



Northside High School

Geometry Curriculum

Unit 8: Two-Dimensional & Three-Dimensional

Unit Length: 9 days

Domain: Geometric Measurement and Dimension

- Cluster 14: Explain volume formulas and use them to solve problems.
- Cluster 15: Visualize relationships between two-dimensional and three-dimensional objects.

Domain: Geometric Measurement and Dimension

- Cluster 16: Apply geometric concepts in modeling situations.

Standards:

- HSG.GMD.A.1:
 - Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume and surface area of a cylinder, pyramid, and cone.
- (+)*HSG.GMD.A.2:
 - Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
- *HSG.GMD.A.3:
 - Use volume formulas for cylinders, pyramids, cones, spheres, and to solve problems which may involve composite figures.
 - Compute the effect on volume of changing one or more dimension(s).
 - Example: How is the volume affected by doubling, tripling, or halving a dimension?
- HSG.GMD.B.4:
 - Identify the shapes of two-dimensional cross-sections of three-dimensional objects.
 - Identify three-dimensional objects generated by rotations of two-dimensional objects.
- *HSG.MG.A.1:
 - Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
- HSG.MG.A.2:
 - Apply concepts of density based on area and volume in modeling situations.
- HSG.MG.A.3:
 - Apply geometric methods to solve design problems.



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- HSG.CO.E.14:
 - Apply inductive reasoning and deductive reasoning for making predictions based on real world situations using:
 - Conditional Statements (inverse, converse, and contrapositive).
 - Venn Diagrams Note: This is not intended to be an isolated topic but instead to support concepts throughout the course.

**Guaranteed Viable Curriculum*

(+) Pre-AP standard

Vocabulary to Emphasize:

- Area.
- Perimeter.
- Circumference.
- Surface Area.
- Volume.
- Prism.
- Pyramid.
- Cone.
- Cylinder.
- Sphere.
- Cross Section.
- Rotation.
- Net.



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Unit 7: Part 1: Equations of Lines, Distance, Midpoint, & Slope

8 days

Essential question: How do dimensions effect 2-D and 3-D shapes?

| Learning Goal | Notes | Bellwork/Exit | Practice |
|--|--|--|---|
| Students will find the area of polygons. | Area Notes. Pre-AP: <ul style="list-style-type: none">Area and Perimeter Notes.* *Resource found at: http://newellssecondarymath.blogspot.com/2016/02/area-perimeter-of-rectangles.html | BW: <ul style="list-style-type: none">Pre-assessment. | Area and Perimeter Worksheet #1.* *resource from Holt Geometry textbook and workbook pages. Pre-AP: <ul style="list-style-type: none">Area and Perimeter Partner Worksheet.* *Resource found at: http://newellssecondarymath.blogspot.com/2016/02/area-perimeter-of-rectangles.html |
| Students will calculate compound area and area of shaded regions. | Pre-AP: <ul style="list-style-type: none">Area of Regular Polygons.* *Resource found at: http://newellssecondarymath.blogspot.com/2016/03/area-of-regular-polygons.html | BW: <ul style="list-style-type: none">Area BW #1. | Area Worksheet #2. Pre-AP: <ul style="list-style-type: none">Area of Regular Polygons Scavenger hunt.* *Resource found at: http://newellssecondarymath.blogspot.com/2016/03/area-of-regular-polygons.html |
| Students will identify nets and cross sections of three-dimensional figures. | 3D Shapes Notes.* 3-D Shapes Practice.* *resource from Holt Geometry textbook and workbook pages. | BW: <ul style="list-style-type: none">Area BW #2. | Nets Flipchart. Cross Sections Flipchart. |
| Students will find the volume of three-dimensional figures. | Volume Notes. | BW: <ul style="list-style-type: none">Nets BW. | Volume Practice #1.* *resource from Holt Geometry textbook and workbook pages. Pre-AP Homework: <ul style="list-style-type: none">Explorations in Core Math Workbook 11-2. |



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| Students will find the volume of three-dimensional figures. | | BW: <ul style="list-style-type: none">Volume BW #1. | Volume Scavenger Hunt. Pre-AP Homework: <ul style="list-style-type: none">Explorations in Core Math Workbook 11-3. |
| Students will find the surface area of three-dimensional figures.. | Surface Area Notes. | BW: <ul style="list-style-type: none">Volume BW #2. | Surface Area Whiteboard Practice. Pre-AP Homework: <ul style="list-style-type: none">Explorations in Core Math Workbook 11-3. |
| Students will find the surface area of three-dimensional figures. | | BW: <ul style="list-style-type: none">Surface Area BW #1. | Surface Area Task Cards. Pre-AP: <ul style="list-style-type: none">Laying the Foundation-Solids of Revolution. |
| Students will calculate the effects of dimensional change. | Effects of Dimensional Change Graphic Organizer.* Effects of Dimensional Change Practice.* *resource from http://newellssecondarymath.blogspot.com/p/interactive-notebook-pages.html | BW: <ul style="list-style-type: none">Surface Area BW #2. | Effects Of Dimension Practice Independent Work.* *resource from Holt Geometry textbook and workbook pages. Pre-AP: <ul style="list-style-type: none">Laying the Foundation-Volumes of Revolution. |

Unit 8 Volume Review.

Unit 8 CFA #1, Version A: Volume.

Unit 8 CFA #1, Version B: Volume.

Unit 8 CFA #2, Version A: Surface Area.

Unit 8 CFA #1, Version B: Surface Area.

Unit 8 Common Summative Assessment.



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Unit 8 previous learning: Where do I start/What should they know?

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|-------|--|
| 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. |
| 7.G.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.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.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. |
| 8.G.9 | Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. |