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Properties of Reflection

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Generic Lesson Plan Template

You should submit this form in addition to any computer generated files/documents/models to your group folder on Angel. Please create a .zip file and upload the group of files as a single archive.

Name: John Palo
Grade level(s)/Subject taught: 10th
Objectives: To help students understand the concept of reflection. Also to help students become more comfortable using Cabri Jr.

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

1. *Write the Mathematical Concept or “key idea” that modeling will be used to teach:* (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

The key concepts of reflection: equal distance from the line of reflection and perpendicular to the line of reflection.

and/or...

- 1b. *Write the Science Concept or “key idea” that modeling will be used to teach:* (e.g. Organisms maintain a dynamic equilibrium that sustains life).

Materials:

"...a rich **one-page, single-spaced**, description or a *vision* of your best thinking..."

Prompts:

1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions)
4. How will you assess the learning for the lesson?

Using ____ the TI 84 plus ____ I plan on having my students...

get familiar with Cabri Jr. by doing basic tasks. I will have students complete a quick bell work hand out reviewing how to find distance between 2 points using the distance formula. I also will have students discuss how slopes of two different lines determine if they are perpendicular. I would have the students come up and demonstrate how to do this on the overhead. These concepts would help students in basic set up using Cabri Jr. I am assuming that the students have used Cabri Jr. before, although I feel the lesson is easy enough and straight forward enough that even a student with very limited use with Cabri Jr. would still be able to finish the task successfully. The bulk of the lesson will be the students working individually or with a partner, their choice. By following along with the very explicit detailed handout, hopefully the questions will be minimal. This will allow me to monitor the students' progress (hopefully using the Navigator system or otherwise walking around the classroom). The main objective is to have the students understand what exactly a reflection is and more importantly, how to reflect an object on paper. The grading rubric would be fairly straight forward (see grading rubric). The main goal is to make sure students are able to plot reflections, especially when the line of reflection is not one of the axis. This will lead them to be able to graph a reflection across a line with just the equation of the line.

Name : _____

Date : _____

DIRECTIONS: In this activity, we will discuss the properties of reflection. We will be using Cabri Jr. on your graphing calculator. Follow the activity directions and answer the questions along the way. You may work with a partner.

Activity 1: Triangle:

- 1.) Create a diagonal line going through the middle of the screen.
- 2.) Create a triangle on one side of the line (put it relatively close to the line).
- 3.) For each point of the triangle:
 - a.) create a line that is perpendicular to the point and the diagonal line you have created.
 - b.) place a point on this perpendicular line on the other side of your diagonal line.
 - c.) now measure the distance from the point of your triangle to the diagonal line.
 - d.) measure the distance of the point you just created and the diagonal line.
 - e.) drag the new point until its distance is the same as the distance from the point on the triangle to the diagonal line.
- 4.) After you have created the 3 new points, connect them to form a triangle.
- 5.) Now you can make sure you have reflected the object correctly by using the reflection function (we haven't used this before, it's under F4). After selecting this, highlight your original triangle (remember the entire triangle must be "excited") and then hit enter. Then highlight your diagonal line and hit enter. The reflected triangle should line up perfectly with the second triangle you created.

Now answer the following questions:

- 1.) Analyze the steps you took to create a reflection of the triangle. Suppose you had to do these steps without a graphing calculator, that is you had to do it on graph paper. Explain how you would do this.

2.) Look at your original triangle, we'll call it triangle ABC . The triangle you created will be called triangle $A'B'C'$. Are the points in your triangles in the same order? For example if A is to the left of B in your original triangle, is A' to the left of B' in your reflected triangle? Explain why you think this is.

3.) On the graph paper provided, create a triangle in quadrant I. Create a reflection of the triangle across the y -axis and the x -axis.