Course Title:	Content Area:	Grade Level:	Credit (if applicable)
Grade 7 Mathematics	Mathematics	Grade 7	

Course Description:
Students start grade 7 by studying scale drawings, an engaging geometric topic that supports the subsequent work on proportional relationships in the second and fourth units. It also makes use of grade 6 arithmetic understanding and skill, without arithmetic becoming the major focus of attention at this point. Geometry and proportional relationships are also interwoven in the third unit on circles, where the important proportional relationship between a circle's circumference and its diameter is studied. By the time students reach the fifth unit on operations with rational numbers, both positive and negative, students have had time to brush up on and solidify their understanding and skill in grade 6 arithmetic. The work on operations on rational numbers, with its emphasis on the role of the properties of operations in determining the rules for operating with negative numbers, is a natural lead-in to the work on expressions and equations in the next unit. Students then put their arithmetical and algebraic skills to work in the last two units, on angles, triangles, and prisms, and on probability and sampling.

Aligned Core Resources:	Connection to the *BPS Vision of the Graduate*
Kendall Hunt Illustrative Mathematics	Critical Thinking and Problem Solving Collect, assess and analyze relevant information • Reason effectively. Use systems thinking • Make sound judgments and decisions. Identify, define and solve authentic problems and essential questions. • Reflect critically on learning experience, processes and solutions • Transfer knowledge to other situations

Additional Course Information: *Knowledge/Skill Dependent courses/prerequisites*	Link to *Completed Equity Audit*

Standard Matrix

Standards	Aligned Lessons
7.EE.A	7.7.3
7.EE.A.1	7.6.18, 7.6.19, 7.6.20, 7.6.21, 7.6.22, 7.9.7
7.EE.A.2	7.6.12
7.EE.B	7.9.8
7.EE.B.3	7.3.11, 7.5.12, 7.5.17, 7.6.2, 7.6.3, 7.6.4, 7.6.5, 7.6.6, 7.6.11, 7.6.12
7.EE.B.4	7.5.15, 7.6.5, 7.6.9, 7.6.11, 7.6.12, 7.6.13, 7.6.15, 7.7.5, 7.9.3
7.EE.B.4.a	7.5.15, 7.5.16, 7.6.4, 7.6.5, 7.6.7, 7.6.8, 7.6.9, 7.6.10, 7.6.11, 7.6.12, 7.9.7
7.EE.B.4.b	7.6.14, 7.6.16, 7.6.17
7.G.A	7.3.2, 7.3.7, 7.7.1, 7.7.4, 7.7.9
7.G.A.1	7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.1.5, 7.1.6, 7.1.7, 7.1.8, 7.1.9, 7.1.10, 7.1.11, 7.1.12, 7.1.13, 7.2.1, 7.3.6, 7.3.11,

	7.9.4, 7.9.13
7.G.A.2	7.3.2, 7.7.6, 7.7.7, 7.7.8, 7.7.9, 7.7.10, 7.7.17
7.G.A.3	7.7.11, 7.7.13
7.G.B	7.3.6, 7.3.7, 7.7.1, 7.7.2, 7.7.4, 7.7.15, 7.7.16, 7.9.6
7.G.B.4	7.3.3, 7.3.4, 7.3.5, 7.3.7, 7.3.8, 7.3.9, 7.3.10, 7.3.11, 7.9.4, 7.9.11, 7.9.12
7.G.B.5	7.7.2, 7.7.3, 7.7.4, 7.7.5
7.G.B.6	7.1.6, 7.2.8, 7.3.6, 7.7.12, 7.7.13, 7.7.14, 7.7.15, 7.7.16, 7.7.17, 7.9.4, 7.9.5, 7.9.9
7.NS.A	7.5.13
7.NS.A.1	7.5.1, 7.5.4, 7.5.6, 7.6.18, 7.7.6
7.NS.A.1.a	7.5.2, 7.5.3
7.NS.A.1.b	7.5.1, 7.5.2, 7.5.3
7.NS.A.1.c	7.5.1, 7.5.3, 7.5.5, 7.5.6, 7.5.7, 7.6.18
7.NS.A.1.d	7.5.3
7.NS.A.2	7.5.9, 7.5.11
7.NS.A.2.a	7.5.8, 7.5.9
7.NS.A.2.b	7.5.11
7.NS.A.2.c	7.5.9, 7.5.10
7.NS.A.2.d	7.4.5, 7.5.1, 7.8.16, 7.9.4
7.NS.A.3	7.5.7, 7.5.12, 7.5.13, 7.5.14, 7.5.15, 7.5.16, 7.5.17, 7.9.3, 7.9.6
7.RP.A	7.2.5, 7.2.9, 7.2.11, 7.2.14, 7.5.8, 7.7.16, 7.8.4, 7.8.7, 7.8.16, 7.8.20, 7.9.6, 7.9.10, 7.9.11, 7.9.12, 7.9.13
7.RP.A.1	7.2.8, 7.4.2, 7.4.3, 7.9.5
7.RP.A.2	7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.6, 7.2.7, 7.2.8, 7.2.9, 7.2.10, 7.2.11, 7.2.12, 7.2.13, 7.2.14, 7.2.15, 7.3.3, 7.4.3, 7.4.4, 7.4.5, 7.5.9, 7.5.12, 7.5.14, 7.9.3, 7.9.5
7.RP.A.2.a	7.2.2, 7.2.3, 7.2.10, 7.3.1, 7.3.3, 7.3.5, 7.3.7
7.RP.A.2.b	7.2.2, 7.2.3, 7.2.5
7.RP.A.2.c	7.2.4, 7.2.5, 7.2.6, 7.3.5
7.RP.A.2.d	7.2.11
7.RP.A.3	7.3.5, 7.4.6, 7.4.7, 7.4.8, 7.4.9, 7.4.10, 7.4.11, 7.4.12, 7.4.13, 7.4.14, 7.4.15, 7.4.16, 7.9.1, 7.9.2, 7.9.3, 7.9.4, 7.9.6, 7.9.8, 7.9.13
7.SP.A	7.8.13, 7.8.16, 7.8.17, 7.8.20
7.SP.A.1	7.8.12, 7.8.13, 7.8.14, 7.8.15, 7.8.20
7.SP.A.2	7.8.13, 7.8.14, 7.8.15, 7.8.16, 7.8.17, 7.8.20
7.SP.B	7.8.11, 7.8.12

7.SP.B.3	7.8.11, 7.8.18
7.SP.B.4	7.8.15, 7.8.16, 7.8.18, 7.8.19, 7.8.20, 7.9.3
7.SP.C	7.8.6
7.SP.C.5	7.8.2, 7.8.3, 7.8.4, 7.8.5, 7.8.6
7.SP.C.6	7.8.1, 7.8.3, 7.8.4, 7.8.5, 7.8.6
7.SP.C.7	7.8.3, 7.8.4, 7.8.5, 7.8.14
7.SP.C.7.a	7.8.3, 7.8.20
7.SP.C.7.b	7.8.4, 7.8.5, 7.8.6
7.SP.C.8.a	7.8.9
7.SP.C.8.b	7.8.8, 7.8.9
7.SP.C.8.c	7.8.6, 7.8.7, 7.8.10

Unit Links

Unit 1: Scale Drawings
Unit 2: Introducing Proportional Relationships
Unit 3: Measuring Circles
Unit 4: Proportional Relationships and Percentages
Unit 5: Rational Number Arithmetic
Unit 6: Expressions, Equations, and Inequalities
Unit 7: Angles, Triangles, and Prisms
Unit 8: Probability and Sampling

Unit Title:
Unit 1: Scale Drawings

Relevant Standards: Bold indicates priority

Lesson	Standards
7.1.1	7.G.A.1
7.1.2	7.G.A.1, 7.RP.A.2
7.1.3	7.G.A.1, 7.RP.A.2
7.1.4	7.G.A.1
7.1.5	7.G.A.1, 7.RP.A.2
7.1.6	7.G.A.1, 7.G.B.4, 7.G.B.6, 7.RP.A.2.a
7.1.7	7.G.A.1
7.1.8	7.G.A.1, 7.RP.A, 7.RP.A.2.b
7.1.9	7.G.A.1
7.1.10	7.G.A.1, 7.G.B.6, 7.RP.A, 7.RP.A.3
7.1.11	7.G.A.1
7.1.12	7.G.A.1
7.1.13	7.G.A.1

Unit Narrative

In this unit, students learn to understand and use the terms "scaled copy," "to scale," "scale factor," "scale drawing," and "scale," and recognize when two pictures or plane figures are or are not scaled copies of each other. They use tables to reason about measurements in scaled copies, and recognize that angle measures are preserved in scaled copies, but lengths are scaled by a scale factor and areas by the square of the scale factor. They make, interpret, and reason about scale drawings. These include maps and floor plans that have scales with and without units.

Demonstration of Learning:	Pacing for Unit
CFA 1: Lesson 3 CFA 2: Lesson 7 CFA 3: Lesson 11 EoU: Assessment A	15 Days

Family Overview (link below)	Integration of Technology:
Scale Drawings	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning.*

Unit-specific Vocabulary:	Aligned Unit Materials, Resources, and Technology (beyond core resources):
Area, corresponding, reciprocal, scale, scale drawing, scale factor, scaled copy	• *DESMOS* • *Edulastic*
Connections to Prior Units:	**Connections to Future Units:**
Grade 6, Unit 2; Grade 6, Unit 6	Grade 8, Unit 2

Differentiation through *Universal Design for Learning*

UDL Indicator	Teacher Actions:
Representation: Illustrate through multiple media	Classroom materials are often dominated by information in text. But text is a weak format for presenting many concepts and for explicating most processes. Furthermore, text is a particularly weak form of presentation for learners who have text- or language-related disabilities. Providing alternatives—especially illustrations, simulations, images or interactive graphics—can make the information in text more comprehensible for any learner and accessible for some who would find it completely inaccessible in text. • Make explicit links between information provided in texts and any accompanying representation of that information in illustrations, equations, charts, or diagrams

Supporting Multilingual/English Learners

Related *CELP standards:*	Learning Targets:
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.	See Italicized Learning Targets/Success Criteria

Lesson Sequence	Learning Target(s)	Success Criteria/ Assessment
1	• I can create a scaled copy with a given scale factor. (Lessons 1-3) • I can make sense of corresponding distances and angles in scaled copies. (Lessons 4-6)	Lesson 1: What are Scaled Copies? • I can describe some characteristics of a scaled copy. • I can tell whether or not a figure is a scaled copy of another figure. Lesson 2: Corresponding Parts and Scale Factors • *I can describe what the scale factor has to do with a figure and its scaled copy.* • In a pair of figures, I can identify corresponding points, corresponding segments, and corresponding angles. Lesson 3: Making Scaled Copies • I can draw a scaled copy of a figure using a given scale factor. • *I know what operation to use on the side lengths of a figure to produce a scaled copy.*

		Lesson 4: Scaled Relationships ● I can use corresponding distances and corresponding angles to tell whether one figure is a scaled copy of another. ● *When I see a figure and its scaled copy, I can explain what is true about corresponding angles.* ● *When I see a figure and its scaled copy, I can explain what is true about corresponding distances.* Lesson 5: The Size of the Scale Factor ● *I can describe the effect on a scaled copy when I use a scale factor that is greater than 1, less than 1, or equal to 1.* ● *I can explain how the scale factor that takes Figure A to its copy Figure B is related to the scale factor that takes Figure B to Figure A.* Lesson 6: Scaling and Area ● *I can describe how the area of a scaled copy is related to the area of the original figure and the scale factor that was used.*
2	● I can use scale drawings to find actual distances and areas. (Lessons 7-8) ● I can calculate scale drawing distances using different scales (Lesson 9-10) ● I can express scales with and without units (Lesson 11-12)	Lesson 7: Scale Drawings ● *I can explain what a scale drawing is, and I can explain what its scale means.* ● I can use actual distances and a scale to find scaled distances. ● I can use a scale drawing and its scale to find actual distances. Lesson 8: Scale Drawings and Maps ● I can use a map and its scale to solve problems about traveling. Lesson 9: Creating Scale Drawings ● I can determine the scale of a scale drawing when I know lengths on the drawing and corresponding actual lengths. ● I know how different scales affect the lengths in the scale drawing. ● *When I know the actual measurements, I can create a scale drawing at a given scale.* Lesson 10: Changing Scales in Scale Drawings ● *Given a scale drawing, I can create another scale drawing that shows the same thing at a different scale.* ● I can use a scale drawing to find actual areas. Lesson 11: Scales without Units ● I can explain the meaning of scales expressed without units. ● I can use scales without units to find scaled distances or actual distances. Lesson 12: Units in Scale Drawings ● *I can tell whether two scales are equivalent.* ● *I can write scales with units as scales without units.*

| 3 | ● I can create a scale drawing of my classroom. | Lesson 13: Draw It to Scale
● When given requirements on drawing size, I can choose an appropriate scale to represent an actual object. |

Unit Title:
Unit 2: Introducing Proportional Relationships

Relevant Standards: Bold indicates priority

Lesson	Standards
7.2.1	7.G.A.1, 7.RP.A
7.2.2	7.RP.A.2, 7.RP.A.2.a, 7.RP.A.2.b
7.2.3	7.RP.A.2, 7.RP.A.2.a, 7.RP.A.2.b
7.2.4	7.RP.A.2, 7.RP.A.2.c
7.2.5	7.RP.A, 7.RP.A.2, 7.RP.A.2.b, 7.RP.A.2.c
7.2.6	7.RP.A.2, 7.RP.A.2.c
7.2.7	7.RP.A.1, 7.RP.A.2
7.2.8	7.G.B.6, 7.RP.A.1, 7.RP.A.2
7.2.9	7.RP.A, 7.RP.A.2
7.2.10	7.RP.A.2, 7.RP.A.2.a
7.2.11	7.RP.A, 7.RP.A.2, 7.RP.A.2.d
7.2.12	7.RP.A.1, 7.RP.A.2
7.2.13	7.EE.A, 7.RP.A.2
7.2.14	7.RP.A, 7.RP.A.2
7.2.15	7.RP.A.2

Unit Narrative:

In this unit, students learn to understand and use the terms "proportional," "constant of proportionality," and "proportional relationship," and recognize when a relationship is or is not proportional. They represent proportional relationships with tables, equations, and graphs. Students use these terms and representations in reasoning about situations that involve constant speed, unit pricing, and measurement conversions.

Demonstration of Learning:	Pacing for Unit
CFA 1: Lesson 3 + "what does it represent? For #3" CFA 2: Lesson 7 CFA 3: Lesson 11 EoU: Assessment A	18 Days

Family Overview (link below)	Integration of Technology:

Introducing Proportional Relationships	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*
Unit-specific Vocabulary:	**Aligned Unit Materials, Resources, and Technology (beyond core resources):**
Area, constant of proportionality, coordinate plane, corresponding, equivalent ratios, origin, proportional relationship, reciprocal, scale, scale drawing, scale factor, scaled copy,	- DESMOS - Edulastic
Connections to Prior Units:	**Connections to Future Units:**
Grade 6, Unit 3; Grade 6, Unit 6	Grade 7, Unit 3; Grade 7, Unit4
Differentiation through *Universal Design for Learning*	
UDL Indicator	**Teacher Actions:**
Representation: Illustrate through multiple media	Classroom materials are often dominated by information in text. But text is a weak format for presenting many concepts and for explicating most processes. Furthermore, text is a particularly weak form of presentation for learners who have text- or language-related disabilities. Providing alternatives—especially illustrations, simulations, images or interactive graphics—can make the information in text more comprehensible for any learner and accessible for some who would find it completely inaccessible in text. Make explicit links between information provided in texts and any accompanying representation of that information in illustrations, equations, charts, or diagrams
Supporting Multilingual/English Learners	
Related *CELP standards:*	**Learning Targets:**
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.	See Italicized Learning Targets/Success Criteria

Lesson Sequence	Learning Target	Success Criteria/ Assessment
1	I can make sense of representations showing equivalent ratios. (Lessons 1-3)	Lesson 1: One of These Things Is Not Like the Others - I can use equivalent ratios to describe scaled copies of shapes. - I know that two recipes will taste the same if the ingredients are in equivalent ratios. Lesson 2: Introducing Proportional Relationships with Tables *I can use a table to reason about two quantities that are in a proportional relationship.* - I understand the terms proportional relationship and constant of proportionality.

		Lesson 3: More about Constant of Proportionality ● I can find missing information in a proportional relationship using a table. ● *I can find the constant of proportionality from information given in a table.*
2	● I can explain how equations can represent proportional relationships (Lesson 4 & 5) ● I can compare approaches to solving problems involving proportional relationships (Lesson 6)	Lesson 4: Proportional Relationships and Equations ● *I can write an equation of the form $y = kx$ to represent a proportional relationship described by a table or a story.* ● I can write the constant of proportionality as an entry in a table. Lesson 5: Two Equations for Each Relationship ● I can find two constants of proportionality for a proportional relationship. ● I can write two equations representing a proportional relationship described by a table or story. Lesson 6: Using Equations to Solve Problems ● I can find missing information in a proportional relationship using the constant of proportionality. ● *I can relate all parts of an equation like $y = kx$ to the situation it represents.*
3	● I can interpret situations involving proportional relationships (Lesson 7) ● I can compare proportional relationships with nonproportional relationships using tables and equations. (Lesson 8 & 9)	Lesson 7: Comparing Relationships with Tables ● *I can decide if a relationship represented by a table could be proportional and when it is definitely not proportional.* Lesson 8: Comparing Relationships with Equations ● *I can decide if a relationship represented by an equation is proportional or not.* Lesson 9: Solving Problems about Proportional Relationships ● *I can ask questions about a situation to determine whether two quantities are in a proportional relationship.* ● I can solve all kinds of problems involving proportional relationships.
4	● I can compare tables, descriptions, and graphs representing the same situations (Lesson 10) ● I can interpret how a graph represents features of a situation (Lesson 11) ● I can compare graphs of proportional relationships (Lesson 12) ● I can explain how a constant of proportionality is represented by graphs and tables (Lesson 13)	Lesson 10: Introducing Graphs of Proportional Relationships ● I know that the graph of a proportional relationship lies on a line through. Lesson 11: Interpreting Graphs of Proportional Relationships ● I can draw the graph of a proportional relationship given a single point on the graph (other than the origin). ● I can find the constant of proportionality from a graph. I understand the information given by graphs of proportional relationships that are made up of points or a line. Lesson 12: Using Graphs to Compare Relationships

		● *I can compare two, related proportional relationships based on their graphs.* ● I know that the steeper graph of two proportional relationships has a larger constant of proportionality. Lesson 13: Two Graphs for Each Relationship ● *I can interpret a graph of a proportional relationship using the situation.* ● I can write an equation representing a proportional relationship from a graph.
5	● I can make connections between the graphs, tables, and equations of a proportional relationship. (Lessons 14 & 15)	Lesson 14: Four Representations ● I can use units to help me understand information about proportional relationships. Lesson 15: Using Water Efficiently ● *I can answer a question by representing a situation using proportional relationships.*

Unit Title:
Unit 3: Measuring Circles

Relevant Standards: Bold indicates priority

Lesson	Standards
7.3.1	7.G.B.4, 7.RP.A.2.a, 7.RP.A.3
7.3.2	7.G.A, 7.G.A.2, 7.G.B.4
7.3.3	7.G.B.4, 7.RP.A.2, 7.RP.A.2.a
7.3.4	7.G.B.4
7.3.5	7.G.B.4, 7.RP.A.2.a, 7.RP.A.2.c, 7.RP.A.3
7.3.6	7.G.A.1, 7.G.B, 7.G.B.6
7.3.7	7.G.A, 7.G.B, 7.G.B.4, 7.RP.A.2.a
7.3.8	7.G.B.4
7.3.9	7.G.B.4
7.3.10	7.G.B.4
7.3.11	7.EE.B.3, 7.G.A.1, 7.G.B.4

Unit Narrative:

In this unit, students learn to understand and use the term "circle" to mean the set of points that are equally distant from a point called the "center." They gain an understanding of why the circumference of a circle is proportional to its diameter, with constant of proportionality π. They see informal derivations of the fact that the area of a circle is equal to π times the square of its radius. Students use the relationships of circumference, radius, diameter, and area of a circle to find lengths and areas, expressing these in terms of π or using appropriate approximations to express them numerically.

Demonstration of Learning:	Pacing for Unit
CFA 1: Lesson 3 CFA 2: Lesson 8/9 combo (add in "find the area **and perimeter**") EoU: Assessment A	13 Days

Family Overview (link below)	Integration of Technology:
[Measuring Circles](#)	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*

Unit-specific Vocabulary:	Aligned Unit Materials, Resources, and Technology (beyond core resources):

Area, area of a circle, circle, circumference, constant of proportionality, coordinate plane, corresponding, diameter, equivalent ratios, origin, pi, proportional relationship, radius, reciprocal, scale, scale drawing, scale factor, scaled copy, squared	• DESMOS • Edulastic

Connections to Prior Units:	Connections to Future Units:
Grade 6, Unit 1	Grade 8, Unit 5

Differentiation through *Universal Design for Learning*	
UDL Indicator	Teacher Actions:
Representation: Illustrate through multiple media	Classroom materials are often dominated by information in text. But text is a weak format for presenting many concepts and for explaining most processes. Furthermore, text is a particularly weak form of presentation for learners who have text- or language-related disabilities. Providing alternatives—especially illustrations, simulations, images or interactive graphics—can make the information in text more comprehensible for any learner and accessible for some who would find it completely inaccessible in text. • Make explicit links between information provided in texts and any accompanying representation of that information in illustrations, equations, charts, or diagrams

Supporting Multilingual/English Learners	
Related *CELP standards:*	Learning Targets:
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.	See Italicized Learning Targets/Success Criteria

Lesson Sequence	Learning Target	Success Criteria/Assessment
1	I can explain the relationship between circumference, radius and diameter (Lesson 1-3) I can solve problems involving circumference, perimeter and rotations (Lesson 4 & 5)	Lesson 1: How Well Can You Measure? • I can examine quotients and use a graph to decide whether two associated quantities are in a proportional relationship. • *I understand that it can be difficult to measure the quantities in a proportional relationship accurately.* Lesson 2: Exploring Circles • *I can describe the characteristics that make a shape a circle.* • I can identify the diameter, center, radius, and circumference of a circle. Lesson 3: Exploring Circumference • *I can describe the relationship between circumference and diameter of any circle.* • *I can explain what π means.* Lesson 4: Applying Circumference

		● I can choose an approximation for π based on the situation or problem. ● If I know the radius, diameter, or circumference of a circle, I can find the other two. Lesson 5: Circumference and Wheels ● If I know the radius or diameter of a wheel, I can find the distance the wheel travels in some number of revolutions.
2	I can calculate the areas of circles using relationships between components of circles. (Lesson 6 - 8) I can justify reasoning about areas of curved figures (Lesson 9)	Lesson 6: Estimating Areas ● I can calculate the area of a complicated shape by breaking it into shapes whose area I know how to calculate. Lesson 7: Exploring the Area of a Circle ● If I know a circle's radius or diameter, I can find an approximation for its area. ● *I know whether or not the relationship between the diameter and area of a circle is proportional and can explain how I know.* Lesson 8: Relating Area to Circumference ● *I can explain how the area of a circle and its circumference are related to each other.* ● I know the formula for area of a circle. Lesson 9: Applying Area of Circles ● I can calculate the area of more complicated shapes that include fractions of circles. ● I can write exact answers in terms of π.
3	I can identify and solve problems involving circumference and area formulas. (Lesson 10 -11)	Lesson 10: Distinguishing Circumference and Area ● *I can decide whether a situation about a circle has to do with area or circumference.* ● I can use formulas for circumference and area of a circle to solve problems. Lesson 11: Stained-Glass Windows ● *I can apply my understanding of area and circumference of circles to solve more complicated problems.*

Unit Title:
Unit 4: Proportional Relationships and Percentages

Relevant Standards: Bold indicates priority

Lesson	Standards
7.4.1	7.RP.A, 7.RP.A.1, 7.RP.A.2.a
7.4.2	7.RP.A, 7.RP.A.1
7.4.3	7.RP.A.1, 7.RP.A.2
7.4.4	7.EE.A.1, 7.RP.A.2, 7.RP.A.3
7.4.5	7.NS.A.2.d, 7.RP.A.2, 7.RP.A.3
7.4.6	7.RP.A.3
7.4.7	7.RP.A.3
7.4.8	7.RP.A.3
7.4.9	7.RP.A.3
7.4.10	7.RP.A.3
7.4.11	7.RP.A.3
7.4.12	7.RP.A.3
7.4.13	7.RP.A.3
7.4.14	7.RP.A.3
7.4.15	7.RP.A.3
7.4.16	7.RP.A.3

Unit Narrative:

In this unit, students use ratios, scale factors, unit rates (also called constants of proportionality), and proportional relationships to solve multi-step, real-world problems that involve fractions and percentages. They use long division to write fractions presented in the form $\frac{a}{b}$ as decimals, e.g. $\frac{11}{35} = 0.3\overline{6},$. They learn to understand and use the terms "repeating decimal," "terminating decimal," "percent increase," "percent decrease," "percent error," and "measurement error." They represent amounts and corresponding percent rates with double number line diagrams and tables. They use these terms and representations in reasoning about situations involving sales taxes, tips, markdowns, markups, sales commissions, interest, depreciation, and scaling a picture. Students use equations to represent proportional relationships in which the constant of proportionality arises from a percentage, e.g., relationship between price paid and amount of sales tax paid.

Demonstration of Learning:	Pacing for Unit

CFA 1: Lesson 4 CFA 2: Lesson 8 CFA 3: Lesson 11 EoU: Assessment A	19 Days

Family Overview (link below)	**Integration of Technology:**
[Proportional Relationships and Percentages](#)	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*

Unit-specific Vocabulary:	**Aligned Unit Materials, Resources, and Technology (beyond core resources):**
Area, area of a circle, circle, circumference, constant of proportionality, coordinate plane, corresponding, diameter, equivalent ratios, long division, measurement error, origin, percent error, percentage, percentage, percentage decrease, percentage increases, pi, proportional relationship, radius, reciprocal, repeating decimal, scale, scale drawing, scaled copy, squared, tape diagram, unit rate	- DESMOS - Edulastic

Connections to Prior Units:	**Connections to Future Units:**
Grade 6, Unit 5	Gade 7, Unit 8

Differentiation through *Universal Design for Learning*	

UDL Indicator	**Teacher Actions:**
Representation: Clarify syntax and structure	Single elements of meaning (like words or numbers) can be combined to make new meanings. Those new meanings, however, depend upon understanding the rules or structures (like syntax in a sentence or the properties of equations) of how those elements are combined. When the syntax of a sentence or the structure of a graphical representation is not obvious or familiar to learners, comprehension suffers. To ensure that all learners have equal access to information, provide alternative representations that clarify, or make more explicit, the syntactic or structural relationships between elements of meaning. - Clarify unfamiliar syntax (in language or in math formulas) or underlying structure (in diagrams, graphs, illustrations, extended expositions or narratives) through alternatives that: - Highlight structural relations or make them more explicit - Make connections to previously learned structures - Make relationships between elements explicit (e.g., highlighting the transition words in an essay, links between ideas in a concept map, etc.)

Supporting Multilingual/English Learners	

Related *CELP standards:*	**Learning Targets:**
An EL can construct grade appropriate oral and	See Italicized Learning Targets/Success Criteria

written claims and support them with reasoning and evidence.		

Lesson Sequence	Learning Target	Success Criteria/Assessment
1	I can explain how to solve concrete and abstract problems involving an amount plus (or minus) a fraction of that amount (Lesson 1-3) I can write and solve equations to represent percent change. (Lessons 4 & 5)	Lesson 1: Lots of Flags • I can find dimensions on scaled copies of a rectangle. • I remember how to compute percentages. Lesson 2: Ratios and Rates With Fractions • I can solve problems about ratios of fractions and decimals. Lesson 3: Revisiting Proportional Relationships • I can use a table with 2 rows and 2 columns to find an unknown value in a proportional relationship. • *When there is a constant rate, I can identify the two quantities that are in a proportional relationship.* Lesson 4: Half as Much Again • I can use the distributive property to rewrite an expression like $x + \frac{1}{2}x$ as $(1 + \frac{1}{2})x$. • *I understand that "half as much again" and "multiply by $\frac{3}{2}$" mean the same thing.* Lesson 5: Say It with Decimals • I can use the distributive property to rewrite an equation like $x + 0.5x = 1.5x$. • *I can write fractions as decimals. I understand that "half as much again" and "multiply by 1.5" mean the same thing.*
2	I can explain how to solve percent change problems (Lesson 6) I can interpret and represent concrete problems involving percent increase and decrease (Lesson 7 & 8) I can explain strategies for solving percent problems with fractional percentages (Lesson 9)	Lesson 6: Increasing and Decreasing • I can draw a tape diagram that represents a percent increase or decrease. • When I know the starting amount and the percent increase or decrease, I can find the new amount. Lesson 7: One Hundred Percent • I can use a double number line diagram to help me solve percent increase and decrease problems. • *I understand that if I know how much a quantity has grown, then the original amount represents 100%.* • When I know the new amount and the percentage of increase or decrease, I can find the original amount. Lesson 8: Percent Increase and Decrease with Equations • *I can solve percent increase and decrease problems by writing an equation to represent the situation and solving it.* Lesson 9: More and Less than 1% • I can find percentages of quantities like 12.5% and 0.4%. • *I understand that to find 0.1% of an amount I have to multiply by 0.001.*
3	I can solve problems involving different real world elements of sales. (Lesson 10-12)	Lesson 10: Tax and Tip • *I understand and can solve problems about sales tax and tip.* Lesson 11: Percentage Contexts • *I understand and can solve problems about commission, interest, markups, and discounts.*

	I can explain strategies and solve concrete situations involving percent error (Lesson 13 - 15)	Lesson 12: Finding the Percentage • I can find the percentage increase or decrease when I know the original amount and the new amount. Lesson 13: Measurement Error • I can represent measurement error as a percentage of the correct measurement. • *I understand that all measurements include some error.* Lesson 14: Percent Error • I can solve problems that involve percent error. Lesson 15: Error Intervals • I can find a range of possible values for a quantity if I know the maximum percent error and the correct value.
4	I can represent situations from the news involving percent change (Lesson 16)	Lesson 16: Posing Percentage Problems • *I can write and solve problems about real-world situations that involve percent increase and decrease.*

Unit Title:

Unit 5: Rational Number Arithmetic

Relevant Standards: Bold indicates priority

Lesson	Standards
7.5.1	7.NS.A.1, 7.NS.A.1.b, 7.NS.A.1.c, 7.NS.A.2.d
7.5.2	7.NS.A.1, 7.NS.A.1.a, 7.NS.A.1.b
7.5.3	7.NS.A.1.a, 7.NS.A.1.b, 7.NS.A.1.c, 7.NS.A.1.d
7.5.4	7.NS.A.1
7.5.5	7.NS.A.1, 7.NS.A.1.c
7.5.6	7.NS.A.1, 7.NS.A.1.c
7.5.7	7.EE.B.4, 7.NS.A.1.c, 7.NS.A.3
7.5.8	7.NS.A.2.a, 7.RP.A
7.5.9	7.NS.A.2, 7.NS.A.2.a, 7.NS.A.2.c, 7.RP.A.2
7.5.10	7.EE.B, 7.NS.A.2.c
7.5.11	7.EE.B.4.a, 7.NS.A.2, 7.NS.A.2.b
7.5.12	7.EE.B.3, 7.NS.A.3, 7.RP.A.2
7.5.13	7.NS.A, 7.NS.A.3
7.5.14	7.EE.B.4.a, 7.NS.A.3, 7.RP.A.2
7.5.15	7.EE.B, 7.EE.B.4, 7.EE.B.4.a, 7.NS.A.3
7.5.16	7.EE.B.4.a, 7.NS.A.3
7.5.17	7.EE.B.3, 7.NS.A.3

Unit Narrative:

In this unit, students interpret signed numbers in contexts (e.g., temperature, elevation, deposit and withdrawal, position, direction, speed and velocity, percent change) together with their sums, differences, products, and quotients. ("Signed numbers" include all rational numbers, written as decimals or in the form $\frac{a}{b}$) Students use tables and number line diagrams to represent sums and differences of signed numbers or changes in quantities represented by signed numbers such as temperature or elevation, becoming more fluent in writing different numerical addition and subtraction equations that express the same relationship. They compute sums and differences of signed numbers. They plot points in the plane with signed number coordinates, representing and interpreting sums and differences of coordinates. They view situations in which objects are traveling at constant speed (familiar from previous units) as proportional relationships. For these situations, students use multiplication equations to represent changes in position on number line diagrams or distance traveled, and interpret positive and negative velocities in context. They become more fluent in writing different numerical multiplication and division equations for the same relationship. Students extend their use of the "next to" notation (which they used in expressions such as $5x$ and $6(3 + 2)$ in grade 6) to include negative numbers and products of numbers, e.g.,

writing and rather than $(-5) \cdot (x)$ and $(-5 \cdot (-10)$. They extend their use of the fraction bar to include variables as well as numbers, writing $-8.5 \div x$ as well as $\frac{-8.5}{x}$.

Demonstration of Learning:	Pacing for Unit
CFA 1: Lesson 3 CFA 2: Lesson 6 CFA 3: Lesson 12 CFA 4: Lesson 15 EoU: Version B	20 Days

Family Overview (link below)	Integration of Technology:
[Rational Number Arithmetic](#)	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*

Unit-specific Vocabulary:	Aligned Unit Materials, Resources, and Technology (beyond core resources):
Absolute value, area, area of a circle, circumference, constant of proportionality, coordinate plane, corresponding, deposit, diameter, equivalent ratios, long division, measurement error, negative number, origin, percent error, percentage, percentage decrease, percentage increase, pi, positive number, proportional relationship, radius, rational number, reciprocal, scale, scale drawing, scale factor, scaled copy, solution to an equation, squared, tape diagram, unit rate, variable, withdrawal	- DESMOS - Edulastic

Connections to Prior Units:	Connections to Future Units:
Grade 6, Unit 7	Grade 8, Unit 3

Differentiation through *Universal Design for Learning*	
UDL Indicator	**Teacher Actions:**
Support decoding of text, mathematical notation, and symbols	The ability to fluently decode words, numbers or symbols that have been presented in an encoded format (e.g., visual symbols for text, haptic symbols for Braille, algebraic expressions for relationships) takes practice for any learner, but some learners will reach automaticity more quickly than others. Learners need consistent and meaningful exposure to symbols so that they can comprehend and use them effectively. - Allow for flexibility and easy access to multiple representations of notation where appropriate (e.g., formulas, word problems, graphs) - Offer clarification of notation through lists of key terms

Supporting Multilingual/English Learners		
Related _CELP standards:_		**Learning Targets:**
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.		See Italicized Learning Targets/Success Criteria
Lesson Sequence	**Learning Target**	**Success Criteria/Assessment**
1	I can interpret situations involving signed numbers (Lesson 1)	Lesson 1: Interpreting Negative Numbers • I can compare rational numbers. • I can use rational numbers to describe temperature and elevation.
2	I can represent addition of signed numbers on a number line and interpret them in tables. (Lesson 2 & 3) I can interpret real world scenarios with signed numbers (Lesson 4) I can generalize about subtracting and adding signed numbers (Lesson 5) I can represent changes in elevation and generalize about differences and magnitude (Lesson 6 & 7)	Lesson 2: Changing Temperatures • I can use a number line to add positive and negative numbers. Lesson 3: Changing Elevation • I understand how to add positive and negative numbers in general. Lesson 4: Money and Debts • I understand what positive and negative numbers mean in a situation involving money. Lesson 5: Representing Subtraction • I can explain the relationship between addition and subtraction of rational numbers. • I can use a number line to subtract positive and negative numbers. Lesson 6: Subtracting Rational Numbers • I can find the difference between two rational numbers. • I understand how to subtract positive and negative numbers in general. Lesson 7: Adding and Subtracting to Solve Problems • I can solve problems that involve adding and subtracting rational numbers.
3	I can represent position, speed, and direction (Lesson 8) I can generalize about multiplying and dividing negative numbers (Lesson 9-12) I can represent situations involving signed numbers and negative rates (Lessons 12)	Lesson 8: Position, Speed, and Direction • I can multiply a positive number with a negative number. • I can use rational numbers to represent speed and direction. Lesson 9: Multiplying Rational Numbers • I can explain what it means when time is represented with a negative number in a situation about speed and direction. • I can multiply two negative numbers. Lesson 10: Multiply! • I can solve problems that involve multiplying rational numbers. Lesson 11: Dividing Rational Numbers • I can divide rational numbers. Lesson 12: Negative Rates

		● I can solve problems that involve multiplying and dividing rational numbers. ● I can solve problems that involve negative rates.
4	I can solve problems using the four operations with rational numbers. (Lesson 13 & 14)	Lesson 13: Expressions with Rational Numbers ● I can add, subtract, multiply, and divide rational numbers. ● I can evaluate expressions that involve rational numbers. Lesson 14: Solving Problems with Rational Numbers ● I can represent situations with expressions that include rational numbers.
5	I can generalize about additive and multiplicative inverses (Lesson 15) I can write and solve equations to represent situations that involve rational numbers. (Lesson 16)	Lesson 15: Solving Equations with Rational Numbers ● I can solve equations that include rational numbers and have rational solutions. Lesson 16: Representing Contexts with Equations ● I can explain what the solution to an equation means for the situation.
6	I can solve real world scenarios using rational numbers and percentages. (Lesson 17)	Lesson 17: The Stock Market ● I can solve problems about the stock market using rational numbers and percentages.

Unit Title:
Unit 6: Expressions, Equations, and Inequalities

Relevant Standards: Bold indicates priority

Lesson	Standards
7.6.1	7.EE.B, 7.EE.B.4, 7.EE.B.4.a
7.6.2	7.EE.B.3, 7.EE.B.4
7.6.3	7.EE.B.3, 7.EE.B.4
7.6.4	7.EE.B.3, 7.EE.B.4.a
7.6.5	7.EE.B.3, 7.EE.B.4, 7.EE.B.4.a
7.6.6	7.EE.B.3, 7.EE.B.4.a
7.6.7	7.EE.B.4.a
7.6.8	7.EE.B.4.a
7.6.9	7.EE.B.4, 7.EE.B.4.a
7.6.10	7.EE.B.4.a
7.6.11	7.EE.B.3, 7.EE.B.4, 7.EE.B.4.a
7.6.12	7.EE.A.2, 7.EE.B.3, 7.EE.B.4, 7.EE.B.4.a
7.6.13	7.EE.B.4, 7.EE.B.4.b
7.6.14	7.EE.B.4.b
7.6.15	7.EE.B.4, 7.EE.B.4.b
7.6.16	7.EE.B.4.b
7.6.17	7.EE.B.4.b
7.6.18	7.EE.A.1, 7.NS.A.1, 7.NS.A.1.c
7.6.19	7.EE.A.1
7.6.20	7.EE.A.1
7.6.21	7.EE.A.1
7.6.22	7.EE.A.1

Unit Narrative:

In this unit, students solve equations of the forms $px + q = r$ and $p(x + q) = r$ where $p, q,$ and r are rational numbers. They draw, interpret, and write equations in one variable for balanced "hanger diagrams," and write expressions for sequences of instructions, e.g., "number puzzles." They use tape diagrams together with equations to represent situations with one unknown quantity. They learn algebraic methods for solving equations. Students solve linear inequalities in one variable and represent their solutions on the number line. They understand and use the terms "less than or equal to" and "greater than or equal to," and the corresponding symbols. They generate expressions that are equivalent to a given numerical or linear expression. Students formulate and solve linear equations and inequalities that represent real-world situations.

Demonstration of Learning:	Pacing for Unit
- CFA 1: Lesson 4&5 combo - CFA 2: Lesson 10 - MOU: Version A - CFA 3: Lesson 16 - CFA 4: Lesson 21 - EoU: Version B	28 Days
Family Overview (link below)	**Integration of Technology:**
[Expressions, Equations, and Inequalities](#)	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*
Unit-specific Vocabulary:	**Aligned Unit Materials, Resources, and Technology (beyond core resources):**
Area, area of a circle, circle, circumference, constant of proportionality, coordinate plane, corresponding, deposit, diameter, equivalent expressions, equivalent ratios, expand, factor, long division, measurement error, negative number, origin, percent error, percentage, percentage decrease, percentage increase, pi, positive number, proportional relationship, radius, rational number, reciprocal, repeating decimal, scale, scale drawing, scaled copy, solution to an equation, solution to an inequality, squared, tape diagram, term, unit rate, variable, withdrawal	DESMOS Edulastic
Connections to Prior Units:	**Connections to Future Units:**
Grade 6, Unit 6	Grade 8, Unit 4
Differentiation through *Universal Design for Learning*	
UDL Indicator	**Teacher Actions:**
Representation: Clarify vocabulary and symbols	The semantic elements through which information is presented—the words, symbols, numbers, and icons—are differentially accessible to learners with varying backgrounds, languages, and lexical knowledge. To ensure accessibility for all, key vocabulary, labels, icons, and symbols should be linked to, or associated with, alternate representations of their meaning (e.g., an embedded glossary or definition, a graphic equivalent, a chart or map). Idioms, archaic expressions, culturally exclusive phrases, and slang, should be translated. - Pre-teach vocabulary and symbols, especially in ways that promote connection to the learners' experience and prior knowledge - Provide graphic symbols with alternative text descriptions - Highlight how complex terms, expressions, or equations are composed of simpler words or

		symbols

Related *CELP standards:*	Learning Targets:
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.	See Italicized Learning Targets/Success Criteria

Lesson Sequence	Learning Target	Success Criteria/Assessment
1	I can compare stories with corresponding tables and diagrams (Lesson 1 & 2) I can compare, draw and solve tape diagrams with corresponding equations (Lesson 3 - 5) When I have a situation or a tape diagram, I can represent it with an equation. (Lesson 6)	Lesson 1: Relationships between Quantities • I can think of ways to solve some more complicated word problems. Lesson 2: Reasoning about Contexts with Tape Diagrams • I can explain how a tape diagram represents parts of a situation and relationships between them. • I can use a tape diagram to find an unknown amount in a situation. Lesson 3: Reasoning about Equations with Tape Diagrams • I can match equations and tape diagrams that represent the same situation. • If I have an equation, I can draw a tape diagram that shows the same relationship. Lesson 4: Reasoning about Equations and Tape Diagrams (Part 1) • I can draw a tape diagram to represent a situation where there is a known amount and several copies of an unknown amount and explain what the parts of the diagram represent. • I can find a solution to an equation by reasoning about a tape diagram or about what value would make the equation true. Lesson 5: Reasoning about Equations and Tape Diagrams (Part 2) • I can draw a tape diagram to represent a situation where there is more than one copy of the same sum and explain what the parts of the diagram represent. • I can find a solution to an equation by reasoning about a tape diagram or about what value would make the equation true. Lesson 6: Distinguishing between Two Types of Situations • I understand the similarities and differences between the two main types of equations we are studying in this unit.
2	I can compare and explain strategies for hanger diagrams and equations (Lesson 7)	Lesson 7: Reasoning about Solving Equations (Part 1) • I can explain how a balanced hanger and an equation represent the same situation. • I can find an unknown weight on a hanger diagram and solve an equation that represents the diagram.

		I can explain strategies for using hanger diagrams to solve equations (Lesson 8) I can explain different strategies and pathways for solving equations (Lesson 9 & 10) I can explain reasoning about situations, tape diagrams, and equations (Lesson 11 & 12)	• I can write an equation that describes the weights on a balanced hanger. Lesson 8: Reasoning about Solving Equations (Part 2) • I can explain how a balanced hanger and an equation represent the same situation. • I can explain why some balanced hangers can be described by two different equations, one with parentheses and one without. • I can find an unknown weight on a hanger diagram and solve an equation that represents the diagram. • I can write an equation that describes the weights on a balanced hanger. Lesson 9: Dealing with Negative Numbers • I can use the idea of doing the same to each side to solve equations that have negative numbers or solutions. Lesson 10: Different Options for Solving One Equation • For an equation like $3(x + 2) = 15$, I can solve it in two different ways: by first dividing each side by 3, or by first rewriting $3(x + 2)$ using the distributive property. • For equations with more than one way to solve, I can choose the easier way depending on the numbers in the equation. Lesson 11: Using Equations to Solve Problems • I can solve story problems by drawing and reasoning about a tape diagram or by writing and solving an equation. Lesson 12: Solving Problems about Percent Increase or Decrease • I can solve story problems about percent increase or decrease by drawing and reasoning about a tape diagram or by writing and solving an equation.
	3	I can write and reason about inequalities (Lesson 13 & 14) I can justify reasoning about solutions to inequalities (Lesson 15) I can compare descriptions of situations with corresponding inequalities (Lesson 16) I can justify the need for specific information in order to write and solve inequalities (Lesson 17)	Lesson 13: Reintroducing Inequalities • I can explain what the symbols $\leq$ and $\geq$ mean. • I can represent an inequality on a number line. • I understand what it means for a number to make an inequality true. Lesson 14: Finding Solutions to Inequalities in Context • I can describe the solutions to an inequality by solving a related equation and then reasoning about values that make the inequality true. • I can write an inequality to represent a situation. Lesson 15: Efficiently Solving Inequalities • I can graph the solutions to an inequality on a number line. • I can solve inequalities by solving a related equation and then checking which values are solutions to the original inequality. Lesson 16: Interpreting Inequalities • I can match an inequality to a situation it represents, solve it, and then explain what the solution means in the situation. • If I have a situation and an inequality that represents it, I can explain what the parts of the inequality mean in the situation.

		Lesson 17: Modeling with Inequalities • I can use what I know about inequalities to solve real-world problems.
4	I can explain strategies for identifying and writing equivalent expressions (Lesson 18 - 22)	Lesson 18: Subtraction in Equivalent Expressions • I can organize my work when I use the distributive property. • I can re-write subtraction as adding the opposite and then rearrange terms in an expression. Lesson 19: Expanding and Factoring • I can organize my work when I use the distributive property. • I can use the distributive property to rewrite expressions with positive and negative numbers. • I understand that factoring and expanding are words used to describe using the distributive property to write equivalent expressions. Lesson 20: Combining Like Terms (Part 1) • I can figure out whether two expressions are equivalent to each other. • When possible, I can write an equivalent expression that has fewer terms. Lesson 21: Combining Like Terms (Part 2) • I am aware of some common pitfalls when writing equivalent expressions, and I can avoid them. • When possible, I can write an equivalent expression that has fewer terms. Lesson 22: Combining Like Terms (Part 3) • Given an expression, I can use various strategies to write an equivalent expression. • When I look at an expression, I can notice if some parts have common factors and make the expression shorter by combining those parts.
5	I can justify whether different sequences of calculations give the same result. (Lesson 23)	Lesson 23: Applications of Expressions • I can write algebraic expressions to understand and justify a choice between two options.

Unit Title:	
Unit 7: Angles, Triangles, and Prisms	

Relevant Standards: Bold indicates priority

Lesson	Standards
7.7.2	7.G.B, 7.G.B.5
7.7.3	7.EE.A, 7.G.B.5
7.7.4	7.G.A, 7.G.B, 7.G.B.5
7.7.5	7.EE.B.4, 7.G.B.5
7.7.6	7.G.A.2, 7.NS.A.1
7.7.7	7.G.A.2
7.7.8	7.G.A.2
7.7.9	7.G.A, 7.G.A.2
7.7.10	7.G.A.2
7.7.11	7.G.A.3, 7.G.B.6
7.7.12	7.G.B.6
7.7.13	7.G.A.3, 7.G.B.6
7.7.14	7.G.B.6
7.7.15	7.G.B, 7.G.B.6
7.7.16	7.G.B, 7.G.B.6, 7.RP.A
7.7.17	7.G.A.2, 7.G.B.6

Unit Narrative:

In this unit, students investigate whether sets of angle and side length measurements determine unique triangles or multiple triangles, or fail to determine triangles. Students also study and apply angle relationships, learning to understand and use the terms "complementary," "supplementary," "vertical angles," and "unique." The work gives them practice working with rational numbers and equations for angle relationships. Students analyze and describe cross-sections of prisms, pyramids, and polyhedra. They understand and use the formula for the volume of a right rectangular prism, and solve problems involving area, surface area, and volume.

Demonstration of Learning:	Pacing for Unit
CFA 1: Lesson 2 CFA 2: Lesson 5 CFA 3: Lesson 9 CFA 4: Lesson 16 EoU: Version A	20 Days

Family Overview (link below)	Integration of Technology:
[Angles, Triangles and Prisms](#)	*Intentionally aligned use of digital tools and resources to*

	support acquisition of content, researching, organizing and communicating learning
Unit-specific Vocabulary:	**Aligned Unit Materials, Resources, and Technology (beyond core resources):**
Absolute value, adjacent angles, area, base, circle, circumference, complementary, constant of proportionality, coordinate plane, corresponding, cross section, deposit, diameter, equivalent expressions, equivalent ratios, expand, factor, long division, measurement error, negative number, origin, percent error, percentage, percentage decrease, percentage increase, pi, positive number, prism, proportional relationship, pyramid, radius, rational number, reciprocal, repeating decimal, right triangle, scale, scale drawing, scale factor, scaled copy, solution to an equation, solution to an inequality, squared, straight angle, supplementary, tape diagram, term, unit rate, variable, vertical angles, volume, withdrawal	DESMOS Edulastic
Connections to Prior Units:	**Connections to Future Units:**
Grade 6, Unit 1	Grade 8, Unit 5
Differentiation through _Universal Design for Learning_	
UDL Indicator	**Teacher Actions:**
Representation: Highlight patterns, critical features, big ideas, and relationships	One of the big differences between experts and novices in any domain is the facility with which they distinguish what is critical from what is unimportant or irrelevant. Since experts quickly recognize the most important features in information, they allocate their time efficiently, quickly identifying what is valuable and finding the right "hooks" with which to assimilate the most valuable information into existing knowledge. As a consequence, one of the most effective ways to make information more accessible is to provide explicit cues or prompts that assist individuals in attending to those features that matter most while avoiding those that matter least. ● Highlight or emphasize key elements in text, graphics, diagrams, formulas ● Use outlines, graphic organizers, unit organizer routines, concept organizer routines, and concept mastery routines to emphasize key ideas and relationships ● Use multiple examples and non-examples to emphasize critical features ● Use cues and prompts to draw attention to critical features ● Highlight previously learned skills that can be used to solve unfamiliar problems
Supporting Multilingual/English Learners	

Related CELP standards:		Learning Targets:
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.		See Italicized Learning Targets/Success Criteria

Lesson Sequence	Learning Target	Success Criteria/Assessment
1	I can critique reasoning about measuring angles. (Lesson 1) I can explain how to measure angles. (Lesson 2) I can interpret situations involving intersecting lines in order to form a conjecture. (Lesson 3) I can interpret and explain which information is relevant to find unknown angle measurements. (Lessons 4 & 5) I can interpret and solve equations representing angle measurements. (Lesson 5)	Lesson 1: Relationships of Angles ● I can find unknown angle measures by reasoning about adjacent angles with known measures. ● I can recognize when an angle measures 90°, 180°, or 360°. Lesson 2: Adjacent Angles ● I can find unknown angle measures by reasoning about complementary or supplementary angles. ● I can recognize when adjacent angles are complementary or supplementary. Lesson 3: Nonadjacent Angles ● I can determine if angles that are not adjacent are complementary or supplementary. ● I can explain what vertical angles are in my own words. Lesson 4: Solving for Unknown Angles ● I can reason through multiple steps to find unknown angle measures. ● I can recognize when an equation represents a relationship between angle measures. Lesson 5: Using Equations to Solve for Unknown Angles ● I can write an equation to represent a relationship between angle measures and solve the equation to find unknown angle measures.
2	I can determine whether or not *shapes* are identical copies (Lesson 6) I can show whether or not 3 side lengths will make a triangle (Lesson 7 & 8) I can justify whether or not *measurements* determine identical copies (Lesson 9) I can justify whether or not measurements determine unique triangles (Lesson 10)	Lesson 6: Building Polygons (Part 1) ● I can show that the 3 side lengths that form a triangle cannot be rearranged to form a different triangle. ● I can show that the 4 side lengths that form a quadrilateral can be rearranged to form different quadrilaterals. Lesson 7: Building Polygons (Part 2) ● I can reason about a figure with an unknown angle. Lesson 8: Triangles with 3 Common Measures ● I understand that changing which sides and angles are next to each other can make different triangles. Lesson 9: Drawing Triangles (Part 1) ● Given two angle measures and one side length, I can draw different triangles with these measurements or show that these measurements determine one unique triangle or no triangle. Lesson 10: Drawing Triangles (Part 2) ● Given two side lengths and one angle measure, I can draw different triangles with these measurements or show that these measurements determine one unique triangle or no triangle.

Grade 7 Mathematics (Academic) (BOE Approved Date)

3	I can correctly identify a cross section of any three dimensional figure (Lesson 11)
	
	I can explain how to find the volume of prisms (Lessons 12)
	
	I can critique reasoning about decomposition of prisms (Lesson 13)
	
	I can explain and critique how to find the surface area of prisms (Lesson 14)
	
	I can interpret situations involving volume and surface area (Lesson 15 and 16)
		Lesson 11: Slicing Solids
		  ● I can explain that when a three dimensional figure is sliced it creates a face that is two dimensional.
		  ● I can picture different cross sections of prisms and pyramids.
		Lesson 12: Volume of Right Prisms
		  ● I can explain why the volume of a prism can be found by multiplying the area of the base and the height of the prism.
		Lesson 13: Decomposing Bases for Area
		  ● I can calculate the volume of a prism with a complicated base by decomposing the base into quadrilaterals or triangles.
		Lesson 14: Surface Area of Right Prisms
		  ● I can find and use shortcuts when calculating the surface area of a prism.
		  ● I can picture the net of a prism to help me calculate its surface area.
		Lesson 15: Distinguishing Volume and Surface Area
		  ● I can decide whether I need to find the surface area or volume when solving a problem about a real-world situation.
		Lesson 16: Applying Volume and Surface Area
		  ● I can solve problems involving the volume and surface area of children's play structures.	

4	I can build a triangular prism from scratch.	Lesson 17: Building Prisms ● I can draw and assemble a net of a triangular prism, given two side lengths of the prism's base and one angle measure.	

Unit Title:

Unit 8: Probability and Sampling

Relevant Standards: Bold indicates priority

Lesson	Standards
7.8.1	7.SP.C.6
7.8.2	7.SP.C.5
7.8.3	7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.7.a
7.8.4	7.RP.A, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.7.b
7.8.5	7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.7.b
7.8.6	7.SP.C, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7.b, 7.SP.C.8.c
7.8.7	7.RP.A, 7.SP.C.8.c
7.8.8	7.SP.C.8.b
7.8.9	7.SP.C.8.a, 7.SP.C.8.b
7.8.10	7.SP.C.8.c
7.8.11	7.SP.B, 7.SP.B.3
7.8.12	7.SP.A.1, 7.SP.B
7.8.13	7.SP.A, 7.SP.A.1, 7.SP.A.2
7.8.14	7.SP.A.1, 7.SP.A.2, 7.SP.C.7
7.8.15	7.SP.A.1, 7.SP.A.2, 7.SP.B.4
7.8.16	7.NS.A.2.d, 7.RP.A, 7.SP.A, 7.SP.A.1, 7.SP.A.2, 7.SP.B.4
7.8.17	7.SP.A, 7.SP.A.2
7.8.18	7.SP.B, 7.SP.B.3, 7.SP.B.4
7.8.19	7.SP.B.4
7.8.20	7.RP.A, 7.SP.A, 7.SP.A.1, 7.SP.A.2, 7.SP.B.4, 7.SP.C.7.a

Unit Narrative:

In this unit, students understand and use the terms "event," "sample space," "outcome," "chance experiment," "probability," "simulation," "random," "sample," "random sample," "representative sample," "overrepresented," "underrepresented," "population," and "proportion." They design and use simulations to estimate probabilities of outcomes of chance experiments and understand the probability of an outcome as its long-run relative frequency. They represent sample spaces (that is, all possible outcomes of a chance experiment) in tables and tree diagrams and as lists. They calculate the number of outcomes in a given sample space to find the probability of a given event. They consider the strengths and weaknesses of different methods for obtaining a representative sample from a given population. They generate samples from a given population, e.g., by drawing numbered papers from a bag

and recording the numbers, and examine the distributions of the samples, comparing these to the distribution of the population. They compare two populations by comparing samples from each population.

Demonstration of Learning:	Pacing for Unit
CFA 1: CGA 2: CFA 3: MoU: EoU:	18 Days

Family Overview (link below)	Integration of Technology:
[Probability and Sampling](#)	*Intentionally aligned use of digital tools and resources to support acquisition of content, researching, organizing and communicating learning*

Unit-specific Vocabulary:	Aligned Unit Materials, Resources, and Technology (beyond core resources):
Absolute value, adjacent angles, area, area of a circle, base, chance experiment, circle, circumference, complementary, constant of proportionality, coordinate plane, corresponding, cross section, deposit, diameter, equivalent expressions, equivalent ratios, event, expand, factor, interquartile range, long division, mean, measurement error, median, negative number, origin, outcome, percent error, percentage, percentage decrease, percentage increase, pi, population, positive number, prism, probability, proportional relationship, pyramid, radius, random, rational number, reciprocal, repeating decimal, representative, right angle, sample, sample space, scale drawing, scale factor, scaled copy, simulation, solution to an equation, solution to an inequality, squared, straight angle, supplementary, surface area, tape diagram, term, unit rate, variable, vertical angles, volume, withdrawal	Edulastic DESMOS

Connections to Prior Units:	Connections to Future Units:
Grade 6, Unit 8	Grade 8, Unit 6

Differentiation through *Universal Design for Learning*	

UDL Indicator	Teacher Actions:
Representation: Highlight patterns, critical features, big ideas, and relationships	- Highlight or emphasize key elements in text, graphics, diagrams, formulas - Use outlines, graphic organizers, unit organizer routines, concept organizer routines, and concept mastery routines to emphasize key ideas and relationships - Use multiple examples and non-examples to emphasize

		critical features ● Use cues and prompts to draw attention to critical features ● Highlight previously learned skills that can be used to solve unfamiliar problems

Supporting Multilingual/English Learners	

Related *CELP standards:*	**Learning Targets:**
An EL can construct grade appropriate oral and written claims and support them with reasoning and evidence.	See Italicized Learning Targets/Success Criteria

Lesson Sequence	**Learning Target**	**Success Criteria/ Assessment**
1	*I can describe observations and predictions during a game (Lesson 1)* *I can explain predictions (Lesson 2)* *I can explain how to determine which events are more likely (Lesson 3)* *I can describe patterns observed in repeated experiments (Lesson 4)* *I can justify whether situations are surprising and possible (Lesson 4)* *I can explain possible differences in experimental and theoretical probability (Lesson 5)* *I can compare sample spaces and probably of outcomes for different spinners (Lesson 5)* *I can describe chance experiments to model situations (Lessons 6 and 7)*	Lesson 1: Mystery Bags ● I can get an idea for the likelihood of an event by using results from previous experiments. Lesson 2: Chance Experiments ● I can describe the likelihood of events using the words impossible, unlikely, equally likely as not, likely, or certain. ● I can tell which event is more likely when the chances of different events are expressed as fractions, decimals, or percentages. Lesson 3: What Are Probabilities? ● I can use the sample space to calculate the probability of an event when all outcomes are equally likely. ● I can write out the sample space for a simple chance experiment. Lesson 4: Estimating Probabilities Through Repeated Experiments ● I can estimate the probability of an event based on the results from repeating an experiment. ● I can explain whether certain results from repeated experiments would be surprising or not. Lesson 5: More Estimating Probabilities ● I can calculate the probability of an event when the outcomes in the sample space are not equally likely. ● I can explain why results from repeating an experiment may not exactly match the expected probability for an event. Lesson 6: Estimating Probabilities Using Simulation ● I can simulate a real-world situation using a simple experiment that reflects the probability of the actual event.
2	*I can describe chance experiments to model situations (Lessons 6 and 7)* *I can explain how to use simulations to estimate probability (Lesson 7)*	Lesson 7: Simulating Multi-step Experiments ● I can use a simulation to estimate the probability of a multi-step event. Lesson 8: Keeping Track of All Possible Outcomes ● I can write out the sample space for a multi-step experiment, using a list, table, or tree diagram. Lesson 9: Multi-step Experiments

	I can compare methods for writing sample spaces (Lesson 8) *I can describe a simulation used to model a situation (Lesson 10)* *I can explain how to use a simulation to answer questions about the situation (Lesson 10)*	● I can use the sample space to calculate the probability of an event in a multi-step experiment. Lesson 10: Designing Simulations ● I can design a simulation to estimate the probability of a multi-step real-world situation.	
3	I can describe observations about data sets (Lessons 11 and 17) I can compare heights of two groups (Lesson 11) I can justify which samples are or are not representative of a larger population (Lesson 13) I can compare measures of center with samples (Lesson 13) I can compare sampling methods (Lesson 14)	Lesson 11: Comparing Groups ● I can calculate the difference between two means as a multiple of the mean absolute deviation. ● When looking at a pair of dot plots, I can determine whether the distributions are very different or have a lot of overlap. Lesson 12: Larger Populations ● I can explain why it may be useful to gather data on a sample of a population. ● When I read or hear a statistical question, I can name the population of interest and give an example of a sample for that population. Lesson 13: What Makes a Good Sample? ● I can determine whether a sample is representative of a population by considering the shape, center, and spread of each of them. ● I know that some samples may represent the population better than others. ● I remember that when a distribution is not symmetric, the median is a better estimate of a typical value than the mean. Lesson 14: Sampling in a Fair Way ● I can describe ways to get a random sample from a population. ● I know that selecting a sample at random is usually a good way to get a representative sample	
4	I can describe observations about data sets (Lessons 11 and 17) I can justify which samples correspond with each show, which show is most appropriate for a commercial, and whether a movie is eligible for an award (Lesson 15) I can justify reasoning about samples and populations (Lesson 16) I can justify whether or not differences between samples are meaningful (Lesson 18, 19, and	Lesson 15: Estimating Population Measures of Center ● I can consider the variability of a sample to get an idea for how accurate my estimate is. ● I can estimate the mean or median of a population based on a sample of the population. Lesson 16: Estimating Population Proportions ● I can estimate the proportion of population data that are in a certain category based on a sample. Lesson 17: More about Sampling Variability ● I can use the means from many samples to judge how accurate an estimate for the population mean is. ● I know that as the sample size gets bigger, the sample mean is more likely to be close to the population mean. Lesson 18: Comparing Populations Using Samples ● I can calculate the difference between two medians as a multiple of the interquartile range. ● I can determine whether there is a meaningful difference between two populations based on a sample	

	20) I can compare populations based on samples (Lessons 18 and 20)	from each population. Lesson 19: Comparing Populations With Friends ● I can decide what information I need to know to be able to compare two populations based on a sample from each.
5	*I can justify whether or not differences between samples are meaningful (Lesson 18, 19, and 20)* *I can compare populations based on samples (Lessons 18 and 20)*	Lesson 20: Memory Test ● I can compare two groups by taking a random sample, calculating important measures, and determining whether the populations are meaningfully different.

Course Assessment Map

Unit	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Assessment 5	Assessment 6
Unit 1-Scale Drawings	CFA 1 (L3)	CFA 2 (L7)	CFA 3 (L11)	EOU (A)		
Unit 2-Introducing Proportional Relationships	CFA 1 (L3)	CFA 2 (L7)	CFA 3 (L11)	EOU (A)		
Unit 3-Measuring Circles	CFA 1 (L3)	CFA 2 (L8/9)	EOU (A)			
Unit 4-Proportional relationships and Percentages	CFA 1 (L4)	CFA 2 (L8)	CFA 3 (L11)	EOU (A)		
Unit 5-Rational Number Arithmetic	CFA 1 (L3)	CFA 2 (L6)	CFA 3 (L12)	CFA 4 (L15)	EOU (B)	
Unit 6-Expressions, Equations, and Inequalities	CFA 1 (L4/5)	CFA 2 (10)	MOU (A)	CFA 3 (L16)	CFA 4 (l21)	EOU (B)
Unit 7-Angles, Triangles and Prisms	CFA 1 (L2)	CFA 2 (L5)	CFA 3 (L9)	CFA 4 (L16)	EOU (A)	
Unit 8-Probability and Sampling						