MATH ACTIVITY: HOW LONG WOULD IT TAKE?

Students will use conversions and operations with scientific notation to find out how long it would take groundwater to travel the perimeter of the classroom.

First, ask students to make a prediction of how long it would take groundwater to travel around the classroom. Let the students choose their own units.

To find the answer, students will first physically measure the length or perimeter of the classroom in feet and then convert it to meters. Students will use the information about the rate of flow to find out how long it will take for water to travel the perimeter of the classroom. Students will compare the actual answer with their prediction.

Finally, students will use the same concept to determine how long it would take for water to travel from their home to a selected location. Encourage some students to choose a place in another state that they usually travel to, and some students could choose from their house to school. They will need to use an online map (such as mapquest) and search for the distance between their two selected locations and convert as necessary.

***Possible modifications*:** Split the class up and ask students to measure one length of the classroom only, instead of the perimeter. Students can either share their lengths to add up to find the perimeter, or the activity can be modified such that they only find how long it would take for groundwater to travel one length of the classroom.

Math Activity: How Long Would It Take?

Instruction: Answer the following questions to find out how long it will take groundwater to travel the perimeter of your classroom. (Hint: Set up a proportion.)

Prediction: It will take _____ for groundwater to travel the perimeter of our classroom.

1. **What is the perimeter of the classroom in feet?**
   (Measure the classroom and convert inches to feet if necessary)

   Perimeter of Classroom: _____ ft

2. **How many meters is the perimeter of the classroom?**
   3.28 ft = 1 meter

   Perimeter of Classroom: _____ m

3. **What is the rate of flow for groundwater in meters per hour?**
   Groundwater rate of flow = 2×10^{-5} km per hour
   1 km = 10^3 m

   Rate of Groundwater: _____ m/hr

4. **How long would it take for groundwater to travel the perimeter of this classroom?**
   Convert your answer to the most appropriate time measure. (Ex. minutes/ days/ hours/ years)

   How did your prediction compare?

Extension: How long would it take for groundwater to travel from your house to _____?
1 mile = 1609.34 meters