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IT 7360

Spring 2013

A06 Learning Strategies and Lesson Plan 2

**Lesson- Determining Types of Quadrilaterals beginning with Slope**

Standards:

GPS-

* **MCC9-12.G.GPE.4** Use coordinates to prove simple geometric theorems algebraically. *(Restrict contexts that use distance and slope.)*
* **MCC9-12.G.GPE.5** Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
* **MCC9-12.G.GPE.6** Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
* **MCC9-12.G.GPE.7** Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula

Learning Objectives:

1. Students will be able to use coordinates to prove simple geometric theorems algebraically.
2. Students will be able to make conjectures and then prove these conjectures using mathematics.
3. Students will be able to explain their conclusion with the use of the distance, slope, and midpoint formula.
4. Students will be able to work independently with determining specific characteristics about parallelograms.
5. Students will be able to expand on their current knowledge and put their own individual twist on the material.

Essential Questions:

What are different characteristics for the special quadrilaterals?

Lesson Plan:

Engage- I will begin the lesson by giving each student the rubric for the one to two day project that they will begin working on in class. We will go over the rubric expectations in class and also look at some student examples or the teacher model so that the students have an idea of the work that needs to be done for the project.

Explore- During this part of the lesson, the students will be looking into different characteristics of each quadrilateral in order to make the different sections of the advertisement for their city. They must look into different ways to represent their shapes and include other characteristics such as area, perimeter, distance formula, and midpoint formula. The students will use an over-arching theme for the advertisement as a way to bring the characteristics for the shape together.

Explain- The students will use the characteristics of the special quadrilaterals to explore the different aspects of each shape. The students will use the different sections in the advertisement to explain the characteristics in a independent and individualized fashion. They will show their own creativity throughout the lesson and the way that they create their advertisement.

Elaborate- The students will have to show examples of the work in their advertisement as well as expand on the characteristics that they know to combine two or more quadrilaterals. They will have a compare and contrast section of the advertisement as well that will require them to think deeper about the material.

Evaluate- The students work will be checked for accuracy for the information that is contained on the advertisement. This will evaluate their conceptual and procedural understanding of the material. They must use current resources if they go to other sources of information besides that covered in class. They must include a reference page if needed.

Extend- The students will be allowed to use their advertisements to create a study guide for the final test on this unit. We will make a booklet of all special quadrilaterals so that they can have all of the material in one place and will be able to use different information found from all students to help reinforce the material.

Assessment

The students will be graded on their actual product once it is complete in publisher. They will be graded with the below rubric which will be given out to each student at the beginning of class.

Rubric for Quadrilateral Activity

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Section and Score | 8-7 | 6-5 | 4-3 | 2-1 |
| Content Accuracy | All content contained in the advertisement is correct and has been checked by the student. | Most of the content in the advertisement is correct with few mistakes. | The student has made a number of errors in their content and it does not seem to have been checked with notes from the class. | The information contained in the advertisement is not correct and notes were not utilized. |
| Characteristics | All possible characteristics for the shape are contained in the ad in a way that fits the theme. | Characteristics are contained but do not tie into the theme of the advertisement. | Some characteristics are missing from the given shape. | The advertisement is missing all characteristics that portray solely to the given shape. |
| Area and Perimeter | The area and perimeter for the shape is given with a visual. | The area and perimeter for the shape is given with no visual. | The area or perimeter given is incorrect for the shape. | No area or perimeter calculation is given for the shape. |
| Pictures | The students use at least 2-3 pictures that accurately portray the shape. | The student uses 1 picture that accurately portrays the shape. | The student uses 1 picture that does not accurately portray the shape. | The advertisement does not contain any pictures of the shape. |
| Creativity and Theme | The students use an over-arching theme for the advertisement that pulls all of the material together. The theme is appropriate for the shape. | The students have a theme but it is not carried throughout the advertisement. Color is apparent. | The students have a sporadic theme and there is no creativity or color in the advertisement. | There does not seem to be a theme to carry throughout the advertisement. |