**TEACHER RESOURCE LIBRARY**

Grade 6 ~ ***Geometry (6.G.1-4)***

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| **Solve real-world and mathematical problems involving area, surface area, and volume.** |
| **Resources** | **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. 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 = l w h* and *V = b h* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.** | **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.** | **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 mathematical problems.** |
| **My Stuff** |  |  |  |  |
| **Resource Books** | **Area of Triangles and Quadrilaterals****Elementary & Middle School Mathematics (VanDeWalle, 7th Ed.)** * TEACHER CONTENT
	+ Developing Formulas for Area and Volume: p. 391-394
* STUDENT ACTIVITIES
	+ Area of a Parallelogram (Activity 19.27): p. 393
	+ Area of a Triangle (Activity 19.28): p. 393

**Elementary & Middle School Mathematics (VanDeWalle, 6th Ed.)** * TEACHER CONTENT
	+ Developing Formulas for Area and Volume: p. 398-402
* STUDENT ACTIVITIES
	+ Area of a Parallelogram (Activity 20.27): p. 400
	+ Area of a Triangle (Activity 20.28): p. 401

**Elementary Geometry for Teachers (Parker, Baldridge, 2008) ISBN 9780974814056*** TEACHER CONTENT
	+ Area: p. 107-110
	+ Area of Triangles, Parallelograms, and Trapezoids: p. 121-127

**Volume of Right Rectangular Prism****Elementary & Middle School Mathematics (VanDeWalle, 7th Ed.)** * TEACHER CONTENT
	+ Volume of Common Solid Shapes: p. 395-396
* STUDENT ACTIVITIES
	+ Volume of a Box (Activity 19.29): p. 395 (extend to fractional units)

**Elementary & Middle School Mathematics (VanDeWalle, 6th Ed.)** * TEACHER CONTENT
	+ Volume of Cylinders: p. 403
* STUDENT ACTIVITIES
	+ Volume of Boxes (Activity 20.29): p. 403

**Elementary Geometry for Teachers (Parker, Baldridge, 2008) ISBN 9780974814056*** TEACHER CONTENT
	+ Introducing Volume: p. 193-294
	+ Graphic: Length – Area – Volume – Capacity – Weight: p. 198
	+ Prisms and Cylinders: p. 202-203

**Length of Sides of Polygons in Coordinate Plane EXTENDING CURRICULUM FOR ENRICHMENT ONLY****Elementary & Middle School Mathematics (VanDeWalle, 7th Ed.)** * TEACHER CONTENT
	+ Applying the Pythagorean Relationship: p. 428
* STUDENT ACTIVITIES
	+ The Distance Formula (Activity 20.26): p. 428

**Elementary & Middle School Mathematics (VanDeWalle, 6th Ed.)** * TEACHER CONTENT
	+ Applying the Pythagorean Relationship: p. 442
* STUDENT ACTIVITIES
	+ The Distance Formula (Activity 21.30): p. 442
 |
| **Web**  | **Area of Triangles and Quadrilaterals**STUDENT ACTIVITIES/LESSONS* **NLVM eModule - Student Interactive Lesson** -

 <http://enlvm.usu.edu/ma/nav/toc.jsp?sid=__shared&cid=emready@area_pt&bb=course>* **Shodor - Triangle Explorer - Interactive** **Applet** - <http://www.shodor.org/interactivate/activities/TriangleExplorer/>
* **Illuminations - Area Formulas - Unit of Lessons** - <http://illuminations.nctm.org/LessonDetail.aspx?ID=U160>
* **Scholastic Study Jams - Area of Parallelogram - Student Interactive Tutorial** -

 <http://studyjams.scholastic.com/studyjams/jams/math/measurement/area-parallelogram.htm>* **Scholastic Study Jams - Area of Triangle - Student Interactive Tutorial** -

 <http://studyjams.scholastic.com/studyjams/jams/math/measurement/area-triangle.htm>**Composing and Decomposing Polygons**STUDENT ACTIVITIES/LESSONS* **Illuminations - Area Formulas - Lesson 4** - <http://illuminations.nctm.org/LessonDetail.aspx?ID=L583>
* **Scholastic Study Jams - Area of Irregular Figures - Student Interactive Tutorial** -

 <http://studyjams.scholastic.com/studyjams/jams/math/measurement/area-irregular-figures.htm>* **LearnAlberta - “Exploring Composite Figures” ‘ Interactive Applet** -

 <http://www.learnalberta.ca/content/mejhm/index.html?l=0&ID1=AB.MATH.JR.SHAP&ID2=AB.MATH.JR.SHAP.AREA&lesson=html/object_interactives/composite_figures/explore_it.html>* **Cyberchase - Tangram Game - Game** - <http://pbskids.org/cyberchase/games/area/tangram.html>
* **Apples4theTeacher - Geometry Games** - <http://www.apples4theteacher.com/math.html#geometrygames>

**Volume of Right Rectangular Prism**STUDENT ACTIVITIES/LESSONS* **Scholastic Study Jams - Volume - Video Tutorial** - <http://studyjams.scholastic.com/studyjams/jams/math/measurement/volume.htm>
* **Illuminations - “Fill ‘er Up” Lesson** - <http://illuminations.nctm.org/LessonDetail.aspx?id=L831>
* **Illuminations - “Fishing for the Best Prism” Lesson** - <http://illuminations.nctm.org/LessonDetail.aspx?id=L793>
* **Illuminations - “Popcorn, Anyone?” Lesson** - <http://illuminations.nctm.org/LessonDetail.aspx?id=L797>
* **Scholastic - Volume of 3-D Shapes - Lesson** - <http://www2.scholastic.com/browse/lessonplan.jsp?id=1317>
* **LearnAlberta - Volume and Displacement - Lesson** -

 <http://www.learnalberta.ca/content/mesg/html/math6web/index.html?page=lessons&lesson=m6lessonshell15.swf>* **UEN - “Cube Models” (Volume and Surface Area) - Lesson** - <http://www.uen.org/Lessonplan/preview.cgi?LPid=6399>
* **Three-Dimensional Box - Working with Volume - Applet** - <http://mste.illinois.edu/users/carvell/3dbox/default.html>
* **MathOpen Reference - Interactive Model** - <http://www.mathopenref.com/cubevolume.html>

**Length of Sides of Polygons in Coordinate Plane Nets Using Rectangles and Triangles**STUDENT ACTIVITIES/LESSONS* **Illuminations - Dynamic Paper - Make Own Nets** - <http://illuminations.nctm.org/ActivityDetail.aspx?id=205>
* **Interactives - Solids and Nets - Tutorial/Demonstration** - <http://www.learner.org/interactives/geometry/3d_prisms.html>
* **Nets for Geometric Solids** - <http://www.lifeisastoryproblem.org/explore/index_net.html>
* **Nets of Pyramids** - <http://www.korthalsaltes.com/pdf/pyramid.pdf>
* **Nets of Rectangular Prisms** - <http://www.korthalsaltes.com/pdf/rectangular_prism.pdf>
* **Nets of Cubes and Tetrahedron** - <http://www.korthalsaltes.com/pdf/cube_tetrahedron.pdf>
* **Nets of Pyramids** - <http://www.korthalsaltes.com/pdf/pyramids_equal_hight.pdf>

**Surface Area**STUDENT ACTIVITIES/LESSONS* **Scholastic Study Jams - Student Interactive Tutorial** - <http://studyjams.scholastic.com/studyjams/jams/math/measurement/surface-area.htm>
* **CIMT - Surface Area and Nets - Lesson 6.4 pdf p. 13-20** - <http://www.cimt.plymouth.ac.uk/projects/mepres/book8/bk8_6.pdf>
* **SCETV - Surface Area and Volume Lesson Using Nets** - <http://www.scetv.org/education/ntti/pdf/2000pdf/SurfaceAreaVolume.pdf>
* **Shawnee Edu - Nets and Surface Area of Solids - Lesson** -

 <http://www.shawnee.edu/acad/ms/ENABLdocs/MarchFollowuppdfs/Suit%20for%20a%20Solid.pdf>* **Unfolding Nets - Interactive Tutorial Applet** - <http://mrskrummel.com/apps/Geometry/ch11_SurfaceArea.html>
* **Shodor - Surface Area of a Rectangular Prism - Lesson and Applet** - <http://www.shodor.org/interactivate/lessons/SurfaceAreaRectangular/>
* **Interactives - Surface Area of a Rectangular Prism - Tutorial and Applet** - <http://www.learner.org/interactives/geometry/area_surface.html>
* **Surface Area of Rectangular Prisms - Textbook Tutorial and Practice** - <http://www.gaston.k12.nc.us/schools/cramerton/faculty/kllasky/Course%20Outline%20and%20Syllabus/Textbook/Ch%2012/Text%2012.3%20Surface%20Area%20Rectangular%20Prism.pdf>
* **LearnAlberta - Surface Area and Volume with Nets - Interactive Applet and Video** -

 <http://www.learnalberta.ca/content/mejhm/index.html?l=0&ID1=AB.MATH.JR.SHAP&ID2=AB.MATH.JR.SHAP.SURF&lesson=html/video_interactives/areavolume/areaVolumeSmall.html>* **eHow - Playing the Surface Area Game - Video Tutorial** - <http://www.ehow.com/video_4429485_playing-surface-area-game.html>

**Real World Applications**STUDENT ACTIVITIES/LESSONS* **Learn NC - Gridding a Site - Archaeology Lesson** - <http://www.learnnc.org/lp/pages/1005>
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| **Literature Connections** | Shapes, Shapes, Shapes by Tana HobanCounting on Frank by Rod ClementThe Fly on the Ceiling by Julie GlassShape Up by David AdlerThe Greedy Triangle by Marilyn Burns | Grandfather Tang’s Story by Ann TompertThe Warlord’s Puzzle by Virginia Walton PilegardWrappers Wanted by Candice Yarbray Brucke  “Shapes” in A Light in the Attic by Shel Silverstein |