Volume 1 Issue 1

Math 78
Unit 1 Geometry

Dear Parents,
Below is information regarding Unit 1, Geometry. Look for additional newsletters for future units.

Geometry

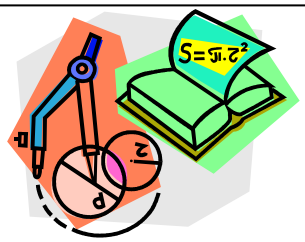
By the end of this unit, students will be able to:

- Draw geometric shapes with given conditions (focus on triangles).
- Describe 2-D figures that result from slicing 3-D figures (prisms, pyramids, cones, cylinders & spheres).
- Use the formulas for the area and circumference of a circle to solve problems.
- Use facts about supplementary, complementary, vertical and adjacent angles in a multi-step problem to find an unknown angle measure.
- Solve real-world problems involving area, volume and surface area of 2-D & 3-D objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.

Vocabulary

- **Adjacent Angle:** Angles in the same plane that have a common vertex and a common side, but no common interior points.
- **Circumference:** The distance around a circle.
- **Complementary Angle:** Two angles whose sum is 90 degrees.
- **Congruent:** Having the same size, shape and measure. $\angle A \cong \angle B$ denotes that $\angle A$ is congruent to $\angle B$.
- **Cross- section:** A plane figure obtained by slicing a solid with a plane.
- **Irregular Polygon:** A polygon with sides not equal and/or angles not equal.
- **Parallel Lines:** Two lines are parallel if they lie in the same plane and they do not intersect. $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ denotes that $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$.
- **Pi:** The relationship of the circle's circumference to its diameter, when used in calculations, pi is typically approximated as 3.14; the relationship between the circumference (C) and diameter (d), $\frac{C}{d} \approx 3\frac{1}{7}$ or 3.14
- **Regular Polygon:** A polygon with all sides equal (equilateral) and all angles equal (equiangular).
- **Supplementary Angle:** Two angles whose sum is 180 degrees.
- **Vertical Angles:** Two nonadjacent angles formed by intersecting lines or segments. Also called opposite angles.

http://intermath.coe.uga.edu/dictnary/homepg.asp
http://www.teachers.ash.org.au/jeather/maths/dictionary.html



Textbook Connection

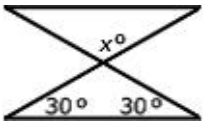
McGraw Hill Georgia Math Grade 7 Plus:
Chapter 2 Lessons 1-8, 10-12
Textbook Online: connected.mcgraw-hill.com

Web Resources

- http://www.mathsisfun.com/geometry/construct-ruler-compass-1.html
- http://www.cimt.plymouth.ac.uk/projects/mepres/book7/bk7i5/bk7_5i5.htm
- www.learner.org/channel/courses/learningmath/geometry/session9/part_c/index.html
- http://illuminations.nctm.org/LessonDetail.aspx?id=U166
- http://illuminations.nctm.org/ActivityDetail.aspx?ID=116 circumference
- http://www.uen.org/Lessonplan/preview.cgi?LPid=23360 entire lesson plan area/circum.
- http://www.shodor.org/interactivate/activities/SurfaceAreaAndVolume/
- http://www.learner.org/interactives/geometry/area.html surface area/volume
- http://www.analyzemath.com/Geometry/angles.html
- http://www.mathsisfun.com/geometry/vertical-angles.html
- http://www.mathsisfun.com/geometry/adjacent-angles.html

Practice Problems

1) Find the measure of angle *x*.



2) Draw an isosceles triangle with only one eighty degree angle. Is this the only possibility or can another triangle be drawn that will meet these conditions?

3) A triangle has an area of 6 square feet. The height is four feet. What is the length of the base?

4) What is the face shape created from cuts made parallel to the base of a rectangular pyramid?

Answers

1) First, find the missing angle measure of the bottom triangle (180 – 30 – 30 = 120). Since the 120 is a vertical angle to *x*, the measure of *x* is also 120°.

2) Through exploration, students recognize that the sum of the angles of any triangle will be 180 degrees.

3) One possible solution is to use the formula for the area of a triangle and substitute in the known values, then solve for the missing dimension. The length of the base is 3 ft.

4) If the pyramid shown is cut parallel to the base, the resulting face shape is a rectangle.