# Plan for Grade 6 Unit 1: Area and Surface Area

*Relevant Unit(s) to review: N/A*

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| **Essential prior concepts to engage with this unit** | ● Properties of 2-D and 3-D figures<br>● Concept of area using rectangular prisms |
| **Brief narrative of approach** | This unit will be taught for the most part with fidelity. The purpose of this unit is to orient teachers and students with the routines and structures of a lesson using mathematical concepts that are low stakes. Further, presuming the students have had some prior exposure to area and perimeter using whole numbers, the concepts require less prerequisite knowledge than future units, so this unit provides students a more open invitation to mathematics, particularly grade 6 students who may have not previously had many opportunities for inquiry-based mathematics. |

| Lessons to Add | Lessons to Remove or Modify |
|---|---|
| Because of the accessible entry points in the introductory lessons, no lessons are recommended to be added in order for students to meet the outcomes of the unit.<br><br>If students need additional exposure to ideas around perimeter and area, reinforce the key ideas of each lesson within the tasks using more opportunities to practice to develop understanding within the context of grade-level mathematics. | 1. Combine 6.1.1 and 6.1.2<br>2. Remove 6.1.16 - An optional lesson. Late unit exploration<br>3. Move to outside of class 6.1.19 - Culminating lesson. Optional given time constraints. |
| Lessons added: 0 | Lessons removed: 3 |

# Modified Plan For Grade 6 Unit 1

| Day | IM lesson | Notes |
|---|---|---|
| | Check Your Readiness | |
| 1 | 6.1.1 6.1.2 | Combine lessons. Ensure that lesson 1 activities 1 and 2 as well as lesson 2 activities 2 and 3 are completed. Emphasize the definition of area. |
| 2 | 6.1.3 | |
| 3 | 6.1.4 | |
| 4 | 6.1.5 | |
| 5 | 6.1.6 | |
| 6 | 6.1.7 | |
| 7 | 6.1.8 | |
| 8 | 6.1.9 | |
| 9 | 6.1.10 | Focus on corresponding base and heights of triangles. |
| 10 | Mid-Unit Assessment | |
| 11 | 6.1.11 | |
| 12 | 6.1.12 | |
| 13 | 6.1.13 | Focus on simply identifying the characteristics of polyhedra. |
| 14 | 6.1.14 | Focus on matching polyhedra and their nets. |
| 15 | 6.1.15 | |
| 16 | 6.1.17 | |

| 17 | 6.1.18 | |
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| 18 | End Assessment | |

## Priority and Category List for Lessons

High priority (+), Medium priority (0), Low priority (-)

E: Explore, Play, and Discuss, D: Deep Dive, A: Synthesize and Apply

| IM lesson | Priority (+, 0, -) | Category (E, D, A) | Notes |
|-----------|-------------------|-------------------|-------|
| 6.1.1 | 0 | E | This lesson focuses on the ideas of area, decomposing and composing shapes. The cool-down asks students to define the area as a check for understanding. |
| 6.1.2 | 0 | E | Given the cool down in 6.1.1 serves as a check for understanding, the lesson could be combined with 6.1.1. Students continue to find areas, this time with decomposed shapes. If a student struggles to decompose and recompose areas as evidenced by the cool-down, focus them on the different strategies used with the shaded areas in the next lesson. |
| 6.1.3 | 0 | D | This lesson focuses on finding the area of polygons by composing and decomposing other figures. Builds on 6.1.2 and the idea of decomposing and rearranging figures to find area. Hone in with students on whether they can find a way to to find the area by decomposing and rearranging larger pieces. |
| 6.1.4 | + | E | This lesson builds towards the idea of students connecting the area with the base and height, which continues in 6.1.5. Emphasize that the definition we are using for parallelograms is a quadrilateral where both pairs of opposite sides are parallel. By that definition, rectangles and squares are special kinds of parallelograms. The cool-down asks how to find the area of parallelogram if given a partial area of square units. |
| 6.1.5 | + | D | In this lesson, students analyze the defining attributes of parallelograms, observe other properties that follow from that definition, and use reasoning strategies |

| | | | from previous lessons to find the areas of parallelograms. |
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| 6.1.6 | + | A | This lesson allows students to practice using the formula for finding the area of parallelograms, and to choose the measurements to use as a base and a corresponding height. The cool-down asks students to find the area of parallelogram with base and height on a grid. |
| 6.1.7 | + | A | This lesson prepares students to apply what they know about the area of parallelograms to reason about the area of triangles. The cool-down focuses on the area of parallelograms with base and height off a grid. |
| 6.1.8 | + | E | This lesson builds on the concept of base *x* height of a parallelogram to make sense of the formula of a triangle. Focus students on finding at least one method that works for them. The cool down focuses on just that—decomposing parallelograms to find area and 6.1.9 build on this idea. |
| 6.1.9 | + | A | This lesson focuses on finding the area of a triangle with multiple given dimensions. If students are unsure how to decide the measurement to use, ask what they learned must be true about a base and a corresponding height in a triangle. The cool-down asks students to find the area of a triangle given multiple options for a base and height. |
| 6.1.10 | 0 | A | This lesson explores using different base and height pairs to find the area of a triangle. The cool-down asks students to find a height given base and invites students to use a straightedge or index card in order to create a perpendicular line. Emphasis can be placed on every triangle having multiple base/height pairs. |
| 6.1.11 | 0 | A | This lesson explores the definition of a polygon. The point of the lesson is not to define a polygon succinctly, but to come up with describing characteristics of a polygon. The cool-down asks students to define a polygon. If students have trouble here, review the definition and give additional examples of shapes that are not polygons. |
| 6.1.12 | 0 | E | This lesson introduces students to the idea of a surface area by calculating the number of sticky notes it takes to cover a filing cabinet and then looking at the dimensions of a rectangular prism. Cool down focuses on defining characteristics of a polygon.  Additional support for finding surface areas through nets is done in the following lessons. A point of focus of the lesson is examining the area of each |

| | | | face. |
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| 6.1.13 | 0 | E | This lesson introduces students to polyhedra and nets. The lesson should emphasize making sense of polyhedra themselves and their characteristics. The cool-down asks students to describe pyramids, prisms, and their differences. |
| 6.1.14 | 0 | E | This lesson extends on Lesson 13 to use nets to identify polyhedra and to find surface area given a net. The cool-down asks students to do both. Students that struggle to envision the polyhedron based on the net will have additional practice in the next few lessons. |
| 6.1.15 | 0 | D | This lesson further develops students' ability to visualize the relationship between nets and polyhedra and their capacity to reason about surface area. The cool-down is similar to 6.1.14, only students are asked to identify a polyhedra and find surface area without gridlines. |
| 6.1.16 | - | E | *This lesson is optional.* Students distinguish among measures of one-, two-, and three-dimensional attributes and take a closer look at the distinction between surface area and volume. |
| 6.1.17 | 0 | A | In this lesson, students learn about perfect squares and perfect cubes and use exponents to find the volume of a cube. May need to emphasize the meaning of volume and connecting volume of square and cubes. Students will continue to advance understanding of notation through continued practice in 6.18. The cool-down asks if $5^2$ or $3^3$ is bigger. |
| 6.1.18 | 0 | A | In this lesson, students practice using exponents of 2 and 3 to express products and to write square and cubic units. As this is the last "traditional" lesson in the unit, use the practice problems for this lesson to support student understanding of notation. Also, review understanding of volume and surface area from earlier in this unit. The cool-down asks the student to find the volume and surface area of a cube from edge length. |
| 6.1.19 | - | A | *This culminating lesson is optional.* Students use what they learned in this unit to design a tent and determine how much fabric is needed for the tent. |