Kentuck Knob

Pre-Algebra/Algebra
7th – 8th Grade

By: Melyssa Aaron
PA Teaching Standards:

**Standard: 2.3.7.B**
Subject Area: Mathematics
Grades: 7th Grade
Develop strategies for and use appropriate units to determine lengths, areas, and perimeters of compound shapes.

**Standard: 2.11.G.C**
Subject Area: Mathematics
Grades:
Use sums of areas of standard shapes to estimate the areas of complex shapes.

**Standard: 1.4.7.B**
Subject Area: Reading, Writing, Speaking, and Listening
Grades: 7th Grade
Write multi-paragraph informational pieces (e.g., letters, descriptions, reports, instructions, essays, articles, interviews)

Use relevant graphics (e.g., maps, charts, graphs, tables, illustrations, photographs).
Select and use primary and secondary sources, as appropriate, to task.
**Duration:**

This particular lesson will be a continuation of previous lessons that are based on finding the area of different polygons. Previously we will discover and discuss the formulas used to find the area and practice using the formulas on objects found in everyday life. This particular lesson will last 2 days. The first day will consist of the field trip to Kentuck Knob. The second day will be spent discussing what was seen at Kentuck Knob and developing potential interview questions for the current family that owns the house.

**Materials:**

- [http://lcweb2.loc.gov/cgi-bin/ampage?collId=pphhphoto&fileName=pa/pa1600/pa1691/photos/browse.db&action=browse&recNum=0&title2=Isaac%20Hagan%20House,%20Kentuck%20Knob,%20U.S.%20Route%2040%20vicinity%20Stewart%20Township,%20Chalkhill%20vicinity,%20Fayette,%20PA&displayType=1](http://lcweb2.loc.gov/cgi-bin/ampage?collId=pphhphoto&fileName=pa/pa1600/pa1691/photos/browse.db&action=browse&recNum=0&title2=Isaac%20Hagan%20House,%20Kentuck%20Knob,%20U.S.%20Route%2040%20vicinity%20Stewart%20Township,%20Chalkhill%20vicinity,%20Fayette,%20PA&displayType=1)
- Field trip forms/permission slips
- Transportation
Inquiry Based Learning Model

**Ask..** the students to name some of the polygons that are seen in their household and what they expect to see in the Kentuck Knob house.

**Investigate..** the shapes used in Frank Lloyd Wrights design “Kentuck Knob” during field trip and the ways of determining area and perimeter.

**Create..** potential interview questions for the current owners of the house.

**Discuss..** the interview questions as a class as well as their own thoughts about Kentuck Knob.

**Reflect..** on their personal feelings and how they would design the house differently.

This reflection will be a formal writing assignment and will be a form of assessment. They will also reflect on their own work habits by giving themselves a grade, based on a rubric.
Description:

This particular lesson will be the last part of an entire unit. The unit itself will be based on polygons. This particular lesson will also be 2 class periods in length.

On the first day of the lesson, I will be taking the students on a field trip to Kentuck Knob. The reasoning behind choosing Kentuck Knob, is that it is a beautiful home that was constructed of a number of different polygons throughout the home. The students will already have a general understanding of polygons, as well as how to find the area and perimeter of the different shapes. I will begin the lesson by asking the students to name some of the polygons that are seen in their household and what they expect to see in the Kentuck Knob house. In addition, I will then pass around old photographs of Kentuck Knob, including a photograph of the original owners standing on the front porch.

While at Kentuck Knob, the students will be split into small groups while walking through the house, each with their own chaperone. Each group will be instructed to investigate and make a list of all the different polygons they see. Once out of the house and back to the resting area, they will then be expected to write down the area and perimeter formulas for each polygon shape that they wrote down. This will be checked by myself and the other chaperones. As a homework assignment, on the night of the field trip, the students are expected to write a short reflection paragraph(s) about the field trip. In this reflection, they may write about their own personal feelings about the field trip, how they would potentially change the design of the house, etc.
On the second day of the lesson, I will begin by collecting the reflection assignments. Once those are collected, I will then begin the class by starting a discussion on the house itself. After the discussion, I will then split the class into small groups of about 4 or 5 students in each. They will then be instructed to create a set of potential interview questions for the current owners of Kentuck Knob. After each group has come up with their own set of questions, the students will then break off into another set of groups, where they will then share the questions with their new group. This group will then combine their questions into a list of their top 5. The groups will then choose one leader who will write their 5 questions on the board for the rest of the class to see.

After each group has written their possible interview questions on the board, we will then discuss them all as a class and make a list of 5-10 questions that everyone agrees on. I will then email these questions to the Kentuck Knob owners, and hopefully hear back to share the responses with the entire class.

Once the entire activity is done, I will then pass out the rubric, which is attached. Each student will be responsible for reflecting on their own personal work and grading themselves based on the rubric. I will then grade each student myself and average the scores together. I feel this is a very efficient way of grading students because they then feel more in control over their grade.
Collaborative Work Skills : Developing Interview Questions

Teacher Name: **Ms. Aaron**

Student Name: ____________________________________________

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<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
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<tbody>
<tr>
<td>Contributions</td>
<td>Routinely provides useful ideas when participating in the group and in classroom discussion. A definite leader who contributes a lot of effort.</td>
<td>Usually provides useful ideas when participating in the group and in classroom discussion. A strong group member who tries hard!</td>
<td>Sometimes provides useful ideas when participating in the group and in classroom discussion. A satisfactory group member who does what is required.</td>
<td>Rarely provides useful ideas when participating in the group and in classroom discussion. May refuse to participate.</td>
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<td>Quality of Work</td>
<td>Provides work of the highest quality.</td>
<td>Provides high quality work.</td>
<td>Provides work that occasionally needs to be checked/redone by other group members to ensure quality.</td>
<td>Provides work that usually needs to be checked/redone by others to ensure quality.</td>
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<tr>
<td>Time-management</td>
<td>Routinely uses time well throughout the project to ensure things get done on time. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.</td>
<td>Usually uses time well throughout the project, but may have procrastinated on one thing. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.</td>
<td>Tends to procrastinate, but always gets things done by the deadlines. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.</td>
<td>Rarely gets things done by the deadlines AND group has to adjust deadlines or work responsibilities because of this person's inadequate time management.</td>
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<td>Working with Others</td>
<td>Almost always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.</td>
<td>Usually listens to, shares with, and supports the efforts of others. Does not cause &quot;waves&quot; in the group.</td>
<td>Often listens to, shares with, and supports the efforts of others, but sometimes is not a good team member.</td>
<td>Rarely listens to, shares with, and supports the efforts of others. Often is not a good team player.</td>
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<td>Preparedness</td>
<td>Brings needed materials to class and is always ready to work.</td>
<td>Almost always brings needed materials to class and is ready to work.</td>
<td>Almost always brings needed materials but sometimes needs to settle down and get to work.</td>
<td>Often forgets needed materials or is rarely ready to get to work.</td>
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<td>Focus on the task</td>
<td>Consistently stays focused on the task and what needs to be done. Very self-directed.</td>
<td>Focuses on the task and what needs to be done most of the time. Other group members can count on this person.</td>
<td>Focuses on the task and what needs to be done some of the time. Other group members must sometimes nag, prod, and remind to keep this person on-task.</td>
<td>Rarely focuses on the task and what needs to be done. Lets others do the work.</td>
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<tr>
<td>Attitude</td>
<td>Never is publicly critical of the project or the work of others. Always has a positive attitude about the task(s).</td>
<td>Rarely is publicly critical of the project or the work of others. Often has a positive attitude about the task(s).</td>
<td>Occasionally is publicly critical of the project or the work of other members of the group. Usually has a positive attitude about the task(s).</td>
<td>Often is publicly critical of the project or the work of other members of the group. Often has a negative attitude about the task(s).</td>
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