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Math 304

Dr. Olsen

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Idea File # 3

Hamberguer Helper

**Mathematical topic**- Working on rotations, translations, and reflections.

**Purpose or objective(s)**- The purpose of the activity is to show students how to correctly rotate an object, if it is a 180 degree or 90 degrees. The students will need to know how to properally draw the shape. When it comes to reflections students need to see again how the object will look after the reflection. The same goes for translations, the students need to see how it is done properally. With the help of the hambergur paper the students will be able to see both papers, as if it is a before and after look.

**Overview**- The lesson will be using the paper and shapes (triangles specifically) to help better the students understanding of rotations, reflections, and translations. The students will all be given a piece of patty paper, and will be given triangles. The students will than have to either rotate the triangle a specific degree, reflect it over a specific line, or translate it on a line. With this the students will see how all the triangles are congruent and never change size.

**Common Core State Standard(s)-**CCSSM: 8.G.2. The students will, “understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rations, reflections, and translations.”

**Mathematical Practice**- Model with mathematics, because we actually going about doing the mathematics of rotations, reflections, and translations.

**Grade levels**- 8th grade geometry

**Background knowledge requires of students**- The students will need to already have an understanding of what a rotaiotn, reflection, and translation are. The students will also have an understanding of what congruent means.

**Source of the activity**-http://www.michaelserra.net/weblog/patty-paper-geometry-1.html

**Time**- 30-45 minutes

**Materials needed**- I will need patty paper, pencils, and white paper.

**Type of activity**- This activity is both a teacher led and a lab. I will start the students off by showing how to properally use the patty paper, but I will than let them work in small groups of 2-3 people to finish the work sheet.

Why I picked the activity- I picked the activity because a lot of students struggle with understsanding that rotations, reflections, and translations are congruent. Some also struggle with the new drawing of the shape after the rotation, reflection, and translation.

Follow up activity and/or extensions- Some follow up activities I could do is have the students try drawing the new triangle/shape without the patty paper. I could also include multiple steps, i.e. do a rotation first than a translation. This will get the students really thinking.

Strengths of the activity- The streghtns of the activity is showing the students how to properally rotate, reflect, and translate. Another strength is it really shows the difference between all three. Finally it really helps them learn to take their time with drawing because if one leg is to long or too short the whole thing is different.

Weakness of the activity- A weakness of this activity could be that students might over rotate their object, or translate to much. This is a common mistake in the beginning, but I will be sure to iterate to the students to take their time and not rush.

Procedure- detail of what the teacher and students will be doing.

The prodecure is as followed:

I will hand each student a piece of patty paper and a two pieces of white paper. I will than hand out the work sheet with 5-10 problems on it. Each problem will consist of a triangle to start with. I will have the students than pair up with people around them. After that I will give one example using the ELMO to show how to properally use the patty paper. I will draw all the original triangles on the white board, that way it is saving paper. I will be sure to make it big enough so all the students can see it. Then I will let the students get to work, and if they do have a question to raise their hand and I will come to them. For my questions, I will have a couple simple rotations, reflections, translations. Once the students finish the easier ones I provided them with some multi step problems. One thing I will make sure in the worksheet is that the students are labeling their vertices.

Rotations, Reflections, and Translation Worksheet #1 Name.

#1 Rotate the triangle 90 degrees clockwise.

#2 Reflecte the triangle over the X-Axis.

#3 Translate the triangle over the line y=x to the point (4,4)

#4 Rotate the triangle 120 degrees counterclockwise.

#5 Reflect the triangle over the X-Axis, than over the Y-Axis.

#6 Rotate the triangle 90 degrees clockwise, than translate it on the line x=5

#7 Reflect the triangle over the Y- Axis, than rotate it 180 degrees

#8 Translate the triangle on the line y=0 to the origin, than reflect it over the y-axis