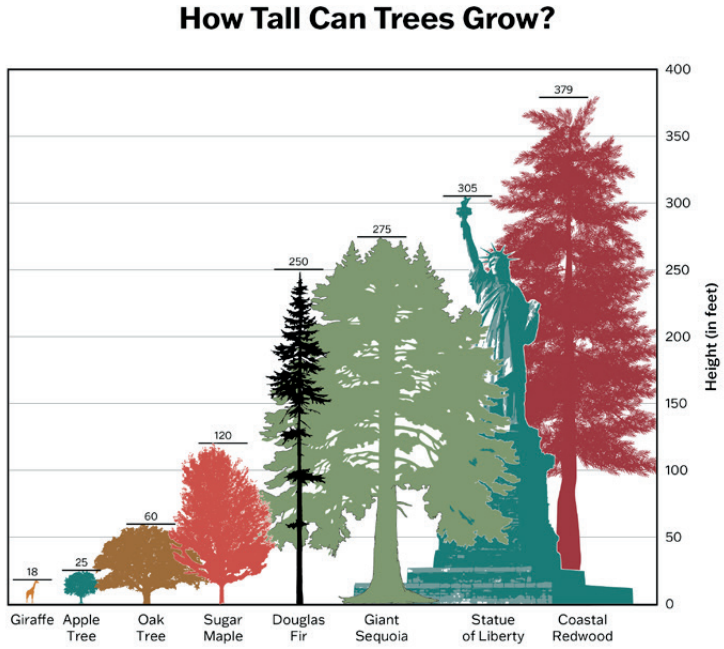
DATA TALK The Heights of Trees

10 minutes

This data was collected by the National Park Service, the US Forest Service, and California State Polytechnic University, Humboldt.



The graph shows the maximum height of various tree species juxtaposed with the heights of a giraffe and the Statue of Liberty. The coastal redwood that is 379 feet tall is named Hyperion. It is the tallest known tree in the world and is estimated to be between 600 and 800 years old. Students may wonder where these giant trees are located. Coastal redwoods grow along the coasts of northern California and southern Oregon. Giant sequoias also grow in California but only in small pockets near the center of the state. The Douglas fir grows in Oregon, California, and western Washington and in mountainous regions such as the Rocky Mountains and Santa Cruz Mountains. Students may also wonder how such tall trees are measured. There are many ways to measure the heights of trees, but the most accurate way is to climb to the top of the tree and lower a measuring tape to the ground.

Ask students what they notice and wonder about the data visualization.

Then facilitate a discussion that helps students understand and apply the data shown by the visualization. Let the discussion be guided by what students notice and wonder; it does not need to follow a specific path. If needed, stimulate conversation by selecting from the following sample questions.

UNDERSTAND

What does this graph show?

- Why do you think the giraffe and the Statue of Liberty are included in this data?
- What comparison statements can you make by using this data?

APPLY

Why might someone want to collect this data?

- If someone gathered data on the heights of trees near our school or near your home, how do you think it would compare to this data?
- If people at our school or in your neighborhood wanted to plant a tree, how might this data help them decide which tree to plant?

REFLECT

What do you want to know more about?

- Did anything about this graph, or the data, surprise you? If so, what was it?

Language Support

To encourage students to make comparison statements, consider posting the following sentence frames:

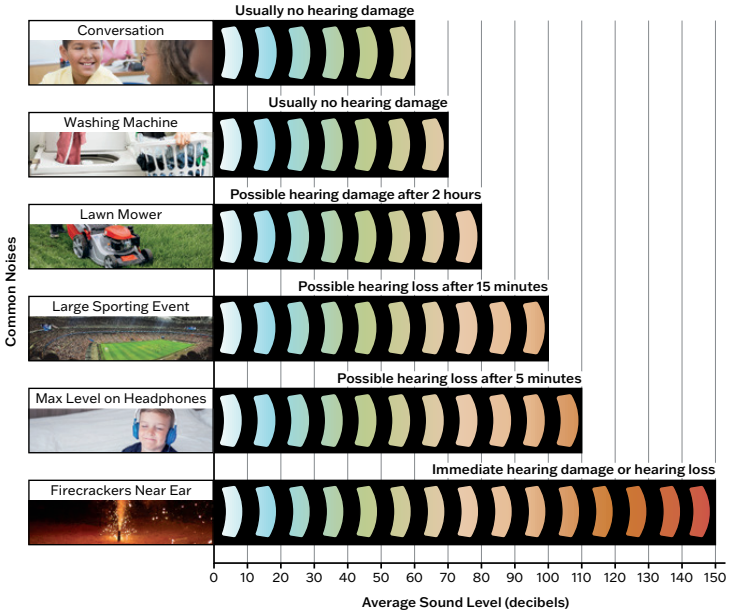
- The _____ is taller than the _____.
- The _____ is shorter than the _____.
- The _____ and the _____ are almost/about/close to the same height.

DATA TALK How Loud Is Too Loud?

10 minutes

This data was collected from the Centers for Disease Control and Prevention (CDC).

Common Noises and Their Effects on Hearing



The graph includes decibel levels of common noises and their typical effect on people's hearing after routine or repeated exposure. Extended or repeated exposure to noises above 70 decibels may cause hearing loss. Students may wonder how the distance they are from a noise affects the chance of harm to their hearing. Prepare to discuss how the graph shows typical effects for nearby sounds and noises. For example, a firecracker exploding near someone's ear may cause immediate hearing loss. But attending public fireworks displays where fireworks explode at a distance would not have the same effect. Consider students' social and emotional needs, given their own experiences with hearing loss.

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UNDERSTAND

What does this graph show?

- How can we use the graph to determine the average sound level of each sound?

APPLY

Why might someone want to collect this data?

- How could you use the data in the graph to make choices that could protect your hearing?
- Think of an everyday sound that is not on the graph. About how many decibels do you think that sound is? Why?

REFLECT

What do you want to know more about?

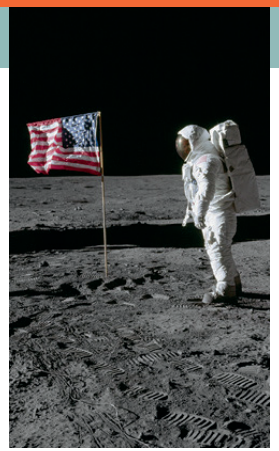
- Did anything about this graph, or the data, surprise you? If so, what was it?

Language Support

Support the term *decibels* by facilitating a class discussion about measurement units. Invite students to turn and talk about measurement units that they are familiar with, such as using centimeters to measure length or minutes to measure time. Tell students that decibels are units used to measure the loudness of sound. Consider finding sounds on the internet at various decibel levels to play for students. By hearing sounds at both lower and higher decibel levels (and then seeing the actual number of decibels for each sound), students may gain a better sense of different decibel levels.

UDL: Representation

Consider inviting a student to model how they used the graph to determine the average sound level of each noise. For example, a student might trace their finger from left to right across the entire bar for a sound and then trace down to the horizontal axis. Students may also notice the *times 10* relationship between the number of icons on a bar and the decibel level. For example, there are six icons for the conversation category: $6 \times 10 = 60$, showing that conversation is typically 60 decibels.

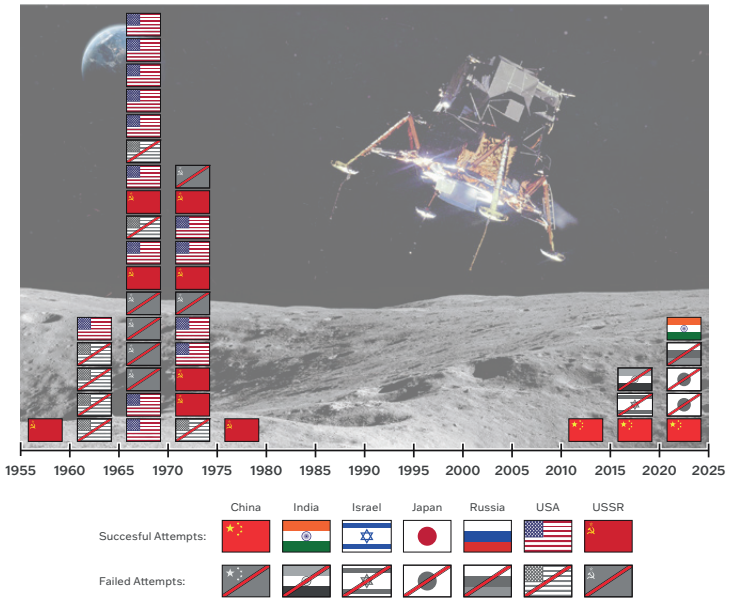


DATA TALK Let's Go to the Moon!

10 minutes

This data was collected by the National Aeronautics and Space Administration (NASA).

Attempted Moon Landings Through August 2023



The pictograph shows a timeline divided into 5-year periods that include the year marked on the left in the timeline through the end of the year prior to the next year marked. Each flag indicates an attempt to land on the moon and the country that was involved. Each column of flags is ordered chronologically from bottom to top. In December 1991, the Union of Soviet Socialist Republics (USSR) dissolved into 15 independent countries, the largest of which is Russia. (That's why there are flags for both the USSR and Russia.) Students may notice that the flags of China and the USSR look similar. To help students distinguish between the two, consider clarifying that the attempts by the USSR were between 1955 and 1980 and that the attempts by China were between 2010 and 2025.

Ask students what they notice and wonder about the data visualization.

Then facilitate a discussion that helps students understand and apply the data shown by the visualization. Let the discussion be guided by what students notice and wonder; it does not need to follow a specific path. If needed, stimulate the conversation by selecting from the following sample questions.

UNDERSTAND

What does this graph show?

- During which 5-year periods were there attempts to land on the moon? During which 5-year periods were there no attempts to land on the moon?
- Which country has made the most successful attempts? Which country has made the most failed attempts?

APPLY

Why might someone want to collect this data?

- Based on the data, around which 5-year period do you think the US government began a push to explore the moon?
- What can you conclude about moon landing attempts from this data? What can you not conclude? Why?

REFLECT

What do you want to know more about?

- Did anything about this graph, or the data, surprise you? If so, what was it?

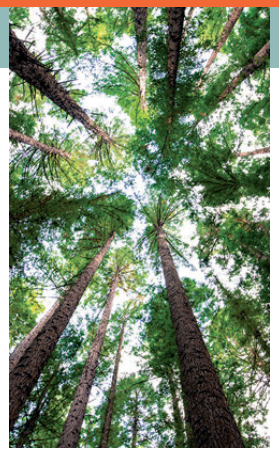
UDL: Representation

Consider providing an example to ensure students understand the graph's key. Select a 5-year period, cover up the other 5-year periods, and invite a volunteer to chronologically describe the attempted moon landings from that 5-year span. For example, in the period from 2015 to 2019, China had a successful attempt, then Israel had a failed attempt, then India had a failed attempt.

Language Support

To encourage students to share their thinking with each other, consider posting the following sentence frames:

- I think ___ because ___.
- I see ___, which makes me think ___.
- I already know ___.

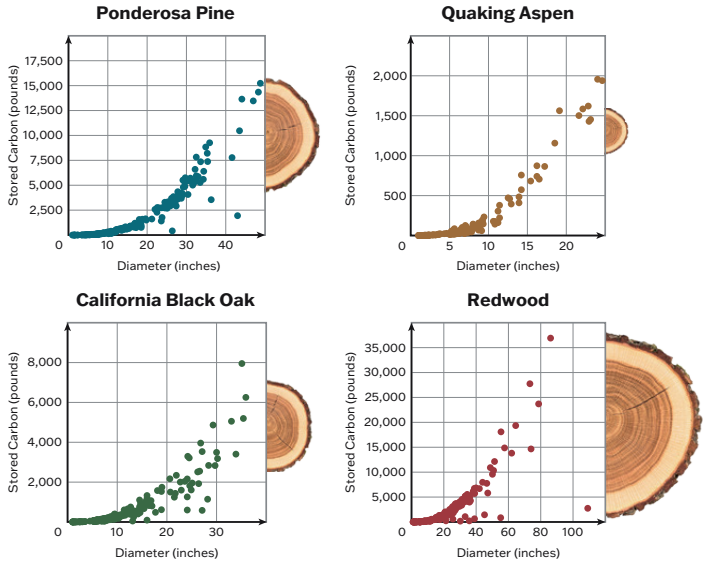


DATA TALK The Carbon in Our Trees

10 minutes

This data was collected between 1994 and 2019 by the Forest Service, which is the branch of the United States Department of Agriculture that manages public lands consisting of national forests and grasslands.

Carbon Storage in Trees



Each scatter plot shows a sample of 200 trees of a certain species found in California. Across all four scatter plots, each point illustrates the amount of carbon a given tree stored relative to its diameter. The diameter of each tree was measured at a height of 4.5 feet from the ground. The carbon stored in a tree consists of the estimated amount of carbon stored in the part of the tree below ground and the part above ground.

Ask students what they notice and wonder about the data visualization.

Then facilitate a discussion that helps students understand and apply the data shown by the visualization. Let the discussion be guided by what students notice and wonder; it does not need to follow a specific path. If needed, stimulate the conversation by selecting from the following sample questions.

UNDERSTAND

What does this graph show?

- Compare the scales of the graphs for ponderosa pine and California black oak. What does this information tell you? What does it not tell you?
- Based on this data, which species of tree do you think is likely to store the most carbon at a diameter of 40 inches? Why?

APPLY

Why might someone want to collect this data?

- What kind of impact might this data have on how forests in California are managed?

REFLECT

What do you want to know more about?

- Did anything about this graph, or the data, surprise you? If so, what was it?

Language Support

Consider activating prior knowledge by encouraging students to turn and talk about what they know about carbon. Consider sharing an image of the carbon cycle to support any of the instances students may share of carbon in the environment, such as carbon dioxide in the atmosphere.