

Name _____

Date _____

EXPLORATIONS

Exploration Student Worksheet: Water Power

Learning Objectives

- Recognize that hydroelectric power uses the energy of falling water to produce electricity.
- Describe the effects of head height (the distance water falls) and water volume on the amount of electricity produced by hydroelectric power.

Questions

1. Did raising only the volume of water always increase the amount of electricity produced?

2. Did raising only the head height always increase the amount of electricity produced?

3. What happened to the gate as you increased the volume of water?

4. What are some of the advantages of hydropower?

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How to Use This Exploration

1. Read the Introduction and click the **Continue** button.
2. Note the components of the picture on the right. Water is stored in a reservoir on the left side of the **dam**. The **gate** controls the water flow through the **penstock** to spin the **turbine**. The turbine connects to the **generator**, which produces electricity. The resulting electricity moves through power lines to provide electrical power to homes.
3. Complete these steps for each Head Height/Volume of Water combination shown in the Findings Chart below:
 - a. From the drop-down lists on the left, select the head height and the volume of water. Then click the **Play** button and observe the results.
 - b. Note the *kilowatt-hours/year* and *homes powered/year* readings.
 - c. Record your observations in the Findings Chart. The results of the first combination have been recorded for you as an example.
4. Complete the questions at the bottom of this worksheet. (To review parts of the exploration, use the **Replay** and **Reset** buttons as necessary.)

Findings Chart

Head Height (m) (Distance water falls)	Volume of Water (cubic m/sec)	Kilowatt-hours per Year (billions)	Homes Powered per Year
50	500	0.45	50,000
50	1500		
50	2000		
150	500		
150	1500		
150	2000		
200	500		
200	1500		
200	2000		