*Learning Objectives*

Activity:

After talking with my CT, we compiled this list for my unit plan coming up:

Common Core Standards:

1. Draw, construct, and describe geometrical figures and describe the relationships between them.
   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.
   2. Draw (freehand, with ruler and protractor, using technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
   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.
2. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
   1. 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.

Vocabulary to Know:

* Scale drawing
* Dimensions
* Scale factor
* Plane sections
* Right rectangular prism
* Right rectangular pyramids
* Parallel
* Perpendicular
* Inscribed
* Circumference
* Radius
* Diameter
* Pi
* Supplementary
* Vertical
* Adjacent
* Complementary
* Pyramids
* Face
* Base

Students must be able to:

1. Determine dimensions of figures when given a scale and identify the impact of a scale on actual length and area. (1 and 2 dimensions) Given 2 figures, identify scale factor. Using given scale drawing, reproduce drawing at different scale. Understand the lengths will change by a factor equal to the product of the magnitude of two size transformations.
2. Draw geometric shapes with given parameters. Parameters could include parallel lines, angles, perpendicular lines, line segments, etc.
3. Describe the resulting face shape from cuts made parallel and perpendicular to the bases of right rectangular prisms and pyramids.
4. Understand the relationship between radius and diameter. Understand the ratio of circumference to diameter can be expressed as pi. Generate formulas for circumference.

**Stage 1:**

* Learners should know…
  + Perimeter
  + Area of 2-D figures
* Learners should understand…
  + How to name 2-D shapes (triangles up to decagons)
* Learners should value…
  + Constructing triangles from three given measures, (either angles or sides)
    - Able to identify how many triangles can be created with these given measures
* Learners should be able to…
  + Draw and name 2-D figures (3-10 sides)
  + Find the perimeter of 2-D figures (3-10 sides)
  + Understand similar figures at a basic level

Reflection:

1. What are the objectives and how do they relate to the national or state standards?
   1. The objectives are the common core standards:
      1. Draw, construct, and describe geometrical figures and describe the relationships between them.
         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.
         2. Draw (freehand, with ruler and protractor, using technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
         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.
      2. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
         1. 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.
   2. These are the national standards provided to the schools
2. So what makes the learning associated with these objectives important for your learners?
   1. Students will be able to successfully draw scaled drawings which are useful for drafting, modeling, and architecture.
   2. Students will be able to use what they learned about angles, area, surface area, and volume when they are dealing with designing clothing, working with automobiles or other types of engineering projects, painting their room, tiling floors, etc.
3. Now, what order might you organize these objectives in to best support the development of understanding and why does this order make sense?
   1. Best order:
      1. Draw and name the 2-D geometric shapes with given conditions starting with triangles and working up to decagons.
      2. Review the concept of perimeter.
      3. Determine patterns in these shapes and apply them to things such as area, circumference, and perimeter.
      4. Using the given lengths, draw a scaled drawing of these shapes.
      5. Draw a scaled drawing of the students’ preferred object whether it be a picture, shape, or design.
      6. Describe 2-D figures resulting from slicing 3-D figures.
   2. This order makes sense to follow because the various objectives build on each other. For example, it is important for students to be able to draw and name shapes before they determine equations for area and circumference. Ending with cutting 3-D shapes and doing extensive scaled drawing sets students up for a challenge and an expansion on their already acquired knowledge.