Piecewise Functions with Angry Birds

Lesson Plan Outline

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**Materials:** Computer, Geogebra, Internet Access

**Total Time:** about 50 minutes

**Topic:** Introduction of Piecewise Functions

1. **Introduction (5 minutes)**
   1. Introduce the lesson using Angry Birds and Geogebra.
   2. Show video and explain the game to the class.
   3. Outline the main ideas of the lesson.
      1. Creating graphs that match the flight path of the bird.
      2. The first part will be a familiar type of function and the last two, students will be investigating a new type of graph.
   4. Walk them through how to retrieve the first Geogebra file.
2. **Activity Part 1 (~10 minutes)**
   1. Students will find the graph that represents the red birds flight path.
   2. Walk around and make sure students are not having trouble creating the sliders and manipulating them.
   3. The students will pause after part 1.
   4. Provide a quick summary:
      1. We found a quadratic function to represent the path of the bird.
      2. We changed a, h, and k until we had the correct orientation, width of the parabola, height and horizontal shift of the vertex.
3. **Activity Part 2 (~10 – 15 minutes)**
   1. Students will use the same methods to find the trajectory of the yellow bird. There are fewer step-by-step instructions to find a graph of the flight path. They will apply the methods they just went through.
   2. The students will pause after part 2.
   3. This is where you will introduce the notion of piecewise functions.
      1. **Piecewise Functions:** A function that is defined on a sequence of intervals.
      2. **Domain:** The domain of a function is the set of input values for which the function is defined. Domain of a function is written as \_\_\_\_< x <\_\_\_\_\_ OR (\_\_\_,\_\_\_\_)
      3. **Proper Notation**:



1. **Activity Part 3 (~15 Minutes)**
   1. The students do not have step-by-step instructions in completing this part. They will use what they have learned in the previous sections.
   2. Walk around and make sure students are on task.
2. **Closure (5 minutes)** 
   1. Today we did this activity to learn about the properties of Piecewise functions. We learned that a piecewise function is a composition of at least two functions defined on specific intervals. Tomorrow, we will talk more about other types piecewise functions!