

STEM ACTIVITIES



(Physical Science)

Resources for Learning at Home for PK - 8

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Remember... Safety First!

Before attempting any experiments or hands on activities, make sure you have parent permission and are following all safety instructions! Remember science is not fun if you get hurt because you are not being safe!



Parents

Dear Parents and/or Family members:

In an effort to continue teaching and learning under the current COVID19 circumstances, we recognize the needs for parents, families, and students to conduct a variation of activities to enhance and motivate students learning from the homefront. **Please note some will require adult supervision. We leave this to your discretion.** Do try other grade levels for challenges.

This particular packet focuses on **Physical Science** activities. This includes activities and websites covering topics such as energy, light, sound, electricity, magnetism, and chemistry.

Stay tuned for more activities and projects to follow.



RESOURCES BY GRADE

Click on the box with your child's grade to go to resources for that grade level.

K

1-2

3-4

5-6

7-8

9-10



Kindergarten:

Websites

What is light? Watch this [video](#) to help you understand.



What is a shadow? A shadow is when the light is blocked by an object, and a dark shape is formed. Watch this [video](#) for better understanding.

Activity

Firefly Drawing

- Materials: Colored pencils, black paper, scissors, shiny paper
- Cut a small piece of shiny paper for the body of the firefly. Draw on the rest of its body and decorate the night sky black background.

Shadow Drawing

- Materials: white paper, a pencil, flashlight, toy animal.
- Place your toy on the table next to the white paper. Shine the light on your toy so a shadow appears on the paper. Trace the around the shadow. Color your picture.

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by Grade](#)

First-Second

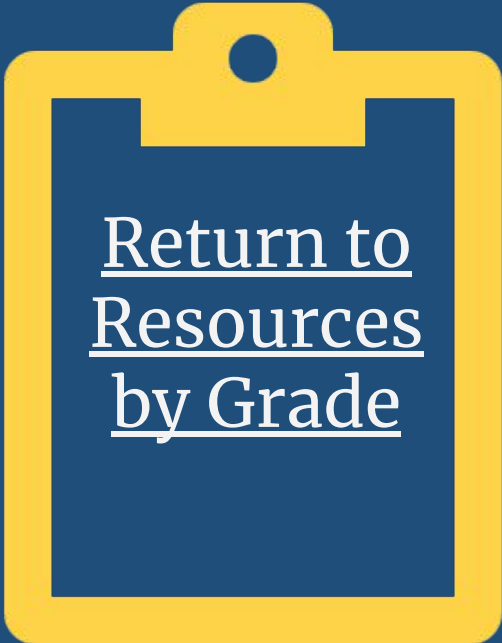
Websites

- The **Sun** is a source of heat and light that warms the land, air, and water. **Day** and night occur when the Earth spins (or rotates) on an imaginary line called its **axis** and whether its facing towards the **Sun** or away from it. Watch this [video](#) for a visual explanation.
- Explore the basics of magnetism by watching this [video](#).
- Make a [compass at home](#). All you will need is a bowl of water, paper clip, and any type of magnet (even a refrigerator magnet).

Activity

Make your own **Sundial**:

- Materials:
 - ruler or a stick
 - a soda/water bottle
 - dry dirt/flour/rice.
- Fill the bottle with dry dirt or rice/flour.
- Insert the stick and place the activity outside or by a window where you get sunshine. You can even use a flashlight.
- Watch the shadow change in size as the light moves or as the earth rotates around the sun at different times of the day.
- Were you able to tell the time?
- How does a sundial compare to a clock?



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Third-Fourth

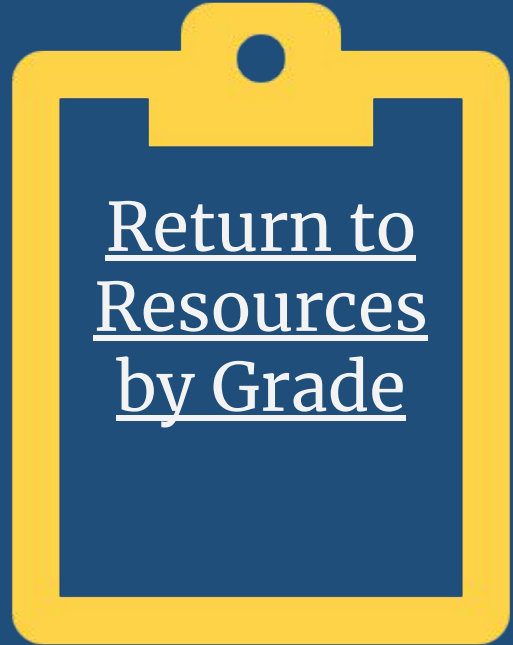
Websites

- Learn about magnetism and try out one of these [experiments](#).
- Explore [static electricity](#) by moving a empty soda can with only a balloon and your hair. Challenge yourself by making it an experiment.
- Learn about insulators and conductors by making yourself some [electric playdough](#).

Activity

Explore the similarities and differences between series circuit and parallel circuits.

- Get some background knowledge on [electricity](#) and the paths it takes.
- Watch the [Series and Parallel Circuits](#) video.
- Practice making [series and parallel circuits](#) with this interactive application.
- Work with an adult to [create your own circuit](#) at home.



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Fifth-Sixth

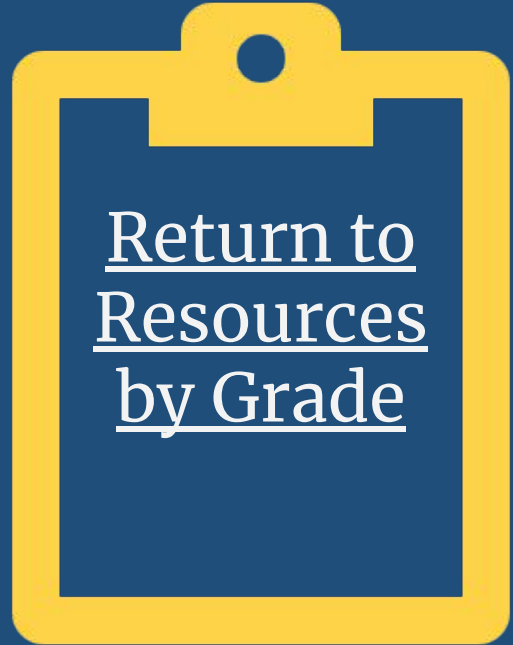
Websites

- Expand your knowledge on [light](#). Read a little about it, play games, do experiments, watch videos, and test yourself.
- Explore light with [absorption, reflection and refraction](#). Watch the video and then test yourself to check your understanding.
- Create your own musical instrument using materials in your house. Watch this [video](#) on a water trombone to get you started. Check out some other cool [examples](#).

Activity

Sound is invisible, but what if there was a way to see it?

- Watch this [video](#) about sound and the vibrations it makes.
- Follow the directions for [Making Sprinkles Dance](#). Use household items to create your mechanism. Ask yourself these questions:
 - Can you can “see the sound?”
 - How does sound travel?
 - What does sound need to travel?



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Seventh-Eighth

Websites

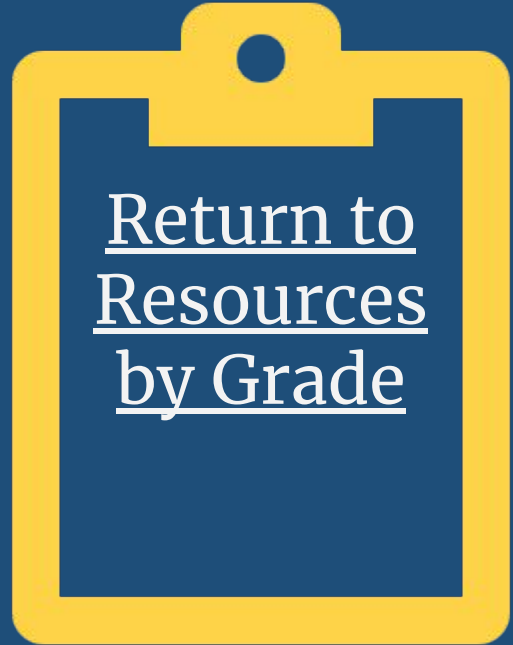
- Play the Smithsonian's [Bumper Ducks](#) to learn about what happens when 2 objects collide.
- Here's a NASA video about [Potential and Kinetic Energy](#)
- This site talks about the different [types of energy](#) we use.
- After learning about the different types of energy available put your knowledge to the test in [Power Up!](#)

VA Standard of Learning Connection: PS.6
The student will investigate and understand states and forms of energy and how energy is transferred and transformed.

Activity

Bills are often expensive especially when it comes to keeping a house running. When homes are more energy efficient these bills tend to go down. Read this page from the Department of Energy to find out [How Much You Spend](#).

- Research ways for homes to be more [energy efficient](#)
- Create a detailed plan of ways to make your home energy efficient
- Construct a model of your energy efficient home out of materials from your house.
- Present your ideas to your household and see if you can make the changes you suggested.



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Ninth-Tenth

Websites

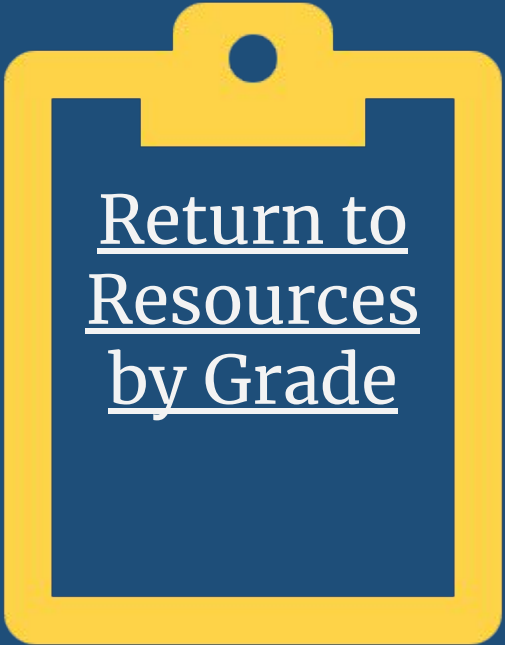
- Learn about the [Types of Matter: Elements, Compounds, and Mixtures](#)
- Use this website for a [basic introduction to Chemistry](#)
- Do some research on the [Periodic Table of Elements](#) using this interactive from Ted-Ed
- Have some fun with the [Element Song](#). Can you learn all of them?
- [Other Activities](#) you can try out!

VA Standard of Learning Connection: PS.4
The student will investigate and understand the organization and use of the periodic table of elements to obtain information. a) symbols, atomic number, atomic mass

Activity

Choose 1 element to become the expert for! You have been asked to share your knowledge of this element with a group of young students.

- When sharing, you need to include info on the element's:
 - Name and Symbol
 - Atomic #
 - state of matter
 - Brief history
 - Atomic Structure
- Remember kids can't listen for a long time! How would you put together a great presentation without putting the kids to sleep? You could record yourself to share your knowledge with others!



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