

NJDOE MODEL CURRICULUM PROJECT

CONTENT AREA: Mathematics

GRADE: 6

UNIT #5

UNIT NAME: Geometry and Data Evaluation

| STUDENT LEARNING OBJECTIVES | | CORRESPONDING CCSS | |
|-----------------------------|--|--------------------|--|
| 1 | Find the area of right triangles, other triangles, special quadrilaterals and polygons by composing into rectangles or decomposing into triangles and other shapes to solve real world or mathematical problems. | 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. |
| 2 | Represent three dimensional figures using nets made of rectangles and triangles, and use the nets to find the surface area of the figures in the context of solving real world and mathematical problems. | 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. |
| 3 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes. Show that the volume is the same as it would be if found by multiplying the edge lengths. | 6.G.2 | Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, 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. |
| 4 | Draw polygons in the coordinate plane given the coordinates of the vertices and use the coordinates to solve real-world distance, perimeter, and area 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. |
| 5 | Display numerical data in plots on the number line (including dot plots, histograms, and box plots) and summarize in relation to their context. | 6.SP.4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots. |
| | | 6.SP.5a | Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. |
| | | 6.SP.5b | Summarize numerical data sets in relation to their context, such as by: b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. |

Major Content **Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks). ***Bold type indicates grade level fluency requirements.*** (Identified by PARCC Model Content Frameworks).

Selected Opportunities for Connection to Mathematical Practices

1. Make sense of problems and persevere in solving them.

SLO #5 Relating variables to real world context.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

SLO #6 Use graphs and tables to represent a dependent/independent relationship.

5. Use appropriate tools strategically.

6. Attend to precision.

1. SLO #4 Converting measures.

SLO #2 Real-world context involving careful attention to units of measure.

2. Look for and make use of structure.

3. Look for and express regularity in repeated reasoning.

SLO #1 The use of variables to represent real-world context over time.

All of the content presented at this grade level has connections to the standards for mathematical practices..

Bold type identifies possible starting points for connections to the SLOs in this unit.

Greater Brunswick Charter School Curriculum

| Grade level: 6 | | Subject: Math | | | Unit #: 5 | | |
|----------------|---------------------------------------|---------------|--|---|--|---|--|
| Day | Topic | SLO | Learning Objectives | Essential Questions | Suggested Student Activities | | Possible Resources |
| | | | | | Whole Group | Small Group / Stations | |
| 1 | Area of rectangles and parallelograms | 1 | To determine the area of parallelograms | <i>How can I transfer my knowledge of area of rectangles to parallelograms?</i> | <i>Stay with the base x height formula and show how the base changes or the height changes no matter how tilted the figure becomes, but it's still the same formula.</i> | <ul style="list-style-type: none"> • Independent practice • Intervention • i-Ready | GlencoeMath p. 654-656p.656-660 |
| 2 | Area of parallelograms | 1 | <ul style="list-style-type: none"> • To determine the area of parallelograms • To find a missing measure | | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 9-1 p.661-667 Some tougher practice |
| 3 | Area of triangles | 1 | To derive the area of triangle | <i>How can I transfer my knowledge of area of rectangles to triangles?</i> | <i>Still base x height, but a triangle is a rectangle cut in half.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.669-672 |
| 4 | Area of triangles | 1 | <ul style="list-style-type: none"> • To determine the area of triangles • To find a missing measure | | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 9-2 p.673-680 |
| 5 | Area of trapezoids | 1 | <ul style="list-style-type: none"> • To determine the area of trapezoids • To find a missing measure | <i>How can I transfer my knowledge of area of rectangles to trapezoids?</i> | <i>It's still base x height, but there are two bases so you need the average of the two.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 9-3 p.681-691 |
| 6 | Diagrams, minimum/maximum | 1 | To use problem solving strategies | <i>How can I use these new skills in real world situations?</i> | <i>The minimum perimeter problem is a nice one and will take some conversation. It can be transferred to why all soup cans of a certain volume are the same shape – least surface area/material.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.693-696 |

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| | | | | | Whole Group | Small Group / Stations | |
| 7 | Effect of dimension changes | 1 | To determine the change in area or perimeter when a dimension is changed | <i>How does a change in one dimension change the result in others?</i> | <i>This continues the concept of minimum dimension for specific measures.</i> | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath 9-4 p.697-703 |
| 8 | Polygon on coordinates | 4 | To determine the area of a polygon when unit blocks are visible | <i>How can I break a figure into parts to total the area?</i> | <i>This leads to composite figures without blocks.</i> | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath 9-5 p.705-712 More practice A different kind |
| 9 | Area of composite figures | 1 | To determine the total area of a composite figure | <i>How can I break a figure into parts to total the area?</i> | <i>Suggesting you do this lesson before the earlier pages.</i> | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath 9-6 p.717-724 |
| 10 | Area of composite figures | 1 | To determine the total area of a real world composite figure | | | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath p.713-716 |
| 11 | Areas and perimeters of figures | 1 | To compute the area of any convex composite figure made of quadrilaterals or triangles | <i>Do I know how to handle any figure I see?</i> | | <ul style="list-style-type: none"> Independent practice Intervention i-Ready | GlencoeMath p.696, 727-730 |
| 12 | Areas and perimeters of figures | 1, 4 | Assessment | | | <ul style="list-style-type: none"> Review Assessment | |
| 13 | Volume of a rectangular prism | 3 | To determine the volume of a rectangular prism | <i>How does finding the area of a rectangle transfer to the area of a prism?</i> | <i>If you don't have 3-D cubes to use, skip the Inquiry Lab. Base x height becomes Area of base x height for this and most figures to come.</i> | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath 10-1 p.731-734 p.735-738 (opt) p.739-746 |
| 14 | Volume of a triangular prism | 2 | To determine the volume of a triangular prism | <i>How does area of the base x height still apply here?</i> | | <ul style="list-style-type: none"> Lesson & Guided practice Independent practice Intervention i-Ready | GlencoeMath 10-2 p.747-754 |

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| | | | | | Whole Group | Small Group / Stations | |
| 15 | Opening prisms into nets | 2 | To open closed containers into nets to clearly see each of the sides | <i>What cuts can I make to a box to lay out all the sides on the table?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.755-758 p.759-762 |
| 16 | Surface area of a rectangular prism | 2 | To find the surface area of a rectangular prism | <i>How is the surface area from a net just like finding the area of a composite figure?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 10-3 p.763-770 |
| 17 | Surface area of a triangular prism | 2 | To find the surface area of a triangular prism | <i>How is the surface area from a net just like finding the area of a composite figure even when it has a triangle?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 10-4 p.771-780 |
| 18 | Pyramid nets | 2 | To draw a net from a square and triangular pyramids | <i>Where do I cut a pyramid to make a net?</i> | <i>The text doesn't deal with triangular pyramids here. But it has them in the next lesson. You may as well make their nets here.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.781-782 |
| 19 | Surface area of pyramids | 2 | To determine the surface area of pyramids | <i>How do my composite figure skills help me with the surface area of a pyramid?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 10-5 p.783-790 |
| 20 | Volume and surface area of figures | 2, 3 | To determine the volume and surface area of figures | <i>Do I know what to do and when to do it to find the volume or surface area of a figure?</i> | | <ul style="list-style-type: none"> • Independent practice • Intervention • i-Ready | GlencoeMath p.758, 793-796 |
| 21 | Volume and surface area of figures | 2, 3 | Assessment | | | <ul style="list-style-type: none"> • Review • Assessment | GlencoeMath p. |
| 22 | Mean, median, mode | | To calculate measures of central tendency | <i>What do I recall from our earlier work with mean, median, and mode?</i> | <i>Take a day or two to review the content needed for review.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.809-824 |

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| 23 | Displaying data | 5 | To make a line plot | <i>How does a line plot help me see my data?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-1 p.860-870 |
| 24 | Histogram | 5 | To make bar graphs for data over intervals | <i>How is a histogram sometimes easier to interpret than a line plot?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-2 p.871-878 |
| 25 | Box and whisker plot | 5 | To make box and whisker plots from data | <i>How does a box and whisker plot tell me more than a bar graph can?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-3 p.879-886 |
| 26 | Using the right graph | 5 | To accurately decide which type of data display is most advantageous | <i>What characteristics of the data help me decide which type of display to use?</i> | <i>This is probably the most important lesson of the unit, thus far, in terms of future real world use.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.887-889 |
| 27 | Data distributions | 5 | To describe the distribution of a set of data | | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-4 p.891-898 p.899-900 |
| 28 | Line graph | 5 | To draw and interpret line graphs | <i>What is the line between points supposed to be telling me?</i> | <i>Novices using line graphs for discreet data when they should be using a bar graph or something else is a large problem in the world. This is your chance to head it off with these students.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-5 p.901-908 |
| 29 | Selecting the correct display | 5 | To use the correct type of graph to display data | <i>What characteristics of the data help me decide which type of display to use?</i> | <i>Novices using line graphs for discreet data when they should be using a bar graph or something else is a large problem in the world. This is your chance to head it off with these students.</i> | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath 12-6 p.909-916 |
| 30 | Selecting the correct display | 5 | To use the correct type of graph to display data | <i>How do I go from getting the data to displaying the data to interpreting the data for new situations?</i> | | <ul style="list-style-type: none"> • Lesson & Guided practice • Independent practice • Intervention • i-Ready | GlencoeMath p.917-918 |

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| 31 | Data displays | 5 | To use the appropriate display correctly for the data set | | | <ul style="list-style-type: none"> Independent practice Intervention i-Ready | GlencoeMath p.921-924 |
| 32 | Data displays | 5 | Assessment | | | <ul style="list-style-type: none"> Review Assessment | |
| <u>Word Wall Candidates</u> | | | | | | | |
| Base Parallelogram | | Height Rhombus | | Composite figure Polygon | | Congruent Formula | |
| Cubic units Surface area | | Lateral face Vertex | | Prism Volume | | Pyramid Slant height | |
| Box plot Symmetric | | Dot plot Histogram | | Line plot Cluster | | Line graph Frequency distribution | |
| <u>Authentic Application</u> | | | | | | | |
| <p>Your Goal: The Project on Page 797 is a reasonable activity for this unit.</p> <p>Your Role:</p> <p>Your Audience:</p> <p>The Situation:</p> <p>The Product:</p> <p>Success criteria:</p> | | | | | | | |