

PhD SCIENCE® ACTIVITIES FOR FAMILIES

Dear Families,

We hope that you enjoy these science activities with your students in grade levels K–5. Please note that some require more adult oversight than others. All should be done only with adult permission.

The featured activities are extension or optional homework activities found in *PhD Science*®. Whether or not your student uses *PhD Science*, these activities can be conducted to extend science learning outside of the classroom. If they use *PhD Science*, you may address any questions to their teacher. If they do not use *PhD Science*, feel free to speak to their teacher about the engagement of these activities. We'd be happy for teachers to [contact us](#), and we encourage you and teachers to [learn more](#) about *PhD Science*.

For more activities and trade book suggestions, check out our Family Tip Sheets.

Sincerely,
The *PhD Science* Team

AT HOME ACTIVITIES

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Level K Activities

Activities for Weather

- **Log the weather.**
 - Encourage your student to keep a weather journal for a month. Have them track if the weather is sunny, cloudy, windy, rainy, or snowy.

- **Model properties of snow.**
 - Work with your student on modeling snow by using kinetic sand, as this sand will easily pile and crumble like snow.
 - If they are unfamiliar with snow, explain that it is like rain but only falls when the temperature is cold and that it will melt to water when the weather warms.

Level 1 Activities

Activity for Survival

- **Take a nature walk.**
 - Take your student outside to a location where plants can be found.
 - Have your student observe various plants.
 - Have your student share their observations of at least two plants and discuss the plants' similarities and differences.

Activity for Light

- **Put on a shadow puppet show.**
 - Help your student identify objects made of different materials, with or without holes, that they could use to put on a shadow puppet show.
 - Watch your student's shadow puppet show.
 - Discuss how the different materials may have affected how a shadow formed.

Level 2 Activities

Activity for Matter

- **Observe water displacement.**
 - Fill a clear container with water.
 - Add corn syrup (or another dense, thick liquid) to the water.
 - Have your student observe and share what happens as the thick liquid is added to the water.
 - Discuss how the water level rose as the thick liquid sank to the bottom. Consider explaining that this is because the thick liquid took up space in the container, displacing the water.

Activity for Biomes

- **Go on a scavenger hunt.**
 - Go on a scavenger hunt with your student and count the number of different kinds of plants and animals they find near your home or in a park.

Level 3 Activities

Activity for Weather and Climate

- **Build a rain gauge.**
 - Cut a 2-liter plastic bottle about one-quarter of the way down from the top of the bottle for your student. Do not discard the top.
 - Work with your student to place pebbles (about 1 cup) in the bottom of the bottle, making sure that the pebbles are evenly spread across the bottom.
 - Place the top of the bottle upside down into the bottom of the bottle, creating a funnel. Secure it with paper clips.
 - Place a ruler on the outside of the bottle and secure the ruler to the bottle with two rubber bands, adjusting the ruler so that the 0-inch mark is even with the top of the pebbles.
 - Draw a line on the bottle with a permanent marker so that it is even with the bottom of the ruler.
 - Fill the bottle with water to that mark.
 - Have your student check the water level on the rain gauge daily.
 - If precipitation occurs, measure how much the water line is above the 0-inch mark. Then empty the water and reset the gauge with the pebbles and starting water.
 - If evaporation or emptying occurs, refill the water in the rain gauge to the 0-inch mark.

Activity for Forces and Motion

- **Investigate electric force.**
 - Have your student rub an inflated balloon with a wool cloth and place a lightweight plastic bag above the balloon.
 - Note that repulsion should cause the plastic bag to float above the balloon.
 - Have your student rub the inflated balloon with a wool cloth again, but this time place the balloon near other objects.
 - Encourage your student to record and/or share their observations about how the balloon and other objects interact.

Level 4 Activities

Activities for Energy

- **Construct and explore energy with a rubber band box.**
 - Help your student stretch 4 or more rubber bands (varied widths) around a shoebox without its lid, spacing the bands evenly.
 - Weave a pencil through the rubber bands at one end of the box.
 - Have your student pluck the rubber bands and then observe and record what happens.
 - Encourage your student to explore how sound made with the rubber band box can change.

- **Explore energy with a kazoo.**
 - Have your student blow air into a kazoo with different types of breath (soft, medium, and hard), observing and recording what happens.
 - Encourage them to explore how sound made with the kazoo can change.

Level 5 Activities

Activity for Earth Systems

- **Demonstrate particles found in air.**
 - Place double-sided tape on an index card.
 - After some time, have your student observe what they see on the tape.
 - They likely will see dust and dirt become attached to the tape, which will serve as evidence that air naturally contains particles on which water vapor can condense.

Activity for Orbit and Rotation

- **Examine shadows.**
 - Take your student outside on a sunny day to observe shadows, about once an hour.
 - Assist your student in recording the Sun's position each time.
 - Encourage your student to use a compass (this could be the compass on your mobile phone) to determine when the shadows fall due north.
 - Note that when this occurs, the time is solar noon at your location.