

Student Sheets ~ Crumpled Paper Watershed



Objectives

By the end of this activity, you should be able to ...

- Define the word “watershed;”
- Understand how to tell where the boundaries of a watershed are; and
- Understand how runoff affects our water quality.

Set Up

Experiment #1



Follow the instructions below to set up the experiment.

1. Crumple up the piece of paper your teacher gave you, and then smooth it back out most of the way. It should still be a bit crumpled, showing small ridges (high points) and valleys (low points).
2. Imagine that this paper is a section of land, and find the ridgelines (the tops of the fold-lines).
3. Use a washable blue marker (not permanent) to color along the ridgelines on your “land.”

Make Your Hypotheses

You are going to “rain” on your landform. Answer the following questions to make your hypotheses before conducting the experiment.



1. What do you think will happen to your land when it “rains?”

2. What will happen to the blue ridge lines you colored?

3. Where will the “rainwater” travel?

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Run the
Experiment

Follow the directions below to conduct the experiment.

1. Use a spray bottle of water to create a “rainstorm” over your land. You want to create gentle sprays of mist.
2. Observe what happens after every misting.
3. As your “rainfall” accumulates, observe the pathways where the excess “rainfall” travels.



Record Your
Observations

In the space below, record your observations about what happened (Use words and pictures if you wish).

Analyze Your
Data and
Draw
Conclusions

Answer the following questions or complete the activities to analyze and draw conclusions about your data.

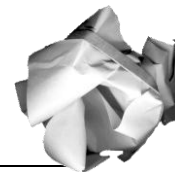
1. Explain how your hypotheses were or were not accurate.

2. How did the “rainfall” travel over your land?



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Analyze Your
Data and
Draw
Conclusions
(continued)

3. Where did the water collect? Explain why this happened.
4. Find an area on your land where water collected. This is a lake, and you get to name it! My lake is Lake _____.
5. Look for the major stream running into your lake. Name this stream as well. My stream is called _____.
6. This stream may have several tributaries (small streams which run into the larger stream). How many does your stream have? _____
7. With your finger, trace your stream all the way back up to where it starts at the top of the ridge. (This should be a path of blue ink.) When you reach the top, this is the edge of the watershed for your stream and lake.
8. Trace the entire edge of the watershed with your finger, by following the ridgeline. This will be something like tracing the edge of a bowl.

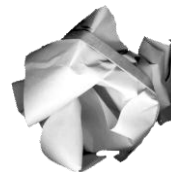
All of the inside, downward-sloping area you have just outlined is the watershed for your stream and lake.

9. Draw a picture of your watershed below. Label your stream and lake.
10. How many other watersheds can you find on your “land?” _____
11. How would you define the word “watershed?”



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Set Up Experiment #2

Follow the instructions below to set up the second experiment.

1. On a fresh sheet of paper, draw some of the ways people use the land. Include a house/community, farm, factory, and some streets/highways.
2. Using the color key below, color your areas with markers.

Use this color...	To Represent...	What Might be on this Land that You Wouldn't Want in the Water?
Brown	Farms	
Red	Landfills & Factories	
Black	Houses & Streets	

3. Crumple this paper, and smooth it in the same way you did the first one.
 4. Use the blue marker to trace the ridgelines on this paper.
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Make Your Hypotheses

Make hypotheses about what you think will happen when you “rain” on your land this time.

Run Your Experiment

Gently mist your new land with water from your spray bottle. Observe what happens, and how the water travels.

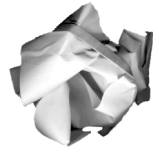
Record Your Observations

Record your observations (in words and pictures) here.



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Analyze the
Data and Draw
Conclusions

Answer the following questions to analyze and draw conclusions about your data.

1. What happened in your second experiment?

2. What do you think the colors could represent in real life?

• Brown = _____

• Red = _____

• Black = _____

3. Where were the colors in the end? _____

4. Where are you in this watershed? What kinds of pollution do you think you add to the watershed?



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Checking For Understanding

Circle the letter of the correct answer for each of the following questions to show you understand the information in this activity.

1. Choose the best description for the **watershed** of a stream:
 - a. the water of a stream and all the tributaries that feed into it, including wetlands
 - b. all the land that slopes toward the stream and drains rain and melting snow into the stream
 - c. a large wet area of land that completely surrounds the stream.

 2. You are hiking along a trail in a hilly countryside. You know that you have reached the watershed of a different stream because:
 - a. the ground changes from soggy soil to dry forest
 - b. you can see another stream
 - c. you are standing on a high spot and the land starts to slope downward again.
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