessment

### Additional Instructional Resources

- The Mathematics Common Core Toolbox
- Inside Mathematics: Tools for Educators
- MARS Lessons
- Achieve the Core
- Standards Toolkit
- Math Vocabulary
- Illustrative Mathematics
- Cpalms Tool Kit
- Inside Mathematics
- CCSS Tool Box
- ADE Mathematics Glossary

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*Highly-Leveraged Standards* are essential knowledge and skills that are emphasized during the quarter because they have endurance (relevant throughout a student’s lifetime); leverage (used across multiple content areas); and are necessary for success in future grade levels. Mastery of these standards is measured using classroom and/or benchmark assessments. Specifically for mathematics, the **Highly-Leveraged Standards** are the **Major Content/Clusters** as defined by the Arizona Math Standards Content Emphasis Document. They should encompass a range of at least 65%-75% of instruction. See the Grade Level Focus documents at: [https://cms.azed.gov/home/GetDocumentFile?id=5994c1b73217e11164e2b109](https://cms.azed.gov/home/GetDocumentFile?id=5994c1b73217e11164e2b109)

*Supporting Standards* are integral to achieve grade-level mastery. Mastery of these standards is measured using classroom and/or benchmark assessments.

*Constant Standards* are routinely addressed to reinforce grade-level mastery.