<table>
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<th>Instructional Time and Investigations</th>
<th>Goals</th>
<th>Common Core Content Standards</th>
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| 23 days                             | Surface Areas and Volumes of Polygonal Prisms and Cylinders: Understand surface areas and volumes of prisms and cylinders and how they are related  
• Prisms are named for their bases. The name of a prism indicates the number of vertices, edges, and faces the prism has.  
• Slicing prisms vertically, horizontally, or on a slant can expose different shapes of cross-sections, depending on which of the original edges are intersected.  
• Comparing, reasoning about, and extending what you know about area and volume leads to an understanding of the formulas for finding the surface area and volume of prisms, cones, and pyramids.  
• Proportional changes to dimensions of the sides of a prism lead to predictable changes in the surface area and the volume. | 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers.  
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.  
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.  
Also 7.RP.A.2, 7.EE.A.1, 7.EE.A.2 |
| 23 days                             | Areas and Circumferences of Circles: Understand the areas and circumferences of circles and how they are related.  
• Approximations of the ratio of the circumference of a circle to the circle’s diameter lead to exact formulas for the area and circumference of a circle. | 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers.  
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.  
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.  
Also 7.RP.A.2, 7.EE.A.1, 7.EE.A.2 |
| 23 days                             | Volumes of Spheres and Cones: Understand the relationships between the volumes of cylinders and the volumes of cones and spheres.  
• Comparing, reasoning about, and extending what you know about area of circles and volume of cylinders leads to an understanding of the formulas for finding the volume of cones and spheres. | 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers.  
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.  
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.  
Also 7.RP.A.2, 7.EE.A.1, 7.EE.A.2 |
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<th>Goals of the Unit</th>
<th>Prior Work</th>
<th>Future Work</th>
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| Surface Areas and Volumes of Polygonal Prisms and Cylinders                     | • Interpreting area as the number of squares that cover a two-dimensional figure (*Covering and Surrounding*)  
• Interpreting perimeter as the number of linear units that surround a two-dimensional figure; interpreting area as the number of squares that cover a two-dimensional figure (*Covering and Surrounding*)  
• Comparing areas and perimeters of different two-dimensional figures (*Covering and Surrounding*)  
• Studying the relationship between perimeter and area in rectangles (*Covering and Surrounding*) | • Finding volumes of cylinders, cones, and spheres (*Say It With Symbols*)  
• Comparing linear, quadratic, and cubic relationships by analyzing the measurements of a cube (*Frogs, Fleas, and Painted Cubes*)  
• Developing strategies for finding the distance between two points on a coordinate grid (*Looking for Pythagoras*)  
• Finding the Pythagorean Theorem and using it to solve problems (*Looking for Pythagoras*)  
• Algebraically analyzing the relationship between perimeter and area in rectangles (*Frogs, Fleas, and Painted Cubes*) |
| Areas and Circumferences of Circles: Understand the areas and circumferences of circles and how they are related. | • Developing strategies and algorithms for finding the perimeter and area of rectangles, triangles, parallelograms, and composite figures (*Covering and Surrounding; Stretching and Shrinking*) | • Finding the equation of a circle (*Looking for Pythagoras*)  
• Using variables to represent a variety of relationships algebraically (*Thinking With Mathematical Models; Looking for Pythagoras; Growing, Growing, Growing; Frogs, Fleas, and Painted Cubes; Say It With Symbols*) |
| Volumes of Spheres and Cones: Understand the relationships between the volumes of cylinders and the volumes of cones and spheres. | • Enlarging, shrinking, and distorting two-dimensional figures (*Stretching and Shrinking*)  
• Scaling quantities up and down using ratios and proportions (*Comparing and Scaling*) | • Describing the relationships among volumes of cylinders, cones, and spheres with algebraic equations (*Say It With Symbols*) |