Two Ways About It

E-Quest

After some time traveling, your bus has arrived at Lake Francis Case where you are going to spend the night. You and a group of your friends are anxious to stretch your legs and scout out the terrain before meeting at Lakeside Lodge.

Task #1: Find **Lakeside Image 1** at the back of this activity sheet. Look at it closely and create a *key* that explains the different geographic features (e.g., lake, stream, trees, etc.) in the area. Use your best guess to identify surface features that would appear as the following colors: green, blue, brown, and orange. Locate the lake, and any small inlet streams that flow into the lake and estimate the dimensions (size) of the image in both the north-south direction as well as the east-west direction. Finally, locate the Lakeside Lodge on the image.

When you arrive at the Lodge, none of the lights inside will turn on. Not one of the electrical outlets work. The electric clock has stopped, the refrigerator is warm inside, the stove won't heat up, and the cordless phone is dead. There is no power at the Lodge! Just then, someone finds a note tacked to the wall, with a rhyme scrawled upon it that reads:

If you want to find some power,
And turn your field trip sweet not sour...
You'll find a source as plain as day,
If you walk the line just 6 kilometers away.

Task #2: Everyone is quite excited and you all agree to split up to try to find the energy source that the note refers to. You and your friends discuss the note. What clue did the note provide?

What do you think an energy-producing source might look like?

Ready for action! In discussing how the group could be as efficient as possible, the class decides that the best way to search is to split up into smaller groups. You suggest that your group will start out by heading west.

Task #3: You and your friends walk 6 kilometers west along the number line in search of the power promised in the note. Describe the terrain (what colors are the landscapes where you are traveling? What patterns do you see in the land where you are walking? Do you think this land is flat, or hilly? Why?)

You know that you left the lodge at 10am, and wonder what time it is now. It feels like you have been walking for days, but you know you haven't been gone that long. You have only gone 6 kilometers and you figure you have been traveling at 3 kilometers per hour, so what time is it? Show your work.

Your group has decided to take some photographs along the way to document the adventure. Once you looked north and took this picture of the view. Is there an energy producing treasure out here? Describe the view.

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Your Snapshot

Task #4: You and your group are exhausted, but you are determined to find the power. After discussing your options, your group decides that you should have gone 6 kilometers to the *east* of the lodge instead of to the west. From where you are now, how far is it to your new destination?

If you are traveling 4 km per hour, what time will you arrive at your new destination?

Several hours later, as you and your friends pause to complain of sore feet and blisters, you hear an amazing sound. You look north and take this photograph:

Describe the photo:

As you look around the area, you see a utility worker heading toward her pick-up truck. After running up to her, you explain that the Lakeside Lodge is experiencing a power outage, and you are in search of electricity. She tells you that you are in luck; this human-made structure is a *hydroelectric dam*. Inside this dam are eight large water-wheels called *turbines,* which are turned by the water flowing through the dam. Each of these turbines produces electricity – lots of it – for use across many states. She asks you about how much electricity you need to keep all of the light bulbs glowing at the lodge. You do a quick count in your head, and estimate that the lodge has 23 light bulbs.

Task #5: If each light bulb draws 45 *watts* of electricity, can you determine how many watts of electricity it takes to light all 23 bulbs at once? Use the ratio table below to help you compute the answer. Some of the table has already been completed to help you get started. Use your knowledge of number relationships to fill in the table as you work toward your answer. You can use many possible number combinations to get your answer.

Number of Lightbulbs	1	2	4	10							
Number of Watts	45	90	180	450							

The utility worker at the dam goes on to tell you that each of the turbines in the dam can produce up to 40,000 *kilowatts* of power! (A kilowatt is equal to 1000 watts.) How much power could be produced by the eight turbines, if each of them were working together at once? Use the following ratio table to help you calculate this amazing amount of power.

Number of Turbines	1	2						
Number of Kilowatts	40,000							

Is there another way to calculate how much power the 8 turbines produce?

The worker guesses that the wind must have caused a power line to fall near the lodge. She invites you to hop into the truck to search for the problem. Sure enough, about half-way back to the lodge, a cable connection is down! Within a few minutes, she restores power to the lodge, and you are the heroes of the E-quest!

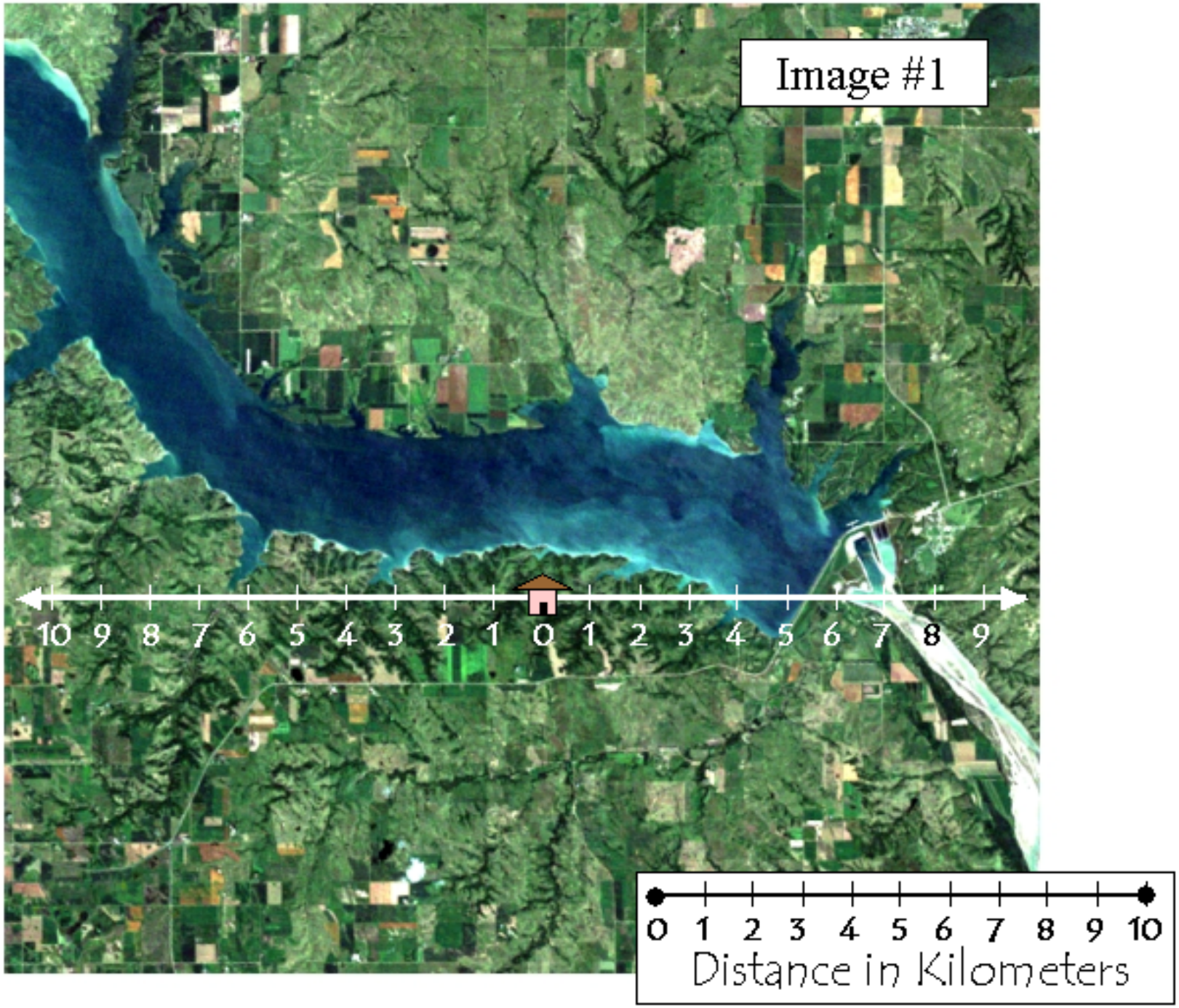
Key:

Green

Blue

Brown

Orange



5