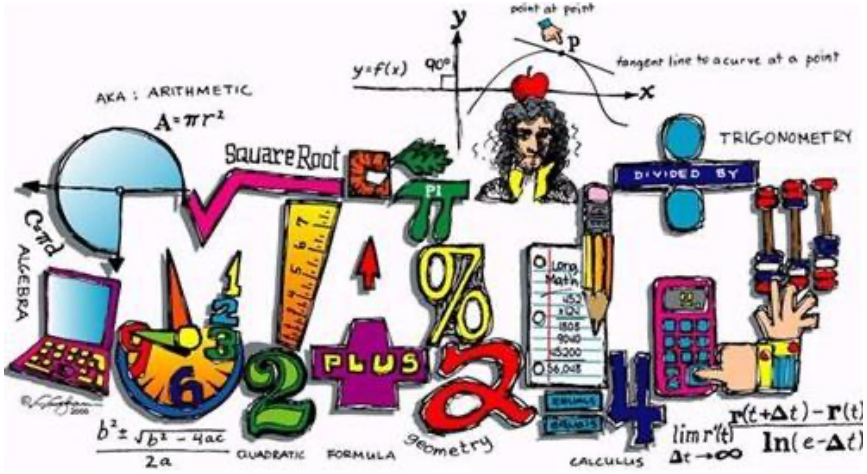
# West Iron County Middle School
# Curriculum Map

## Mathematics
## Grade 7

## Updated 2024-2025




## Based on the
## Common Core State Standards

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# PREFACE

This curriculum map is aligned to the Common Core State Standards for mathematics. The timeline presented for each chapter is meant to aid in estimating and defining the relative pacing and sequencing of the course. The following is the breakdown of the topics in Math 7:

| Semester | Term | Approximate Duration | Chapter from Big Ideas Math | Topic | Priority* |
|---|---|---|---|---|---|
| 1 | 1 | 4 ½ weeks | Chapter 1 | Adding and Subtracting Rational Numbers | major |
| | | 4 ½ weeks | Chapter 2 | Multiplying and Dividing Rational Numbers | major |
| | 2 | 3 weeks | Chapter 3 | Expressions | major |
| | | 4 weeks | Chapter 4 | Equations and Inequalities | major |
| 2 | 3 | 3 weeks | Chapter 5 | Ratios and Proportions | major |
| | | 4 weeks | Chapter 6 | Percents | major |
| | | 4 weeks | Chapter 9 | Geometric Shapes and Angles | additional |
| | 4 | 4 weeks | Chapter 10 | Surface Area and Volume | additional |
| | | 2 ½ weeks | Chapter 7 | Probability | supporting |
| | | 3 ½ weeks | Chapter 8 | Statistics | supporting |

***Students will spend most of their time on the topics of major priority. Supporting and additional topics can engage students in the major topics.**

Daily instructional tools, materials, and methods:

- Big Ideas Math Curriculum
- Interactive whiteboard
- Computer
- Class discussion and practice
- Small-group discussion and practice
- Scientific calculator
- Classroom website containing additional online resources, tools, and apps
- IXL online practice

Periodic assessment and progress monitoring:

- Guided practice
- Independent practice
- Lesson quizzes
- Chapter tests
- NWEA MAP Growth standardized achievement test (fall, winter, and spring)

# STANDARDS FOR MATHEMATICAL PRACTICE

**These mathematical practices should be integrated into daily lessons as applicable:**

**CCSS.Math.Practice.MP1** – Make sense of problems and persevere in solving them. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

**CCSS.Math.Practice.MP2** – Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

**CCSS.Math.Practice.MP3** – Construct viable arguments and critique the reasoning of others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

**CCSS.Math.Practice.MP4** – Model with mathematics. Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

**CCSS.Math.Practice.MP5** – Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

**CCSS.Math.Practice.MP6** – Attend to precision. Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

**CCSS.Math.Practice.MP7** – Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see $7 \times 8$ equals the well-remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as $2 \times 7$ and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

**CCSS.Math.Practice.MP8** – Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

# CHAPTER 1: ADDING AND SUBTRACTING RATIONAL NUMBERS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **1.1** Rational Numbers | Understand absolute values and ordering of rational numbers. | • Graph rational numbers on a number line.<br>• Find the absolute value of a rational number.<br>• Use a number line to compare rational numbers. |
| **1.2** Adding Integers | Find sums of integers. | • Explain how to model addition of integers on a number line.<br>• Find sums of integers by reasoning about absolute values.<br>• Explain why the sum of a number and its opposite is 0. |
| **1.3** Adding Rational Numbers | Find sums of rational numbers. | • Explain how to model addition of rational numbers on a number line.<br>• Find sums of rational numbers by reasoning about absolute values.<br>• Use properties of addition to efficiently add rational numbers. |
| **1.4** Subtracting Integers | Find differences of integers. | • Explain how subtracting integers is related to adding integers.<br>• Explain how to model subtraction of integers on a number line.<br>• Find differences of integers by reasoning about absolute values. |
| **1.5** Subtracting Rational Numbers | Find differences of rational numbers and find distances between numbers on a number line. | • Explain how to model subtraction of rational numbers on a number line.<br>• Find differences of rational numbers by reasoning about absolute values.<br>• Find distances between numbers on a number line. |

| Through the Chapter | | | | | |
|---|---|---|---|---|---|
| **Standard** | **1.1** | **1.2** | **1.3** | **1.4** | **1.5** |
| **7.NS.A.1a** Describe situations in which opposite quantities combine to make 0. | ▲ | ● | ★ | | |
| **7.NS.A.1b** 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 contexts. | ▲ | ● | ★ | | |
| **7.NS.A.1c** 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 contexts. | ▲ | | | ● | ★ |
| **7.NS.A.1d** Apply properties of operations as strategies to add and subtract rational numbers. | ▲ | ● | ● | | ★ |
| **7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers. | ▲ | ● | ● | ● | ● |

## Key Vocabulary

- integers
- rational numbers
- absolute value
- additive inverse

**Key**
▲ = preparing ★ = complete
● = learning ■ = extending

# CHAPTER 2: MULTIPLYING AND DIVIDING RATIONAL NUMBERS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **2.1** Multiplying Integers | Find products of integers. | • Explain the rules for multiplying integers.<br>• Find products of integers with the same sign.<br>• Find products of integers with different signs. |
| **2.2** Dividing Integers | Find quotients of integers. | • Explain the rules for dividing integers.<br>• Find quotients of integers with the same sign.<br>• Find quotients of integers with different signs. |
| **2.3** Converting Between Fractions and Decimals | Convert between different forms of rational numbers. | • Explain the difference between terminating and repeating decimals.<br>• Write fractions and mixed numbers as decimals.<br>• Write decimals as fractions and mixed numbers. |
| **2.4** Multiplying Rational Numbers | Find products of rational numbers. | • Explain the rules for multiplying rational numbers.<br>• Find products of rational numbers with the same sign.<br>• Find products of rational numbers with different signs. |
| **2.5** Dividing Rational Numbers | Find quotients of rational numbers. | • Explain the rules for dividing rational numbers.<br>• Find quotients of rational numbers with the same sign.<br>• Find quotients of rational numbers with different signs. |

## Key Vocabulary

- terminating decimal
- repeating decimal
- complex fraction

| Through the Chapter | | | | | |
|---|---|---|---|---|---|
| **Standard** | **2.1** | **2.2** | **2.3** | **2.4** | **2.5** |
| **7.NS.A.2a** 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 contexts. | ● | | | ★ | |
| **7.NS.A.2b** 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 contexts. | | ● | ● | | ★ |
| **7.NS.A.2c** Apply properties of operations as strategies to multiply and divide rational numbers. | ● | | | ★ | |
| **7.NS.A.2d** Convert a rational number to decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. | | | ★ | | |
| **7.NS.A.3** Solve real-world and mathematical problems involving the four operations with rational numbers. | ● | ● | | ● | ★ |

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# CHAPTER 3: EXPRESSIONS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **3.1** Algebraic Expressions | Simplify algebraic expressions. | • Identify terms and like terms of algebraic expressions.<br>• Combine like terms to simplify algebraic expressions.<br>• Write and simplify algebraic expressions to solve real-life problems. |
| **3.2** Adding and Subtracting Linear Expressions | Find sums and differences of linear expressions. | • Explain the difference between linear and nonlinear expressions.<br>• Find opposites of terms that include variables.<br>• Apply properties of operations to add and subtract linear expressions. |
| **3.3** The Distributive Property | Apply the Distributive Property to generate equivalent expressions. | • Explain how to apply the Distributive Property.<br>• Use the Distributive Property to simplify algebraic expressions. |
| **3.4** Factoring Expressions | Factor algebraic expressions. | • Identify the greatest common factor of terms, including variable terms.<br>• Use the Distributive Property to factor algebraic expressions.<br>• Write a term as a product involving a given factor. |

## Key Vocabulary

- equivalent equations
- inequality
- solution of an inequality
- solution set,
- graph of an inequality

| Through the Chapter | | | | |
|---|---|---|---|---|
| **Standard** | **3.1** | **3.2** | **3.3** | **3.4** |
| **7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. | ● | ● | ● | ★ |
| **7.EE.A.2** Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. | ● | ● | ● | ★ |

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# CHAPTER 4: EQUATIONS AND INEQUALITIES

| Section | Learning Target | Success Criteria |
|---|---|---|
| **4.1** Solving Equations Using Addition or Subtraction | Write and solve equations using addition or subtraction. | • Apply the Addition and Subtraction Properties of Equality to produce equivalent equations.<br>• Solve equations using addition or subtraction.<br>• Apply equations involving addition or subtraction to solve real-life problems. |
| **4.2** Solving Equations Using Multiplication or Division | Write and solve equations using multiplication or division. | • Apply the Multiplication and Division Properties of Equality to produce equivalent equations.<br>• Solve equations using multiplication or division.<br>• Apply equations involving multiplication or division to solve real-life problems. |
| **4.3** Solving Two-Step Equations | Write and solve two-step equations. | • Apply properties of equality to produce equivalent equations.<br>• Solve two-step equations using basic operations.<br>• Apply two-step equations to solve real-life problems. |
| **4.4** Writing and Graphing Inequalities | Write inequalities and represent solutions of inequalities on number lines. | • Write word sentences as inequalities.<br>• Determine whether a value is a solution of an inequality.<br>• Graph the solutions of inequalities. |
| **4.5** Solving Inequalities Using Addition or Subtraction | Write and solve inequalities using addition or subtraction. | • Apply the Addition and Subtraction Properties of Inequality to produce equivalent inequalities.<br>• Solve inequalities using addition or subtraction.<br>• Apply inequalities involving addition or subtraction to solve real-life problems. |
| **4.6** Solving Inequalities Using Multiplication or Division | Write and solve inequalities using multiplication or division. | • Apply the Multiplication and Division Properties of Inequality to produce equivalent inequalities.<br>• Solve inequalities using multiplication or division.<br>• Apply inequalities involving multiplication or division to solve real-life problems. |
| **4.7** Solving Two-Step Inequalities | Write and solve two-step inequalities. | • Apply properties of inequality to generate equivalent inequalities.<br>• Solve two-step inequalities using the basic operations.<br>• Apply two-step inequalities to solve real-life problems. |

**Through the Chapter**

| Standard | 4.1 | 4.2 | 4.3 | 4.4 | 4.5 | 4.6 | 4.7 |
|---|---|---|---|---|---|---|---|
| **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.EE.B.4b** Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where $p$, $q$, and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. | | | | ● | ● | ● | ★ |

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## Key Vocabulary

- equivalent equations
- inequality
- solution of an inequality
- solution set
- graph of an inequality

# CHAPTER 5: RATIOS AND PROPORTIONS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **5.1** Ratios and Ratio Tables | Understand ratios of rational numbers and use ratio tables to represent equivalent ratios. | • Write and interpret ratios involving rational numbers.<br>• Use various operations to create tables of equivalent ratios.<br>• Use ratio tables to solve ratio problems. |
| **5.2** Rates and Unit Rates | Understand rates involving fractions and use unit rates to solve problems. | • Find unit rates for rates involving fractions.<br>• Use unit rates to solve rate problems. |
| **5.3** Identifying Proportional Relationships | Determine whether two quantities are in a proportional relationship. | • Determine whether ratios form a proportion.<br>• Explain how to determine whether quantities are proportional.<br>• Distinguish between proportional and nonproportional situations. |
| **5.4** Writing and Solving Proportions | Use proportions to solve ratio problems. | • Solve proportions using various methods.<br>• Find a missing value that makes two ratios equivalent.<br>• Use proportions to represent and solve real-life problems. |
| **5.5** Graphs of Proportional Relationships | Represent proportional relationships using graphs and equations. | • Determine whether quantities are proportional using a graph.<br>• Find the unit rate of a proportional relationship using a graph.<br>• Create equations to represent proportional relationships. |
| **5.6** Scale Drawings | Solve problems involving scale drawings. | • Find an actual distance in a scale drawing.<br>• Explain the meaning of scale and scale factor.<br>• Use a scale drawing to find the actual lengths and areas of real-life objects. |

**Through the Chapter**

| Standard | 5.1 | 5.2 | 5.3 | 5.4 | 5.5 | 5.6 |
|---|---|---|---|---|---|---|
| **7.RP.A.1** Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. | ● | ★ | | | | |
| **7.RP.A.2a** 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. | | | ● | | ★ | |
| **7.RP.A.2b** Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. | | ● | ● | | ★ | |
| **7.RP.A.2c** Represent proportional relationships by equations. | | | | | ★ | |
| **7.RP.A.2d** 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 multistep ratio and percent problems. | ● | ● | | ● | | |
| **7.G.A.1** Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | | | | | | ★ |

## Key Vocabulary

- ratio
- value of a ratio
- equivalent ratios
- ratio table
- rate
- unit rate
- equivalent rates
- proportion
- cross products
- proportional
- constant of proportionality
- scale drawing
- scale model
- scale
- scale factor

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# CHAPTER 6 - PERCENTS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **6.1** Fractions, Decimals, and Percents | Rewrite fractions, decimals, and percents using different representations. | • Write percents as decimals and decimals as percents.<br>• Write fractions as decimals and percents.<br>• Compare and order fractions, decimals, and percents. |
| **6.2** The Percent Proportion | Use the percent proportion to find missing quantities. | • Write proportions to represent percent problems.<br>• Solve a proportion to find a percent, a part, or a whole. |
| **6.3** The Percent Equation | Use the percent equation to find missing quantities. | • Write equations to represent percent problems.<br>• Use the percent equation to find a percent, a part, or a whole. |
| **6.4** Percents of Increase and Decrease | Find percents of change in quantities. | • Explain the meaning of percent of change.<br>• Find the percent of increase or decrease in a quantity.<br>• Find the percent error of a quantity. |
| **6.5** Discounts and Markups | Solve percent problems involving discounts and markups. | • Use percent models to solve problems involving discounts and markups.<br>• Write and solve equations to solve problems involving discounts and markups. |
| **6.6** Simple Interest | Understand and apply the simple interest formula. | • Explain the meaning of simple interest.<br>• Use the simple interest formula to solve problems. |

| Through the Chapter | | | | | | |
|---|---|---|---|---|---|---|
| **Standard** | **6.1** | **6.2** | **6.3** | **6.4** | **6.5** | **6.6** |
| **7.RP.A.3** Use proportional relationships to solve multistep ratio and percent problems. | | ● | ● | ● | ● | ★ |
| **7.EE.B.3** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. | ● | ● | ● | ● | ● | ★ |

## Key Vocabulary

- percent of change
- percent of increase
- percent of decrease
- percent error
- discount
- markup
- principal
- simple interest

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# CHAPTER 9: GEOMETRIC SHAPES AND ANGLES

| Section | Learning Target | Success Criteria |
|---|---|---|
| **9.1** Circles and Circumference | Find the circumference of a circle. | • Explain the relationship between the diameter and circumference of a circle.<br>• Use a formula to find the circumference of a circle. |
| **9.2** Areas of Circles | Find the area of a circle. | • Estimate the area of a circle.<br>• Use a formula to find the area of a circle. |
| **9.3** Perimeters and Areas of Composite Figures | Find perimeters and areas of composite figures. | • Use a grid to estimate perimeters and areas.<br>• Identify the shapes that make up a composite figure.<br>• Find the perimeters and areas of shapes that make up composite figures. |
| **9.4** Constructing Polygons | Construct a polygon with given measures. | • Use technology to draw polygons.<br>• Determine whether given measures result in one triangle, many triangles, or no triangle.<br>• Draw polygons given angle measures or side lengths. |
| **9.5** Finding Unknown Angle Measures | Use facts about angle relationships to find unknown angle measures. | • Identify adjacent, complementary, supplementary, and vertical angles.<br>• Use equations to find unknown angle measures.<br>• Find unknown angle measures in real-life situations. |

## Key Vocabulary

- circle
- center
- radius
- diameter
- circumference
- pi
- semicircle
- adjacent angles
- complementary angles
- supplementary angles
- vertical angles

**Through the Chapter**

| Standard | 9.1 | 9.2 | 9.3 | 9.4 | 9.5 |
|---|---|---|---|---|---|
| **7.G.A.2** Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. 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. | | | | ★ | |
| **7.G.B.4** Know the formulas for the area and circumference of a circle and use them 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 a multi-step problem to write and solve simple equations for an unknown angle in a figure. | | | | | ★ |
| **7.G.B.6** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | | | ● | | |

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# CHAPTER 10: SURFACE AREA AND VOLUME

| Section | Learning Target | Success Criteria |
|---|---|---|
| **10.1** Surface Areas of Prisms | Find the surface area of a prism. | • Use a formula to find the surface area of a prism.<br>• Find the lateral surface area of a prism. |
| **10.2** Surface Areas of Cylinders | Find the surface area of a cylinder. | • Use a formula to find the surface area of a cylinder.<br>• Find the lateral surface area of a cylinder. |
| **10.3** Surface Areas of Pyramids | Find the surface area of a pyramid. | • Use a net to find the surface area of a regular pyramid.<br>• Find the lateral surface area of a regular pyramid. |
| **10.4** Volumes of Prisms | Find the volume of a prism. | • Use a formula to find the volume of a prism.<br>• Use the formula for the volume of a prism to find a missing dimension. |
| **10.5** Volumes of Pyramids | Find the volume of a pyramid. | • Use a formula to find the volume of a pyramid.<br>• Use the volume of a pyramid to solve a real-life problem. |
| **10.6** Cross Sections of Three-Dimensional Figures | Describe the cross sections of a solid. | • Explain the meaning of a cross section.<br>• Describe cross sections of prisms and pyramids.<br>• Describe cross sections of cylinders and cones. |

## Key Vocabulary

- composite figure
- lateral surface area
- regular pyramid
- slant height
- cross section

| Through the Chapter | | | | | | |
|---|---|---|---|---|---|---|
| **Standard** | **10.1** | **10.2** | **10.3** | **10.4** | **10.5** | **10.6** |
| **7.G.A.3** Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. | | | | | | ★ |
| **7.G.B.4** Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. | | ■ | | | | |
| **7.G.B.6** Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | ● | | ● | ● | ★ | |

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# CHAPTER 7: PROBABILITY

| Section | Learning Target | Success Criteria |
|---|---|---|
| **7.1** Probability | Understand how the probability of an event indicates its likelihood. | • Identify possible outcomes of an experiment.<br>• Use probability and relative frequency to describe the likelihood of an event.<br>• Use relative frequency to make predictions. |
| **7.2** Experimental and Theoretical Probability | Develop probability models using experimental and theoretical probability. | • Explain the meanings of experimental probability and theoretical probability.<br>• Find experimental and theoretical probabilities.<br>• Use probability to make predictions. |
| **7.3** Compound Events | Find sample spaces and probabilities of compound events. | • Find the sample space of two or more events.<br>• Find the total number of possible outcomes of two or more events.<br>• Find probabilities of compound events. |
| **7.4** Simulations | Design and use simulations to find probabilities of compound events. | • Design a simulation to model a real-life situation.<br>• Recognize favorable outcomes in a simulation.<br>• Use simulations to find experimental probabilities. |

| Through the Chapter | | | | |
|---|---|---|---|---|
| **Standard** | **7.1** | **7.2** | **7.3** | **7.4** |
| **7.SP.C.5** 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 $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. | ★ | | | |
| **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. | ● | ★ | | |
| **7.SP.C.7a** Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. | | ★ | | |
| **7.SP.C.7b** Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. | ● | ★ | | |
| **7.SP.C.8a** Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. | | | ● | ★ |
| **7.SP.C.8b** Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. | | | ★ | |
| **7.SP.C.8c** Design and use a simulation to generate frequencies for compound events. | | | | ★ |

## Key Vocabulary

- experiment
- outcomes
- event
- favorable outcomes
- probability
- relative frequency
- experimental probability
- theoretical probability
- sample space
- Fundamental Counting Principle
- compound event
- simulation

**Key**
▲ = preparing ★ = complete
● = learning ■ = extending

# CHAPTER 8: STATISTICS

| Section | Learning Target | Success Criteria |
|---|---|---|
| **8.1** Samples and Populations | Understand how to use random samples to make conclusions about a population. | • Explain why a sample is biased or unbiased.<br>• Explain why conclusions made from a biased sample may not be valid.<br>• Use an unbiased sample to make a conclusion about a population. |
| **8.2** Using Random Samples to Describe Populations | Understand variability in samples of a population. | • Use multiple random samples to make conclusions about a population.<br>• Use multiple random samples to examine variation in estimates. |
| **8.3** Comparing Populations | Compare populations using measures of center and variation. | • Find the measures of center and variation of a data set.<br>• Describe the visual overlap of two data distributions numerically.<br>• Determine whether there is a significant difference in the measures of center of two data sets. |
| **8.4** Using Random Samples to Compare Populations | Use random samples to compare populations. | • Compare random samples using measures of center and variation.<br>• Recognize whether random samples are likely to be representative of a population.<br>• Compare populations using multiple random samples. |

## Key Vocabulary

- population
- sample
- unbiased sample
- biased sample

**Through the Chapter**

| Standard | 8.1 | 8.2 | 8.3 | 8.4 |
|---|---|---|---|---|
| **7.SP.A.1** 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. | ★ | | | |
| **7.SP.A.2** 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. | ● | ● | | ★ |
| **7.SP.B.3** 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. | | | ★ | |
| **7.SP.B.4** Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. | | | | ★ |

**Key**
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● = learning ■ = extending