Middle School Mathematics and the Common Core Summer Institute 2012

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School: Dixie Attendance Center
        Forrest County School District

Grade Level: 8th Grade Pre-Algebra

1. Teaching Objective(s)

Common Core Mathematics Standards:
8.G.9. Know the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.

MDE Mathematics Framework:
8.4c. Use formulas and/or appropriate measuring tools to find length and angle measures (to appropriate levels of precision), perimeter, area, volume, and surface area of polygons, circles, spheres, cones, pyramids, prisms, and composite or irregular figures. (DOK 1)

Teacher Objective:
TSW use formulas and appropriate measuring tools to find length (to appropriate levels of precision), area, and surface area of polygons, prisms, and composite or irregular figures.

2. Instructional Activities

Opening

• TTW display the problem of the day on the promethean board. “Use the isometric grid paper to find the following polygons: rectangle, triangle, parallelogram, rhombus, trapezoid, and pentagon.
• TSW work on the problem of the day with the students at their table.
• TTW ask for volunteers to teach the problem of the day to the class.
• TSW explain the problem of the day to the class.
**Modeling/Guided Practice**

- TSW watch the “**Polygon Song**” on youtube.com to review characteristics of polygons.
- TTW take the students into the hallway and explain the activity for the day.
- For the activity, TSW work in groups and use masking tape to create polygons on the floors of the hallway.
- TTW limit the number of sides in the polygons to 6 (Hexagon).
- TTW display the *Usborne Illustrated Elementary Math Dictionary* by Scholastic for the students to reference when building their polygons.
- Once they have created the polygons, TSW find the area of their group’s polygon.
- TSW then move in groups to the other polygons and find the area of those.
- TTW model how to do this on a previously created polygon in the hallway.
- TTW ask guiding questions about properties of polygons and how to find area of the different polygons.
- Once this activity is finished, TSW measure the sides and find the area of four irregular figures that TT has previously displayed on the floor.
- Once this activity is finished, TSW measure the sides and find the surface area of four 3-dimensional figures that TT has previously displayed on the floor.
- TSW sketch the nets of the 3-dimensional figures to help them find the surface area. The students have previously worked with nets in 7th Grade, but if they struggle, TTW be walking around to work with them one-on-one.
- There will be 4 groups.
- TSW record all of their answers on the worksheet (attached).

**Independent Practice**

- TSW work in groups and use masking tape to form polygons. The polygons cannot have more than 6 sides.
- TSW reference the *Usborne Illustrated Elementary Math Dictionary* by Scholastic if they need help with polygons.
- TS must remember that polygons are formed using straight lines.
- Once TS form the polygons, they will use rulers, tape measures, and/or yard sticks to measure the sides of the polygons.
- TSW find the area of the polygons they created.
- TSW then move in groups to the other polygons and find the area of those.
- Once this activity is finished, TSW move in their groups to measure the sides and find the area of four irregular figures that TT has previously displayed on the floor.
- TSW sketch the nets of the 3-dimensional figures to help them find the surface area. The students have previously worked with nets in 7th Grade, but if they struggle, I will be walking around to work with them one-on-one.
- Once this activity is finished, TSW move in their groups to measure the sides and find the surface area of four 3-dimensional figures that TT has previously displayed on the floor.
- TSW record all of their answers on the worksheet (attached).

**Closing**

- TSW complete an exit slip (attached) that consists of 3 practice problems similar to the class work completed today and the following questions, “What do I understand and what do I still need to learn?” and “What help do I need to learn this?”
3. Materials and Resources

- Promethean Board
- Problem of the Day
- Polygon Song from Youtube.com
- Math Dictionary by Scholastic
- Masking Tape
- Rulers
- Yard Sticks
- Tape Measures
- Worksheet
- Pencils
- Calculators
- Exit Slips

4. Assessment

- The exit slip (attached) will serve as my assessment for today’s lesson. I will use this formative assessment to decide remediation groups and further instruction of area and surface area.

5. References


Creating Polygons and Finding Area

Draw a sketch of each polygon. Find the area of each.

1. 

2. 

3. 

4. 

5. 

6.
Sketch and find the surface area of the three 3-D figures given. Also, sketch the net of the 3-D figures.

9.

10.

11.

12.
Area Exit Slip

1. Find the area of the non-shaded section below.
   9 cm  Note: The diameter of the circle is 5 cm.

2. Find the area of the figure below.

3. Find the surface area of the 3-D figure below. Also, sketch a net of the figure.

4. What do I understand and what do I still need to learn?

5. What help do I need to learn this?