February 16, 2022

Lesson Plan

Topic: Directions on grid paper and the Cartesian Plane
Name: Katie Wilson **Date:** Wednesday December 1, 2021
Strand: E- Spatial Sense: Coordinate Plane **Grade:** Six **Duration:** 40 minute block

Curriculum Expectation(s):
"E1. Geometric and Spatial Reasoning
describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them."
Specific Expectations:
"E1.3 plot and read coordinates in all four quadrants of a Cartesian plane, and describe translations."
Look Fors:
- Students will be able to explain where a shape is based on left, right, up, down, and the amount of squares→ this will help familiarize students with the concept of a shape moving a given amount of units.
- Students will be able to label the quadrants in relation to each other, based on the directions (left, right, up, down) → providing them with the tools to place shapes or objects at ordered pairs in the quadrants.
- Students will be able to label the x axis and the y axis

Resources:
- Travel to Hogwarts handout (Appendix A)
- Anchor chart on the board (Appendix B)
- Scratch Garden- Directions: Hook video
- Smartboard
- Cartesian Plane fill in the blank worksheet (Appendix C)

Teaching Activities:
Introductory Activity: Activity One: Minds On (5 minutes)
Have students push in their chairs and stand with their feet together. You will hold an object either up, down, left, or right, and have students either stand on their tip toes, crouch, stand on their right leg, or stand on their left leg.

Development Strategy Activities:
Activity Two: Hook (10 minutes)
Have students sit back down. Play the Scratch Garden- Directions video as a refresher of directions. Encourage students to shout out the directions and answers to the questions asked in the video.
After the video, have students discuss the Cartesian anchor chart on the board. What do they remember about it? Where is quadrant I in relation to quadrant III? How many units/squares would I have to move in order to go from a point at (2,4) to a point at (2,-4)? What quadrant is it in now? What quadrant did it start from?

These questions should encourage students to start thinking about the different types of transformations that happen on the Cartesian/Coordinate Plane.

Activity Three (15 minutes)
Hand out the Travel to Hogwarts worksheet. Students may work with a partner or individually for this. Display the instructions on the board:

Start from Hagrid. You must pick up Harry, Ron and Hermione and take them back to Hogwarts. You move from whoever's square you are on. For example, Hagrid and Ron would move from Ron's spot to Hermione or Harry. **Make sure you show your pathway using a line or shading in the squares.** You don't have to shade in the squares where the characters are. Guess and check your work afterwards and write on the back how many units it took for each.

Take it up with the class, using the smartboard.

Conclusion: Activity Four (10 minutes)
Engage the students in a discussion about the directions they learned, and the quadrants on a Cartesian plane. Students will do the Cartesian plane fill in the blanks worksheet (4 Quadrants and the x axis and y axis)

Evaluation and Assessment:
Look Fors when evaluating students worksheets (Hogwarts and fill in the blanks):
- Students will be able to explain where a shape is based on left, right, up, down, and the amount of squares→ this will help familiarize students with the concept of a shape moving a given amount of units.
- Students will be able to label the quadrants in relation to each other, based on the directions (left, right, up, down) → providing them with the tools to place shapes or objects at ordered pairs in the quadrants.
- Students will be able to label the x axis and the y axis

What will indicate level 3 work?
Level 3 work will be indicated by adequate completion of the Hogwarts worksheet with a well organized path drawn out, and the amount of units for Hagrid's journey to each character (Harry, Hermione, Ron) and Hogwarts.

Assessment:
I will mark the fill in the blank worksheet and Hogwarts worksheet. These will be handed back to the students after I have made note of their understanding of the sections in a Cartesian Plane and their understanding of directions.

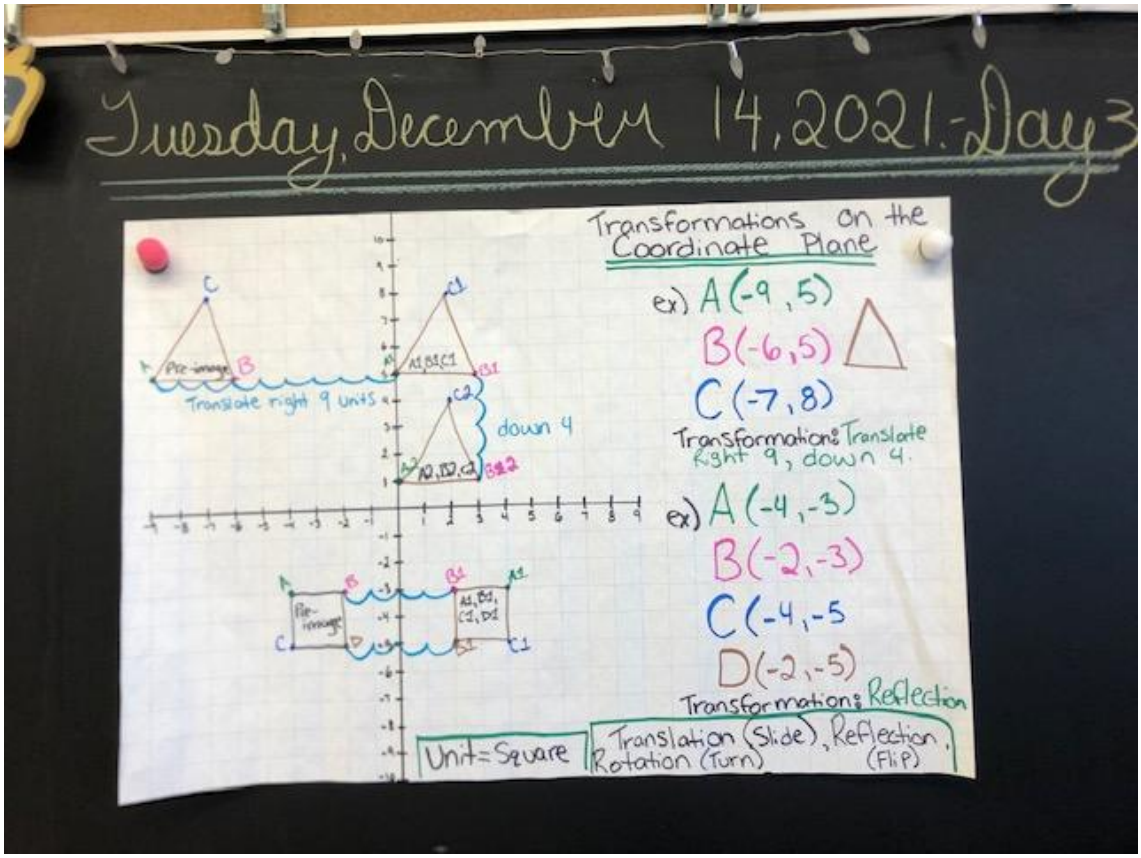
Modifications/ Accommodation: This lesson did not require any modifications when I did it. However, an accommodation for a student who cannot write, would be to scribe for them.

Follow-up Ideas: In the next lesson students will be given ordered pairs and will be plotting points in Quadrant I and Quadrant II. This will shape into a lesson about connecting ordered pairs to make shapes, and finding out what the ordered pair for a point is.

Appendix A

Appendix B



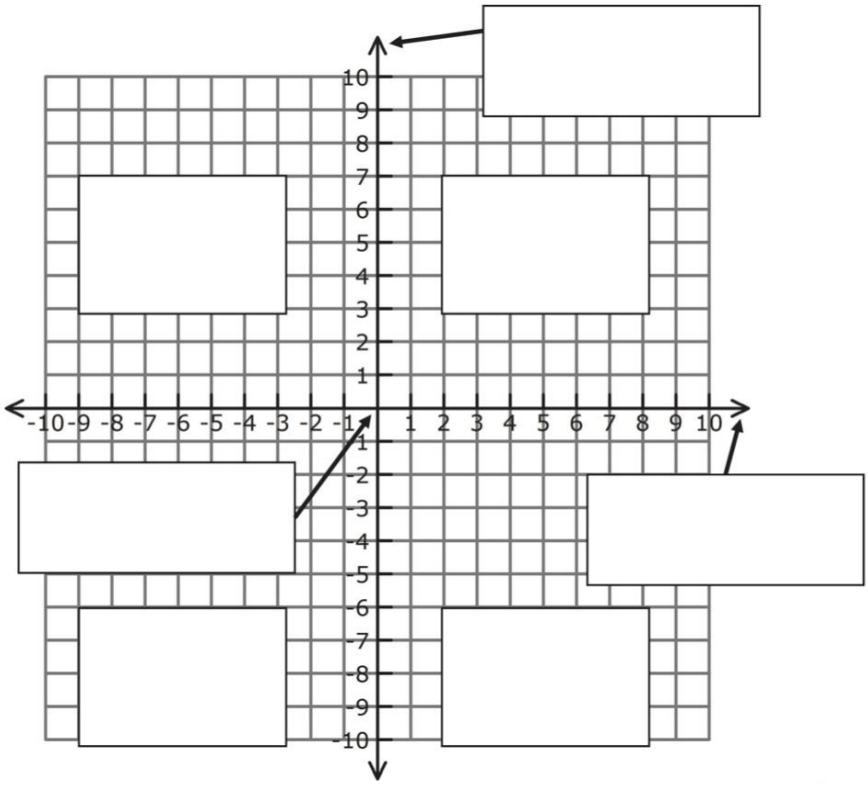
This is the anchor chart I used with my grade sixes, and we added more information onto it over the lessons. This lesson is one lesson in a unit plan

Appendix C

Center 6: Graphing Ordered Pairs of Rational Numbers
Reporting Category 3, TEKS 6(11)(A)

Task 1: Name the Parts

Word Bank						
origin	*x*-axis	*y*-axis	Quadrant I	Quadrant II	Quadrant III	Quadrant IV



Reflection

In my placement of November 2021 I used this lesson plan as the first in my unit on the Cartesian Plane. When I originally presented this lesson, my first draft of the anchor chart (Appendix B) was done on a piece of lined chart paper beforehand, and the students were incredibly confused. Which confused me. That is something I did not do well. I did not prepare for the situation that I would confuse the students enough to confuse myself. The next day however, I found grid chart paper and made the Cartesian Plane anchor chart with the students. Which helped astronomically! They were able to engage in discussion and complete the two handouts with relative ease.

The reason for choosing a Harry Potter themed activity was because I took the time to get to know my students and more than half LOVED Harry Potter. So, I incorporated it into a mathematics lesson. They were so excited they got to work in pairs on a Harry Potter themed activity. The collaboration that was going on was so heartwarming, and so beneficial to the class community as a whole. They felt more comfortable with me because I had taken notice of who my students were.

The reason for the labelling worksheet, was to provide them each with a simplified template of the Cartesian Plane. As well as being able to assess diagnostically if they had retained what we had seen in a video and discussed afterwards. They had, all the students successfully completed it.

Something I would do differently would be to establish a flow to my math lessons. By the fourth week they were beginning to develop a flow (minds on/hook, intro teaching part, hands on work, concluding discussion/exit card). However, it was difficult to differentiate my lesson plans for all of my students who had IEP's, and maintain a natural flow to my lessons. They were a little choppy, and sometimes I was grasping at straws to make connections. Yet, my students were able to complete the tasks well.

All in all, this was an excellent lesson plan, and I will definitely be using it in my future grade six classroom.