Grade Six Chapters 10 – Area
Overview & Support

Standards:

Solve real-world and mathematical problems involving area, surface area, and volume.

6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Apply and extend previous understandings of arithmetic to algebraic expressions.

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

c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

Reason about and solve one-variable equations and inequalities.

6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

Suggested Routines:

- Number Talks
- make and manipulate models

Suggested Resources:

- https://tasks.illustrativemathematics.org/6.G (Visual Activities)
- http://threeacts.mrmeyer.com/bubblewrap/ (6G.1 3 Act Task)
- Graham Fletcher - # Act Tasks https://whenmathhappens.com/3-act-math-geom/
- Read *Room Makeover: Serving the Community (use area to find the amount of tile and paint needed for a room)* and *If I Designed the Zoo (calculating the area and perimeter of complex shapes)* from the Grab and Go Kit

Manipulatives:

rectangle/parallelogram models rectangle/triangle models trapezoid models

Vocabulary:

perimeter
polygon
rectangle
parallelogram
pentagon
decagon
obtuse
formula
parallel
area
congruent
square
base
hexagon
trapezoid
right triangle
horizontal
vertex / vertices
composite figure
quadrilateral
regular polygon
height
octagon
acute
dimensions
vertical

Strategies for Chapter:

- hands-on activities
- students Use grid paper

Color Coding:

Green (G)- The lesson accurately reflects the Framework standard(s).
Yellow (Y) - This lesson includes notes to refer to while planning the lesson.
Red (R) - This lesson does not accurately reflect the Framework standard(s). Skip the lesson.

Essential Question:

How can you use measurements to describe two-dimensional figures?

Lesson-by-Lesson Overview:

Lesson #, Standard	Title	Materials	Vocab	Notes
Show What You Know	Area		perimeter, polygon, triangle, pentagon, hexagon	
10.1 Y 6.G.1 6.EE.2 6.EE.7	Area of Parallelograms	Grid paper	Area, rectangle, parallelogram	**Having students complete the hands-on activity is critical for conceptual understanding. Do Unlock the Problem on pg.389 using the grid paper. Some students might need grid paper to do other problems in the lesson in this concrete way as well.** Students should transition to using the formula A=bh rather than A=lw. Explain that these formulas are equivalent for rectangles. See the Framework for more information on deriving formulas.

				Solve real world and mathematical problems by using formulas for area of polygons as called out in standard 6.EE.7. https://tasks.illustrativemathematics.org/content-standards/6/EE/B/7
10.2 Y 6.G.1	Explore Area of Triangles	Grid paper	congruent	**The *investigate* activity builds conceptual understanding.** This is a good opportunity to review the relationship between multiplying by ½ and dividing by 2. Compare and contrast triangle area formula to rectangle area formula. Option: combine 10.2 and 10.3.
10.3 G 6.G.1 6.EE.2	Area of Triangles	Grid paper		Good place to review multiplying and dividing fractions and decimals.
10.4 Y 6.G.1	Explore Area of Trapezoids	Grid paper	Trapezoid	**The *investigate* activity significantly enhances conceptual understanding.** Students will make sense of the formula for area of a trapezoid by investigating and decomposing trapezoids. See the Framework for more information on deriving formulas. *Make Connections* activity will lead to the area formula that is used in next lesson.
10.5 G 6.G.1 6.EE.2	Area of Trapezoids			Compare and contrast trapezoid area formula with triangle area formula. Students will begin using and interpreting the formula for the area of a trapezoid. Memorization of the formula is not necessary. (6.EE.2c) See the Framework for more information on deriving formulas.
Mid-Chapter Checkpoint				

10.6 G 6.G.1 6.EE.2	Area of Regular Polygons		Regular polygon, Pentagon, hexagon, octagon, decagon, congruent	*As students compose and decompose shapes to determine areas, they learn that area is conserved when composing or decomposing shapes. For example, students will decompose trapezoids into triangles and/or rectangles and use this reasoning to find formulas for the area of a trapezoid.* (Framework)
10.7 G 6.G.1 6.EE.2	Composite Figures		Composite figure	Students should understand that a composite figure is made up of other figures. Introducing the idea of negative space. *Lesson could be broken into two days.
10.8 R 6.G.1	Changing Dimensions			Concept is not compatible with standard although it is related to ratios. See framework p. 311-312.
10.9 G 6.G.3	Figures on the Coordinate Plane		Horizontal, vertical, parallel, vertex, vertices	Look to your framework grade 6 chapter under 6.G.3 for another problem to help support student understanding of the standard. https://tasks.illustrativemathematics.org/content-standards/6/G/A/3/tasks/1997
Chapter 10 Test				
Reteach Options	Reteach standards from this unit to help meet students' need. Some ideas for reteach activities are listed below: ● Math centers or math games focused on unit standards ● Small group instruction focused on a single standard ● Whole group instruction focused on a single standard ● My Favorite No – Rewrite student work with an error and work as a class to identify positives in the work and areas that need to be revised ● Select 1 – 3 problems to resolve in their groups and discuss whole class. We want new learning to occur on this day that helps students over misconceptions. ● Complete the "Performance Task" from Go Math! In the Assessment Book in small groups. Share strategies and discuss whole class. ● Use the Reteach activities based on standards that need intervention.			