General Education Math Lesson Plan

Polygons

Source: Bennett, J.M., Burger, E. B., Chard, D. J., Hall, E., Kennedy, P. A…Waits, B. W. (2011). Mathematics. Austin, TX: Holt McDougal

Standard: 5.GM.1j1 Recognize parallel and perpendicular lines within the context of two-dimensional figures
5.GM.1a1 Recognize properties of simple plane figures
5.GM.1b1 Distinguish plane figures by their properties

Learning Outcome: Students will classify and find angles in polygons

Materials: Variety of polygons; calculator; paper; writing utensil

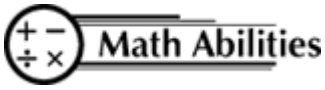
Activities:

- Focus and Review: Show students prefixes (hepta, octa, etc.) and ask them what they think they mean. Discuss what each prefix means using common examples like tricycles and octopus.
- Lecture: Teacher demonstrates how shapes are classified according to how many sides it has. Teacher demonstrates how to draw diagonals inside a polygon to make triangles. Teacher demonstrates how to find angles within the polygon and that the sum of the angles of each triangle is 180°.
- Guided Practice: Students work 10 problems from their math text book.
- Independent Practice: Students work 5 word problems using real-world application. Students identify at least 5 quadrilaterals in their everyday lives.

Activity: Create a universally designed version of the above lesson

UDL Planning	My ideas
Representation- adaptations in materials (e.g., adapt for sensory impairments)	Provide students with common shapes they see every day and name according to number of sides; provide manipulatives which show polygons already made from combinations of triangles; color code different angles; provide angles on polygons
Expression- how will student show learning (e.g., use of assistive technology; alternative project)	Students use a calculator to add the angles; sort polygons into categories depending on number of sides
Engagement- how will student participate in the activity	Student can work in a pair during independent practice; student can use technology (e.g., iPad) to put triangles together to make different polygons; alter word problems to make personally relevant (e.g., add student's name, change the context to be something familiar)

General Education Math Lesson Plan: Reflections in the Coordinate Plane[1]



Conceptual Knowledge
Transformations
Reflections
Coordinate Plane
Procedural Knowledge
Graphing Points
Making Transformations (Flips, Slides, Turns)

Problem Solving
Reasoning
Communication
Connections
Representation

Look in the mirror. Raise your right hand. Does your reflection also raise its right hand?

Students work individually.

Each student needs:

- 3 sheets of graph paper
- 1 ruler
- color pencils
- protractors
- stencils

[1] FCIT (2013). Retrieved from: http://fcit.usf.edu/math/lessons/activities/reflectT.htm

Procedure

1. Trace the stencil on one side of the x-axis. Press hard with your pencil so your figure can be seen through a folded page. Now mark three points on the figure. Label them A, B, and C.
2. Fold the first sheet of paper along the x-axis for a horizontal line of reflection.
3. On the back of the graph paper trace the figure, including A, B, and C. Press hard with your pencil. Open the paper and trace that reflection on the front.
4. Locate the images of A, B, and C in the reflected figure. Label the points A', B', and C'.
5. Use a straightedge and a red pencil to connect A to A', B to B', and C to C'.
6. Measure the angles where the line of reflection crosses each red segment. What do you observe?
7. Mark the midpoint of each of the red segments. What do you observe?
8. Find the coordinates of A, B, and C and A', B', and C'. What do you observe?
9. Do numbers 1-8 using the y-axis as a vertical line of reflection.
10. Do number 1-8 using the graph of y=x as a diagonal line of reflection.

Math Connection

As a result of this activity, students will learn that some transformations, such as reflections and rotations, do not change the figure itself, only its position or orientation.

Activity: Create a universally designed version of the above lesson

UDL Planning	My ideas
Representation- adaptations in materials (e.g., adapt for sensory impairments)	
Expression- how will student show learning (e.g., use of assistive technology; alternative project)	
Engagement- how will student participate in the activity	