



# What Is A Map?

## SUMMARY

This lesson introduces students to map elements and concepts: what is a map and how is it similar and different from other visual representations of places?; legend/key, compass, scale, title and date, decorations/illustrations, projections and globes, purpose; how to interpret maps by reading the stories being told by mapmakers.

Students create a quick map of their own, receive an interactive lesson about maps and mapping, and work in small groups to answer questions about some of the maps in our collection.



**LOCATIONS:** Boston to World

**TIME PERIODS:** N/A

**GRADE LEVEL:** 1-4

**KEYWORDS:** world maps, elementary, introduction to maps

**SUBJECTS:** 1) geography; 2) map projections; 3) map elements; 4) purpose

## ESSENTIAL QUESTIONS

What is a map?

What are some things to look for on maps that help us understand them?

In what ways do maps tell different stories?

## OBJECTIVES

Students begin to identify what makes a map a map.

Students are introduced to the idea of map projections and their variety.

Students learn or review common map elements: compass, legend/key, scale, etc.

Students investigate maps to determine their purpose.

# What Is a Map?

## LESSON PLAN MATERIALS

[Slideshow](#): Link to Google Slide Presentation

*Copy the presentation to save, change format, edit or revise, substitute images, etc.*

Blank paper to draw on and something to draw with

Printed color copies of maps or laptops for remote learning

Worksheet for group map inquiry, one per group

*Printable worksheet included in this document following the Lesson Plan*

*Worksheet is also available as an online activity using links on slides 20-24*

*The online map inquiry activity can be recreated and/or edited with our [Map Inquiry Tool](#), your own Google Form and any map in our [digital collections](#). When you copy in the link to a Google Form you create yourself, students can submit their answers directly to you.*

Sample Lesson: [Video](#)

*This video is a sample lesson taught remotely by our education staff to students in grade 3.*

## Introduction to the Map Center: 2 minutes/Slides 2-3

For the same reasons we think it's important for students to think about who made a map they are exploring, we believe it's important for students to know who created their lessons! (We include sample scripts for each part of this lesson so you can see how we teach it. Just look for the italicized sections.)



*Sample script: (Advance to slide 2) The Norman B. Leventhal Map Center is in the Boston Public Library in Copley Square, downtown Boston, Massachusetts. It was started in 2004 by Norman Leventhal, a wealthy real estate developer and map collector who grew up in Boston in an immigrant family and attended the Boston Public Schools. His idea was that all the maps in the Boston Public Library, over 200,000 maps and 5,000 atlases, should be well-cared for and available for anyone to come and see them and learn from them for free. (Advance to slide 3) So today the Map Center takes care of the maps for the enjoyment and education of all through exhibitions in the Map Center and online, educational programs like this one, and even classes on how to make digital maps. The oldest map at the Map Center is over 500 years old. If you come to visit when the library is open, you can see it!*

## Draw a map: 15 minutes/Slide 4

To begin the lesson, students draw a map of their own to help them think about what maps include and don't include, how to imagine a place in order to draw it, what the purpose of a map is, and how all maps are different from each other because they are made by different people with different ideas.

*Sample script: (Advance to slide 4) The title of this lesson is "What Is a Map?," and one of the best ways to start thinking about that question is to make a map yourself. You are going to do the job of a **cartographer**, or mapmaker, and make a map. Get a blank piece of paper and something to draw with. Imagine a place you know really well. It can be your house or apartment, your school, the park you go to play in, or any other place you really know well. Imagine a visitor has come to the place, and they know nothing about it. Draw a map of that place that shows your visitor where the important things are that they should know about. We'll stop you after 5 minutes. (Draw) Now imagine you are somewhere in your place and you want your visitor to use your map to come find you. How will they know which way to go? Add to your drawing so that your visitor can follow your map to find you. Where do they start? What will they see on the way so they know they are on the right path? Take three minutes to add to your map.*

When students finish drawing, have them share their map with a partner or two, looking for things that are the same or similar and things that are different. After 2 or 3 minutes, ask for some students to share a similarity or a difference. Draw attention to pathways, labels, views (overhead or sideways?), stairs, and how different students used similar and different approaches to show the same things sometimes. You might ask, "Who drew stairs? How did you do it? Who drew a path? How did you do it?"

Distance Learning

*Have one student hold up their map and ask other students to say what they see: a squiggly line, a window, a word, a key, an arrow, a door, a little person, chairs, etc. Then let the student share what the map shows, placing a limit on time for explanation. Repeat with at least two more students. Then ask the group: What did you see that was similar? What was different? Draw attention to pathways, labels, views (overhead or sideways?), stairs, and how different students used similar and different approaches to show the same things.*

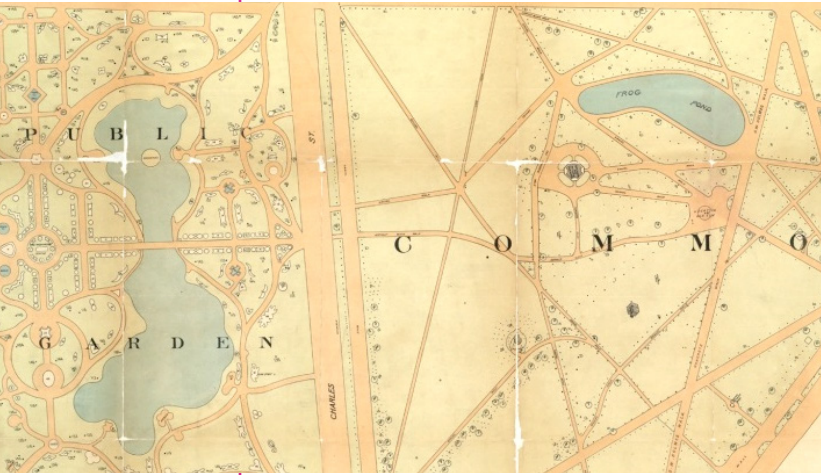




# LESSON PLAN

Transition:

*Sample script: I asked you to make a map in order to warm up our map thinking, notice that mapmakers have many different ways to show information on maps, and remember that maps have purposes. Every cartographer makes a map for a reason, and your purpose was to help a visitor find you in a place they don't know. Now we're going to tackle our big question: What IS a map?*



## What's the Difference?: 8 minutes/ Slides 5 and 6

This section asks students to compare a photograph of a place to a map of the same place. This is one way to prompt thinking about some of the ways maps show the world and encourage naming the qualities of many maps they may encounter: an overhead, zoomed-out view; a compass; labels; less color than in real life; less detail; no people. As students discuss the differences between the two images, flip back and forth between the slides as they refer to them. It doesn't matter if they don't recognize The Public Garden in downtown Boston in the photograph.

*Sample script: (Advance to slide 5) This is The Public Garden in downtown Boston, a park made almost 200 years ago. What do you see? What else do you see? We can see the swan boats and the lake and trees. (Advance to slide 6) This image shows the same place. Let's go back. (Flip between the views as students identify differences and similarities.) Here's one way to see this place, and here's another. What's different? What's the same?*

Transition:

*Sample script: We have identified a lot of differences and similarities, so what makes a map a map?*



## Is This a Map? 8 minutes/Slide 7

This section is a group discussion about whether or not the first photograph of the planet Earth taken from space can be considered to be a map. There is no right or wrong answer. The idea is to tease out what our expectations of maps are. Usually there are some yes answers and some no answers and sometimes students think both yes and no. It's best to have a range, so be sure to emphasize that there is no wrong answer. Take some time and expand on what students say for their explanations. If students say, yes, because they see continents, ask if they can identify them. If they can't, ask what would help them to do that. If a student says, it's just a photograph, you can ask about Google Earth or satellite view in Google Maps. If a student says there are no labels, you can ask if all maps have to have labels. After students have shared their answers according to the way that works best for your students and circumstance, ask them to imagine it IS a map and, if it is, what **purpose** it could have: a map for astronauts to compare what they see from space, a weather map for meteorologists, a continent quiz for students?

# LESSON PLAN

*Sample script: (Advance to slide 7) Take a look at this image. Is this a map? Take a minute to think about it and have a reason for your answer. Then we'll hear what you think. Ok. Who says yes, this is a map? Who says no? If we imagine that it IS a map, what could it be used for? Who could use a map like this?*

Transition:

*Sample script: It doesn't matter very much whether you think this is a map or not. In some ways maybe it is, and in some ways maybe it isn't. The most important thing is to think about what a map's **purpose** is: To find someone in a place you've never been? To show how to get around a wonderful park? To see what the clouds were like over the ocean off the coast of Africa on a particular day? Or something else? Maps can look all kinds of ways. But when we look at a flat map of the world, we need to be aware of some challenges.*

## Making Flat Maps: 5 minutes/Slides 7 - 12

This section of the lesson is an introduction to **projections** and the idea that all flat maps are distortions of the round Earth. There are moments for interaction in this section and the next, but it's mostly direct teaching. Begin with Slide 7.

*Sample script: If we aren't sure whether or not to call this a map, (Advance to slide 8a), does **this** seem more map-like to you? Why?*

*This is a map called a globe. A globe is the most accurate kind of map because it's round like the planet Earth is round. (Advance to slide 8b) Things are in the right places at the right distances if the cartographer did a good job. (Advance to slide 9) But when we try to take the round earth and represent it on a flat map, we have problems!*

*(Advance to slide 10a) If I draw a map of the world on an orange and try to make it flat, I might do it this way. (Advance to slide 10b) What do you think of this as a map of the world? Is it a good map? Why or why not? I could try it again and come up with this. (Advance to slide 10c) What do you think of this as a map of the world? Is this a good map? Why or why not? (Advance to slide 11) And yet here is a kind of map that looks like the orange peel. This cartographer even called this map an orange-peel projection. A **projection** is what it's called when cartographers make flat maps of the round Earth. Do you see any problems with this map? What do you think the purpose of this map is? What did the cartographer want us to think about?*

When discussing slide 11, be sure to have students share their observations. If they do not notice that the quarter spherical projection has Alaska on it in two places and that Australia hangs off the edge, be sure to show them. And you may propose that the purpose of the quarter-spherical projection is to remind the viewer that the world is round and that the map could be cut out and folded back into a sphere, with Alaska overlapping itself, like a paper doll.

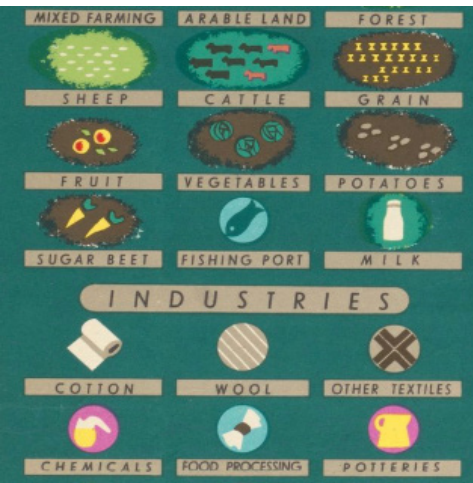
*Sample script: (Advance to slide 12) And this map, a different projection, is kind of like the other orange peel map. What do you notice about this map? What do you think the purpose of this map is? Look at the title and the key and colors. Notice that there aren't any labels on this map because the cartographer didn't think they needed to include them to fulfill the purpose of the map, which is to show where people have had the most effect on the natural environment.*

Transition:

*Sample script: Every flat map of the world is a little wrong. It might be stretched in one place and squeezed in another. It might have big gaps. The shapes of things might be a little off. Every map is **distorted**, because no map can capture everything that is true about a place. That's why the Map Center often says maps are stories, they tell some things and leave some things out. It's your job to figure out what story a map is trying to tell you by looking closely, using map tools and asking good questions.*



# LESSON PLAN



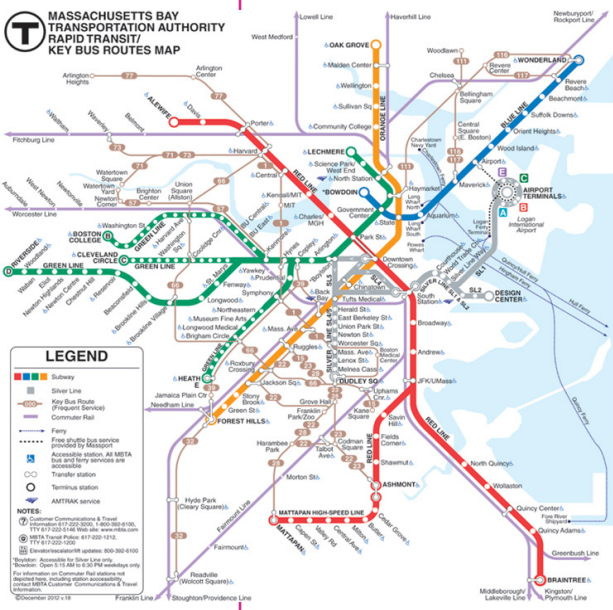
## Reviewing map elements: 2 minutes/Slides 13 and 14

This section is a quick review of map elements students may already be familiar with. The first slide adds pictures of the elements and their names one at a time as you advance the slide. You may review these in any way that works best for your students, their familiarity with the terms, and your teaching circumstances. The second slide shows some common map symbols students can identify together.

*Sample script: Now we're going to review some map tools cartographers put on maps to help us understand them. You will need to know what these are when you explore a map on your own in the next activity. (Advance to slide 13 and click through all the terms, then advance to slide 14 to ask students to help identify some symbols)*

## Thinking about maps as stories and inquiry prep: 5 minutes/Slides 15

This section prepares students to do their independent inquiry. We use a Boston MBTA transit system map to emphasize again the importance of considering a map's purpose and to walk students through the steps of the following activity. It's good to model how you would answer the questions also.



*Sample script: (Advance to slide 15) Some maps tell us how to get around a park, some maps show us where people have had a strong impact on the earth--every map has its own story. In a few minutes you'll be exploring a map, looking for the tools we reviewed and thinking about its purpose. Let's practice one together. (Advance to slide 16) Let's start by looking for the tools. Does this map have a compass? Does it have a key or legend? Does it have a title? Does it have a date? Does it have a scale? How about the name of the mapmaker? Remember, not every map has every tool. What are some other things you notice about this map? Now let's consider this map's purpose. What can someone learn from this map? We can probably come up with a few ideas. If I want to walk around the streets of downtown Boston looking at some of the city's oldest buildings, is this a good map for me? Why or why not? (Advance to slide 17a) Is this a better map for me if I want to walk around the streets of downtown Boston looking at some of the city's oldest buildings? (Advance to slide 17b, then to slide 18) What is one question you have about why this map was made? What do you want to know about its purpose? And finally, when you get your own map to explore, the last question will ask you to finish this sentence: This map shows me.... How would you give a strong answer to that question on this map? Thinking of the map's purpose, this map shows us....?*

## Transition:

*Sample script: (Advance to slide 19) Now you will be assigned to a map to explore using the same steps we just practiced. You will have to look all over the map, sometimes looking close up at one part and sometimes looking at the whole thing at once. Work your way through the questions until you have completed the last one--finishing the sentence "This map shows us...". If you are looking at your map on a computer, you can zoom in and out of the map and drag it to move it around. You'll see the questions on the right side, and you can type or select your answers right there. When you are finished you will come back to the full group and share what you discovered.*





## Students Work: 15 minutes/Slides 20-24

Explain to students how they will be working, either in small groups with printed maps, individually with printed maps, online in small groups or online individually. Below are five maps at different scales, with different purposes, and of different styles. Together they cover a wide-range of cartographic representations for students to discuss. You may choose to have a full class explore one at a time; or choose two to compare; or break students into five groups, each exploring a different map. Whatever approach you take, it is important for students to be able to make sense of maps collaboratively in some way at some point so they can notice more than they can if working alone.

Below each map title is a link to an interactive digital worksheet with a zoomable and moveable map on the left and questions on the right. The link to the inquiry form is also on the slides for each map. [This link](#) takes you to an inquiry worksheet tool for you to make your own versions of these worksheets if you want to use different questions or a different map from the Leventhal collection. You will need to use Google Forms. If you make your own forms, you can have students submit their answers for your recordkeeping. If you are using our forms, students do not need to submit their responses.

[Boston neighborhoods : top 10 countries of birth for foreign-born population](#)

[Map Inquiry 1: https://bit.ly/34bfLMW](https://bit.ly/34bfLMW)

[Nantucket](#)

[Map Inquiry 2: https://bit.ly/35bX9vw](https://bit.ly/35bX9vw)

[Industrial Map of New England](#)

[Map Inquiry 3: https://bit.ly/2FOp4Jo](https://bit.ly/2FOp4Jo)

[United States relief map](#)

[Map Inquiry 4: https://bit.ly/3dUflsh](https://bit.ly/3dUflsh)

[The story map of flying: being a chronicle of man's conquest of the air](#)

[Map Inquiry 5: https://bit.ly/3dKqeCb](https://bit.ly/3dKqeCb)

## Students Report Out and Wrap Up: 15 minutes/Slides 20-24

To wrap up the lesson, have students share out their work in whatever way works best for your students. In the Map Center, students stand up in front of the room with their group and show what they've discovered by pointing to areas on a large reproduction of their map. When they finish sharing, the class can add observations or ask questions. In your classroom, without large format physical reproductions of the maps, you can have students stand in front of the map projected on a white board, or talk about a map that you are showing remotely from your computer in a video conference meeting.

When all groups have presented, we often ask students to share their important take-aways from the lesson as a wrap up, adding our own ideas if they are not mentioned (the importance of looking for a map's purpose, how mapmakers use tools to help us understand their maps, that maps of the same place can look completely different and tell different stories, etc.).



# What Is a Map?

## Map Inquiry Worksheet

### 1. Can you find?

Look for these map elements and circle if you can find them or not

A compass	Yes	No
A legend/key	Yes	No
A scale	Yes	No
The map's title	Yes	No
The name of the mapmaker	Yes	No
The date of the maps	Yes	No

### 2. What can we learn?

What are three things someone can learn from this map?

1.

2.

3.

### 3. Questions

What are two questions you have about this map?

1.

2.

#### 4. Complete the sentence

This map shows us

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# ADDITIONAL MAPS

These maps can be substituted for any maps in the lesson.

## ***Boston***

[2020 map of public transportation from the \*Bending Lines\* exhibition](#)

Map of public transportation routes in Greater Boston served by the Massachusetts Bay Transportation Authority comprising of 64 miles of subway and light railway, 555 miles of commuter railway, and 6,194 miles of omnibus routes in 175 cities and towns

[1871 map of Boston showing notable buildings as illustrations](#)

Bartlett's illustrated map of Boston, or, Stranger's guide showing the public buildings, places of amusement & its' architectural features

## ***New England***

[1863 transportation map of New England, New York and part of Canada with illustrations of Niagara Falls, Mount Holyoke, Franconia Notch and more](#)

E.P. Dutton & Co.s railroad, steam boat & stage route map of New England, New-York and Canada

[1675 map of New England by a British cartographer showing locations of Indigenous people](#)

A Mapp of New England

## ***United States***

[1936 map of the United States as seen by a New Yorker with distorted sizes and humorous tone](#)

A New Yorker's idea of the United States of America

[1920s map of the United States showing time zones and radio stations by region](#)

Radio map of the United States

## ***World***

[1851 whale population map with the Pacific Ocean centered](#)

Whale Chart

[2005 world population cartogram map](#)

The Population Map

## Massachusetts History & Social Science Frameworks

### Grade 1 Curriculum Standards:

*Topic 2. Geography: places to explore [1.T2]*

Supporting Question: How can maps help people locate places and learn about them?

### Grade 2 Curriculum Standards:

*Topic 1. Reading and making maps [2.T1]*

Supporting Question: What do maps show?

1. Explain the kinds of information provided by components of a map (e.g., compass rose/cardinal directions, scale, key/legend, title) and give examples of how maps can show relationships between humans and the environment (e.g., travel, roads, natural resources, agriculture, mining).
2. Compare different kinds of map projections (e.g., Mercator, Peters) and explain how they represent the world differently.
3. Construct a map of a familiar location (e.g., the school, the neighborhood, a park).

### Grade 1, 2 and 3 Speaking and Listening Standards [SL]

*Comprehension and Collaboration*

1. Participate in collaborative discussions with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups; 1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 and grade 4 topics and texts, building on others' ideas and expressing their own clearly.

### Grade 3 and 4 Standards for Reading Informational Texts [RI]

*Integration of Knowledge and Ideas*

7. Use information gained from illustrations (e.g., maps, photographs) and the words, numbers, and symbols in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur); Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, timelines, animations, or interactive elements on webpages) and explain how the information contributes to an understanding of the text in which it appears.

## National Geography Standards: Up to Grade 4

### 1. Properties and functions of geographic representations—such as maps, globes, graphs, diagrams, aerial and other photographs, remotely sensed images, and geographic visualization

Therefore, the student is able to:

Identify and describe the properties of a variety of maps and globes (e.g., title, legend, cardinal and intermediate directions, scale, symbols, grid, principal parallels, meridians) and purposes (wayfinding, reference, thematic).

Identify and describe the functions of a variety of geographic representations.

Identify the maps or types of maps most appropriate for specific purposes, (e.g., to locate physical and/or human features, to determine the shortest route from one town to another town, to compare the number of people living at two or more locations).

Describe how a variety of geographic representations (maps, globes, graphs, diagrams, aerial and other photographs, GPS) are used to communicate different types of information.

Describe how maps are created for a specific purpose (e.g., school fire-drill map, the route from home to school, classroom map of learning center materials).