

Solve real-world and mathematical problems involving area, surface area, and volume (6.G.1-4)	
Standard 6.G.1: Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing and decomposing into rectangles, triangles and/or other shapes; apply these techniques in the context of solving real-world and mathematical problems.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Find the area of right triangles by composing or decomposing rectangles. • Find area of polygons by composing and decomposing into basic shapes (rectangles, triangles, and other shapes). • Solve real-world area problems by decomposing and composing polygons. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.3 , 6.G.2 , 6.G.4	7.G.4 , 7.G.6 , 8.G.9 , I.G.GPE.7 , II.G.GMD.1 , II.G.GMD.3 , III.G.SRT.9 , III.G.MG.1 , III.G.MG.2

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> • Compose shapes to create a composite shape (K.G.6, 1.G.2) • Partition shapes into parts with equal areas (1.G.3, 2.G.3, 3.G.2) • Measure area by counting unit squares (2.G.2, 3.MD.6); find the area of a rectangle with fractional side lengths by tiling it (5.NF.4) • Understand concepts of area measurement and relate area to the operations of multiplication and addition (3.MD.5, 3.MD.7) • Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (4.MD.3)
Academic Vocabulary
Compose, decompose, base, height, right triangle
Resources
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70070

Solve real-world and mathematical problems involving area, surface area, and volume (6.G.1-4)	
<p>Standard 6.G.2: Find the volume of a right rectangular prism with appropriate unit fraction edge lengths by packing it with cubes of the appropriate unit fraction edge lengths (<i>for example, $3 \frac{1}{2} \times 2 \times 6$</i>), and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (Note: Model the packing using drawings and diagrams.)</p>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Extend background knowledge of volume with whole units (5.MD.3-5) and tiling area with fractional units (5.NF.4) to find volume of right rectangular prisms with fractional edge lengths. Recognize the relationship between the volume formula and filling a right rectangular prism with cubes. Describe how finding the volume is the same process whether edge lengths are whole units or fractional units. Solve real-world volume problems. 	
Related Standards: Current Course	Related Standards: Future Courses
6.NS.3 , 6.G.1 , 6.G.4 , 6.EE.7	7.G.6 , 8.G.9 , II.G.GMD.1 , II.G.GMD.3 , III.G.MG.1 , III.G.MG.2

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Apply properties of operations (commutative, associative, distributive) as strategies to multiply and divide (3.OA.5) Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (4.MD.3) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths (5.NF.4) Understand concepts of volume measurement, measure volumes by counting unit cubes, Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume (5.MD.3, 5.MD.4, 5.MD.5)
Academic Vocabulary
Volume, rectangular prism, length, width, height, Base (as area of base), cubic units
Resources
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70070

Solve real-world and mathematical problems involving area, surface area, and volume (6.G.1-4)	
Standard 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 x coordinate or the same y coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> Discover how to find the lengths of sides of polygons using the coordinates of the vertices having the same first coordinate (or second coordinate) and generalize a technique to apply in solving problems. 	
Related Standards: Current Course	Related Standards: Future Courses
6.G.1 , 6.NS.8	7.G.2 , 8.G.6 , 8.G.7 , 8.G.8 , I.G.GPE.4 , I.G.GPE.7 , II.G.GPE.1 , II.G.SRT.1 , II.G.SRT.8 , III.G.MG.3 , P.N.VM.2 , P.N.VM.4

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> Recognize and draw shapes having specified defining attributes (1.G.1, 2.G.1) Represent whole numbers as lengths from 0 on a number line diagram (2.MD.6) Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two-dimensional figures (4.G.1) Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane (5.G.1, 5.G.2) Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane (5.OA.3)
Academic Vocabulary
Coordinate plane, quadrant, vertex, coordinate
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5160#70070

Solve real-world and mathematical problems involving area, surface area, and volume (6.G.1-4)	
Standard 6.G.4: Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Visualize how nets relate to three-dimensional figures. • Understand how area of two-dimensional figures relates to surface area of three-dimensional figures. 	
Related Standards: Current Course	Related Standards: Future Courses
6.G.1 , 6.G.2	7.G.6 , III.MG.1

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
<ul style="list-style-type: none"> • Compose shapes to create a composite shape (K.G.6, 1.G.2) • Measure area by counting unit squares (2.G.2, 3.MD.6); find the area of a rectangle with fractional side lengths by tiling it (5.NF.4) • Understand concepts of area measurement and relate area to the operations of multiplication and addition (3.MD.5, 3.MD.7) • Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (4.MD.3) • Find the area of triangles (6.G.1)
Academic Vocabulary
Net, surface area, vertex, face, prism, pyramid
Resources
Curriculum Resources : https://www.uen.org/core/core.do?courseNum=5160#70070