

## Lesson 3—What you can Learn From a Map

### Key teaching points

- The legend is the key to unlocking the secrets of a map.
- Different maps highlight different physical and man-made features of a particular location. Mapmakers choose to emphasize different characteristics depending on the intended use of the map.
- A **road map** shows people how they can travel from one place to another. It also shows some physical boundaries, such as mountains and rivers; political features, such as States and counties; and populated places, such as cities, towns, and villages.
- A **shaded relief** map is designed to highlight the physical features of a place. It portrays relative elevations.
- A **topographic map** shows the elevation of the land at all points, so the reader can learn the absolute elevation of any given place.
- You can learn more about a place by looking at several different maps of that place.

### How this lesson relates to the geographic themes

**Location**—This lesson helps students understand more about the primary tool that geographers use to communicate information about a location—maps.

**Place**—Throughout this lesson, students will examine the characteristics of Salt Lake City (mountains, rivers, roads, trails) and its surrounding area. They will then look at several maps to see how those various physical and manmade characteristics are represented on maps.

### Materials you need for this lesson

1. A map packet for each student.
2. A copy of Activity Sheet #3 for each student.

During this lesson, students will be working with the black-and-white maps in their map packet, as well as going to the board for information from the maps on the color poster. Have students follow along with the maps and their activity sheets, filling in the answer to each question on their activity sheet or marking on their maps. This will help students learn from each other. At the end of the class, every student will have a correctly filled-in activity sheet.

### Suggestions for teaching this lesson (2, 30-minute sessions)

As your students have learned, there are many different kinds of maps. This lesson focuses on three basic types of maps—a **road map**, a **shaded relief map**, and a **topographic map**.

1. *Pass out Activity Sheet #3.* Ask students to take out their map packets. Tell students they will be using all three maps to complete this lesson. Ask them to follow along, filling in their activity sheets and marking on their maps.
2. *Identify characteristics of Salt Lake City.* Ask the students to look closely at the picture of Salt Lake City on the poster. Using the picture, point out some of the most important things about this city. It's the capital of Utah; point out the capitol building. It has a mountain range to the east; show students the Wasatch Mountains. It is a large city; help students locate the tall buildings. The city is the world headquarters for the Church of Jesus Christ of Latter-day Saints; the Mormon Tabernacle is located just a few blocks from the State capitol building. If you have a United States map in your

classroom, show students the location of Salt Lake City. It is one of the chief centers of finance, industry, and transportation in the Rocky Mountain States.

3. *Show students what they can learn from each map.*

**Legends.** Tell the students, "All of the features we have just identified are shown on at least one of these maps. How can we understand the details of what those maps show? By using the legend on each map. You might not have realized it, but when we did Lesson 1, you used the legend to see what the maps in your book showed. In this lesson, we're going to look at legends in more detail."

4. *Help students understand the information on the road map.* Ask students to turn to their **road map** and Activity Sheet #3. Begin with the **road map**, since it is the map that most students will have seen. To help orient themselves, ask the students to find the State capitol in the center of Salt Lake City. Have them circle it on their map if they have not already done so for Lesson 2.

Have students look at the things listed on the legend for the **road map**.

**Ask students to answer these questions and fill in their answers on Activity Sheet #3 and on their road maps:**

- Find and draw the map symbol for an interstate highway route marker.



- Find and draw the map symbol for a State highway route marker.



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- Ask students to locate an interstate highway.  
(Possible answers: I-80, I-15, I-215)

- Ask students to locate a State highway.  
(Many possible answers)

- Ask the students to find a road that goes into the mountains. Trace it on the **road map** with your pencil.  
(Several possible answers)

- Why are there fewer roads northeast of the city?  
(Answer: Because the area is mountainous.)

Ask a student to go to the poster to answer these questions for their classmates. (Students can't use their map packets because they are printed in black and white.)

### Ask students to answer these questions and fill in their answers on Activity Sheet #3:

- What colors are highways?  
(Answer: red, green, or blue)

- The areas around a city are shown in color on the map. What color is used for Salt Lake City?  
(Answer: yellow)

- What color is used for bodies of water?  
(Answer: blue)

5. Help students understand the information on the **shaded relief map**. Have students look at the **shaded relief map** in the map packet. **Shaded relief maps** look the most like a picture, and are easy for students to understand. Say, "**Shaded relief maps** are designed to highlight the physical features of a place. The shading shows how a particular area looks with sunlight shining on it from a particular direction."

Ask students to find some mountains and valleys. Trace them with their fingers.

Have students notice the water in the top left hand section of the map. Say, "This is the edge of the Great Salt Lake—a huge inland body of water."

### Ask students to answer these questions and fill in their answers on Activity Sheet #3 and their shaded relief maps:

- Draw a line down the ridge (backbone) of the Wasatch Mountains.

- Locate a canyon on the map. What is its name?  
(Answer: Echo Canyon, East Canyon, American Fork Canyon.)

- What do you see at the bottom of a canyon?  
(Answer: rivers or creeks)

- Where does the water in those rivers and creeks come from?  
(Answer: snow or rain)

- Have students use the legend to find the symbol for airport



and the State capitol



- What direction is the airport from the State capitol?  
(Answer: west)

The legend shows city size. Using the legend, the population of Salt Lake City is between \_\_\_\_\_ and \_\_\_\_\_  
(Answer: 100,000 and 500,000)

The population of Ogden is between \_\_\_\_\_ and \_\_\_\_\_  
(Answer: 50,000 and 100,000)

- Have the students find a town with a population of 500 to 1,000.  
(Many answers)

Point out to your students that every map's legend is different. On this map, for example, city size is shown by printing the name larger or smaller. On other maps, city size might be shown by using different symbols.

### Ask students to answer these questions and fill in the answers on Activity Sheet #3:

- What are the major colors on the map? What does each color represent?  
(Answers: blue, water; green, lowland; brown, mountains; red, roads)

*More map practice.* Ask students to determine the pattern of population in this part of Utah—where are most of the large cities located? (west of the Wasatch Mountains) You can tell your students that more than three-fifths of the State's population live in the Salt Lake City-Ogden metropolitan area.

6. Help students understand the information on the **topographic map**. A **shaded relief map** shows height through shading. The **topographic map** uses contour lines to show elevation (height above sea level.)

Because a **shaded relief map** looks something like a picture, it is often easier for students to use. A **topographic map** also shows elevations, but it may be harder to understand because it uses contour lines. (This kind of map can be difficult for students to use because it requires them to visualize a third dimension. This teaching package includes a lesson on reading **topographic maps**.)

Ask the students to look at the **topographic map**. Say, "This **topographic map** shows a small area of Salt Lake City and the nearby mountains. You will be drawing some lines and making some notations on this map."

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7. *Contour lines.* Show students the thin, wiggly lines on this map. Tell them that these are *contour lines*. Say, "Contour lines join points of equal elevation above a specified reference, such as sea level. Think of a contour line as an imaginary line on the ground that takes any path necessary to maintain constant elevation."

Have the students make these markings on their **topographic maps**:

Ask students to run their pens or pencils along the entire 5,000-foot contour line on the **topographic map**. (It's just north of the State capitol.) Then have them run their pens or pencils along another contour line. This will give them a feeling for the shape of the land.

When the contour lines are close together, the ground is steep. Ask students to put an X on the map on a steep hill. When contour lines are farther apart, the ground is less steep. Ask students which is steeper—the area to the north or south of the police firing range?

*(Answer: the ground is steeper to the north of the range)*

A **topographic map** shows actual elevations. Ask students to draw a circle around the highest elevation number they can find.

*(Answer: 5,600 feet at the top of the map)*

**Ask students to answer these questions and fill in the answers on Activity Sheet #3 and their topographic map:**

- Find and draw the symbol for a school. Draw a circle around a school on the map.

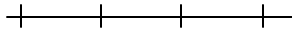


- How high is Ensign Peak?  
*(Answer: 5,414 feet)*

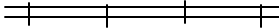
- Find the jeep trail northwest of the State capitol. At about what elevation is the trail?  
*(Answer: about 4,800 feet)*

Why do you think it's a jeep trail instead of a regular road?  
*(Answer: mountainside too steep to fit width of a road.)*

Find and draw the symbol for railroad.



Point out that in the northwestern part of the **topographic map**, there are many railroad symbols bunched together.



These represent railroad sidings where trains come in and wait to be loaded. Tell the students that the symbols near the railroad sidings are oil and salt tanks. They are located next to the railroads to make it easy for the oil and salt to be loaded onto the trains and transported to other parts of the country. As students can see from this **topographic map**, Salt Lake City is a major railroad center.

Have a student go to the colored **topographic map** on the poster and answer these questions about the map for their classmates:

**Ask students to answer these questions and fill in the answers on Activity Sheet #3:**

- What is the color used for rivers or creeks?  
*(Answer: blue and purple)*
- What colors are highways?  
*(Answer: red and purple)*

8. *Wrap-up discussion.* Lead students in a brief discussion that gets them to think about *why* there are different kinds of maps. You might say, "Now we have worked with three different kinds of maps—a **road map**, a **shaded relief map**, and a **topographic map**. These different maps all show the same area—Salt Lake City. The maps are different because the map-makers designed each map for a different purpose."

Divide the students into groups of three or four. Have them pretend they are cartographers. Have them be prepared to answer these questions for the class:

"As a cartographer, I created the **road map** to show \_\_\_\_\_."

I created the **shaded relief map** to show \_\_\_\_\_

I created the **topographic map** to show \_\_\_\_\_

## Additional activities for follow-up

Involve students in brainstorming: What other kinds of maps of the Salt Lake City area could you make? Why might you as a mapmaker decide they were needed? Encourage students to be imaginative—a map of mineral deposits, a map showing voting patterns, a map showing good ski areas, a map showing population density, etc.

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