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North Carolina Department of Public Instruction

An At-Home Guide for Families

Second Grade Science in North Carolina Public Schools

Content Outline

At the end of the year, my child will be able to…

- Understand the relationship between sound and vibrating objects.
- Discuss the relationship between sound and vibrations.
- Explain how sound is produced.
- Explain that sound can be described in terms of pitch and distinguish the difference between a high pitch and a low pitch.
- Compare and contrast how different length air column impact pitch.
- Determine the relationship between sound and objects of the body that vibrate.
- Explain how the pitch and volume of sounds humans produce change.
- Describe matter and its properties.
- Explain how a solid can change to a liquid, and a liquid can become a solid.
- Explain how the volume and weight of water changes as it moves from state to state.
- Identify evaporation and condensation.
- Identify similarities and differences in open and closed containers.
- Explain that the sun is a source of energy and is responsible for the changes in temperature.
- Explain, describe and differentiate between different types of weather.
- Utilize different means of measuring and describing the weather.
- Identify the stages of the life cycles of a human, ladybug, mealworm, and frog.
- Describe the ways in which the life cycles of various organisms are alike and different.
- Explain the difference between living and nonliving things.
- Distinguish between learned traits and inherited traits.
- Explain why animal offspring resemble their parents.

Curious what the specific standards are for 2nd Grade Science in North Carolina?

Check out the **North Carolina Standard Course of Study** to learn more. Looking for additional explanations about what students should be able to do at the end of this course? Check out **NC DPI's unpacked contents document** aligned to the course standards.

Key Vocabulary

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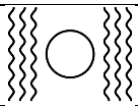
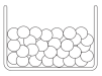
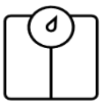
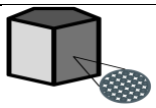
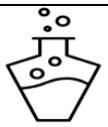
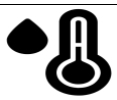
Visual	Term	Definition
	**Sound**	Vibrations that travel through solid, gas, or liquid and can be heard when they reach a person or an animal's ear.
	**Vibration**	Rapid and steady back and forth movement.
	**Sound wave**	A wave that is formed when a sound is made, moves through the air, and carries the sound to one's ear.
	**Pitch**	Describing the highness or lowness of a sound.
	**Volume**	How loud a sound is.
	**Matter**	Anything that takes up space and has mass.
	**Mass**	The amount of matter in an object.
	**Solid**	One of the three states of matter. Solids have a shape of its own. Solids also have mass and volume.
	**Liquid**	One of the three states of matter. Liquids do not have a shape of their own. Liquids also have mass and volume.
	**Gas**	One of the three states of matter. Gasses do not have a definite shape or volume.
	**Volume**	The amount of space an object or substance takes up.
	**Weight**	A measure of how gravity pulls on an object.
	**Evaporation**	A process in which a liquid turns into a gas without the liquid reaching the boiling point.
	**Condensation**	When a substance changes from a gas to a liquid.

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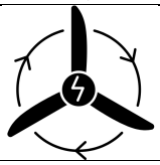
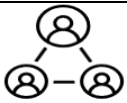
	**Temperature**	How hot or cold a substance is.
	**Weather**	Conditions in the atmosphere that changes from day to day.
	**Precipitation**	Any liquid or frozen water that forms in the atmosphere and falls back to the earth.
	**Anemometer**	A device that measures how fast the wind is moving or wind speed.
	**Barometer**	A device that measures air pressure.
	**Thermometer**	A tool to measure temperature.
	**Rain Gauge**	A device used to measure the amount of rainfall over a period of time.
	**Wind Vane**	A device that shows the direction the wind is moving.
	**Life Cycle**	A series of changes that happen to all living things.

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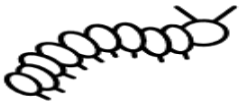
Visual	Term	Definition
	**Egg**	Tiny, white or yellow ovals. This is the first stage in the life cycle of a ladybug and a mealworm.
	**Larva**	The eggs hatch into a grub. This is the second stage in the life cycle of a ladybug and a mealworm.
	**Pupa**	Oval shaped and colored either white, yellow, or orange with black markings. This is the third stage in the life cycle of a ladybug and a mealworm.
	**Metamorphosis**	When a living organism changes its form or shape.
	**Organism**	Any living thing.
	**Nonliving**	Anything that was never alive.
	**Offspring**	Children or young of an animal, plant, or person.
	**Inherit**	To receive information and traits from parents.
	**Learned traits**	Behaviors that you learn from experience, observation, or experiments
	**Inherited traits**	Physical features passed from parents to offspring

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Learning in Action: Grade Level Skills

Examples of Grade Level Skills

1. Create an illustration, drawing, or video demonstrating how vibrating objects produce sound.
2. Explain how the words pitch and sound are connected, and describe the impact an air column can have on pitch.
3. Write an explanation of the difference between high pitch and low pitch, citing real-world examples of each.
4. Create a diagram showing matter that changes from a solid to a liquid and a liquid to a solid by heating and cooling.
5. Explain how matter changes during heating and cooling by describing its weight and volume.
6. Compare and contrast the volume and shape of water in various containers.
7. Create a weather station using various scientific tools to measure weather conditions.
8. Compare and contrast the words weather and climate, paying attention to describe the ways that they are connected.
9. Develop a diagram describing the changing weather conditions in various seasons.
10. Create an illustration, drawing, or video summarizing the stages of an animal's life cycle.
11. Explain how the life cycle begins at birth followed by a period of time in which the animal develops into an adult.
12. Write an explanation of the similarities and differences between the life cycle of two animals.
13. Analyze an image of two parent animals to predict what traits may be inherited by their child.
14. Create a list of inherited traits that a child received from each of their parents.
15. Compare and contrast the traits inherited by groups of siblings.

Resources

Links and online resources to allow you to support your child's learning.

- PBS Learning Media Science

- Study Jams Science
- Kids Discover Online
- The National Science Digital Library

At-Home Connections

- Tell me how:
  - We can use our bodies to make a sound.
  - The television, tablet, or phone is making a sound.
  - We hear the sound of songs on the radio.
  - Our bodies use vibration to both make and hear sounds.
  - You can determine the state of matter of an object.
  - You can change the state of matter of an object.
  - Solid, liquid, and gases are alike and different.
  - We can discover the weather conditions outside.
  - Our outside environment changes depending on the season.
  - Air pressure affects the weather we experience.
  - A puppy is different from a baby.
  - The eggs we eat for breakfast differ from those of a frog.
  - You can identify the stage of the life cycle a family member is at.
  - A toy dog is similar and different from a real dog.
  - A trait that a squirrel has learned to survive.
  - A plant can grow from a seed.
- Real-world application:
  - Tapping the sides of multiple glasses of water to hear the changes in pitch.
  - We can feel the vibration of our vocal cords when we talk.
  - Practice changing the pitch of our voices.
  - We can alter the direction of sound waves by cupping our hands by our mouths and ears.
  - Take a tour of a store, challenging your child to identify the state of matter of products being sold.
  - Demonstrate how water can change states of matter using the stove/microwave and the refrigerator/freezer.
  - Go outside early in the morning to observe the dew forming on the grass.
  - Watch daily weather reports from a local news station or newspaper to observe weather patterns.
  - Create a home-made weather station using household items to track changing weather.
  - Take still photos an outside environment during different seasons to compare and contrast together.
  - Order a set of painted-lady butterflies from an online store. Together you can observe the stages in the life cycle of a butterfly over the course of 2-3 weeks.

- Take a nature walk looking for signs of animal life at different life cycle stages.
- Look back at photographs of your child as a baby and discuss the ways that they have changed over the years.
- Analyze images of family members. Describe any traits that a commonly inherited.
- Look at a pair of flippers used to swim and describe how it is similar to the webbed feet of a duck.

Challenges to Anticipate

- Each unit contains a large amount of domain-specific vocabulary. These words may be difficult to understand and pronounce. Be sure to review the vocabulary words included in each lesson your child is working on.
- Students may need support differentiating concepts like pitch and frequency.
- Students may also struggle to understand the parts of the body involved in the creation of and hearing of sound.
- Students may need reinforcement on the concept that the small bones in our ear also vibrate, which is different from the function of the rest of the skeletal system.
- Students who are hard of hearing may need specific adaptations to accommodate their learning. Consider having students feel vibrations from a speaker or vocal cords.
- Students may need support differentiating the attributes of the three stages of matter.
- Students may struggle with the difference between volume and shape.
- Take time to explain that volume is a multiple meaning word, and means something different in Unit 2: Matter than in Unit 1: Sound.
- The idea of high and low air pressure may be difficult for some students to understand, be sure to return to the concept in Unit 2 that gas takes up space.
- Students may need support understanding the difference between weather and climate.
- Many students might believe that a thermometer is the only tool needed to measure weather, consider having students experience wind chill and humidity using fans or by creating steam in a bathroom.
- Students may need support differentiating that egg, larva, and pupa are all stages of the life cycle that occur for different animals. While these stages are all similar, the appearance of the stage varies from animal to animal.
- Students may struggle with the concept that a life cycle ends in death. This topic is sensitive to many students and may need to be handled delicately.
- Students may need reinforcement that all animals have their own life cycle.
- Discussion around inherited traits may touch on difficult home dynamics. Ensure that the topic is broached carefully.
- Stay in contact with your child's teacher to become aware of any misconceptions that may occur.

Communicating with Your Child's Teacher

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Still feeling stuck? Reach out to your child's teacher to discuss what you can do further your child's learning. Some questions that might guide your discussion:

- What resources would you suggest I use to support my child?
- Where do you see my child struggling? What can we do together to help?
- What should my child practice at home?
- What collective message can we send together to help my child learn?

Need Technical Help?

Reach out to your student's home school for technical assistance. Include the type of device (PC, Mac, Chromebook, etc.) and browser (Chrome, Firefox, Safari, etc.).

Citations

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