

Welcome to STEM Distance Learning!

Hello Lakers!

First, I want to tell you how much I miss seeing you in class! I hope you are all staying safe and healthy. Here you'll find lessons, video links, and book read-alouds. I know that some STEM supplies can be hard to find at home. You may use any material you wish to complete the STEM challenges. It is most important that you keep practicing, inventing, and creating; no matter what materials you use! I'd love to see your finished work! You can email me any time you need help or would like to share something with me. Stay creative, friends!

Love,

Ms. Wheeler

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Week 1:

This week, your challenge is to create a tall building and test it with an “earthquake.” The earthquake will be heavy book dropped beside your building. Remember, you may use any materials you’d like to complete the challenge.

Check out this video link about earthquakes: https://www.youtube.com/watch?v=AArne-wh_Uc

EARTHQUAKE!

CHALLENGE

Create a tall building. It should not fall down during an “earthquake” (when you drop a heavy book beside it).

GET YOUR GEAR

- toothpicks
- craft sticks
- rubber bands
- building blocks
- tape
- heavy book

HINT: Earthquakes shake side to side. A wider base or stronger connections can help your building stand strong.

WHAT'S GOING ON?

There are very large plates under the surface of the earth that move continuously and slowly past each other. Sometimes the pieces slide under or against each other. As the plates move they put forces on themselves and each other. When the force is large enough, the crust breaks. When the break occurs, the stress is released as energy which moves through the earth in the form of waves, which we feel and call an **earthquake**.

S Research what causes an earthquake. How does this information help you build a better structure?

T Scientists have developed **base isolators** so buildings don't sit on the ground. How would a base isolator help your design?

E Make your building taller. How did you change the design so that your building didn't fall during an “earthquake”?

A Use what you have learned about earthquakes to create an earthquake safety poster.

M Drop the book from different heights. How does it affect the movement of your structure? Make a chart to show the results.

Week 2:

This week's lesson is about amazing animal hearing. You'll go on a sound safari to test your hearing!

Take a look at these owls in action: <https://www.youtube.com/watch?v=w4OH6gMN6vY>

An owl's sharp sense of hearing makes it an extraordinary hunter!

A barn owl perches in a tree. It tilts its head and listens for sounds in the night. The bird's keen ears hear a faint squeak below. Silently, the owl soars into the air. Then it dives, snatching up a mouse with its talons. Dinner is served!

From beak to feet, owls are built to hunt. Their talons are strong and sharp to hold prey tight. Soft barbs line the edges of their feathers. These help muffle the sound of air rushing over the owls' wings, allowing them to silently swoop in for

sneak attacks. But one of their best hunting tools is their sharp sense of hearing. This helps owls zero in on their prey.

Keen Ears

Most owls are **nocturnal**—they hunt at night. So excellent hearing is important for finding their prey in the dark.

Many owls have one ear that's a bit higher than the other. Each ear picks up sounds differently. When an owl hears a sound, it listens closely. Is the sound louder in its right ear or

left ear? Which ear detects the sound first?

Another feature that gives these birds' hearing a boost: bowl-shaped rings of feathers on their faces. The curved shape gathers sounds, making them louder. Then it directs the sounds to the owl's ears. An owl can adjust its hearing by moving the feathers around its face to let more sound enter one ear than the other. This can help the owl pinpoint the location of its prey—even if it's hidden.

Silent Stalker



This hungry barn owl is about to scoop up a small rodent for its meal.

task card 1

Sound Safari

We hear sounds all the time. But which sounds do you really hear?

- 1. Think:** What are some sounds you heard in the last three minutes? Write your response on your data sheet.
- 2. For the next three minutes, you are going to sit quietly and listen carefully. You can close your eyes if it helps you concentrate.** When you notice a sound, write it in the first chart on your data sheet. If you don't know what made the sound, just describe it—like "thud" or "rustle." Set a timer for three minutes or have someone else watch the time. Ready, set, . . . listen.
- 3.** After three minutes, think about each sound you heard. Was it significant to you? Was it unusual? Would you have noticed it if you weren't doing this activity? Mark your answers on your data sheet.
- 4.** Repeat Steps 2 and 3 in another location. You can choose another familiar place in your school—like the schoolyard or cafeteria. Or you can take your data sheet home and try the activity at another familiar place.
- 5.** Look at your data sheet. Circle the sounds that you thought you would have heard anyway. Compare them with the other sounds. What differences do you notice between the two groups? Record your answer on your data sheet.
- 6.** Do you make the decision to ignore certain sounds? Or do you ignore them without thinking? What would happen if your brain paid attention to all sounds equally?
- 7.** Do you think an owl's brain would ignore the same kinds of sounds your brain does? Why or why not?

Materials

- ★ watch or clock
- ★ a familiar place
- ★ "Sound Safari" data sheet



Name: _____ Date: _____

Sound Safari

1. Think: What are some sounds you heard in the last three minutes?

2. Do Steps 2 and 3 of the Task Card. Record your observations in the chart below.

Sound	Is it significant to me?	Is it unusual?	Would I usually notice this sound?
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No

3. Do Step 4 of the Task Card. Record your observations below.

Sound	Is it significant to me?	Is it unusual?	Would I usually notice this sound?
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No
	Yes / No	Yes / No	Yes / No

4. Look at both charts. Circle the sounds you think you would have heard anyway. Compare them with the other sounds. What differences do you notice between the two groups?

Week 3:

We are learning about parachutes this week!

This video talks about parachutes and will show you an example of a home-made parachute. Make your own parachute this week. Some good materials are plastic bags or coffee filters.

<https://www.youtube.com/watch?v=w4Jgh9V9gwE>

Lesson Plan

Duration:

60 minutes

Materials:

Lego Man
Materials from home
Twine
Timer



Lesson Steps

This lesson can be done as a team of 2 or as an individual challenge

The students are given the challenge to construct a parachute for a Lego man that will help him gently fall down from a 3 metre drop. Part of the challenge is to bring in materials from home that they can use to make this work

Week 4:

This week we'll be learning about how boats float. Watch the video below to learn about displacement. Once you know how displacement works, you will be able to create your own boat. If you do not have tin foil at home, you can also make a boat using paper or straws.

Check out this video on displacement:

<https://www.youtube.com/watch?v=CvWrkxzCiaY>

Lesson Plan

Duration:
60 minutes



Materials:
Aluminium Foil
Weights

Lesson Steps

This lesson can be done as a team of 2 or as an individual challenge

The students are given the challenge to construct a boat made out of aluminium foil that floats on water. The boat needs to hold the most weight. The students are given 40 minutes to complete their structure.