



Science

Supporting Science at Home

Grade 4

Theme 1	<ul style="list-style-type: none">• Animal and plant structures for survival• Animal senses• Structure and function of eyes• Using codes to communicate	<p>Point out physical structures of family pets or neighborhood animals. Discuss why the ears, nose, eyes, fur, claws, teeth, etc. are suitable for helping that animal survive.</p> <p>Observe plants in your home, yard, or neighborhood. Ask your child questions about why leaves have the shape, size, and texture they have. Point out bees and other pollinators near plants during the warm months.</p> <p>Do an experiment where your child has to notice the difference in how he or she perceives color in a brightly lit room versus a dark room with very low light. Discuss how light helps us see colors and shapes more easily.</p> <p>Let your child look at your pupils in bright light and in dim light to notice how pupils expand and contract to control the light entering the eye.</p> <p>Do an online image search for Morse Code and ask your child to make up a message in Morse Code for you to decipher. Discuss other ways codes are used to communicate. Examples could be: computer code, naval semaphore flags, or drum patterns.</p>
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Theme 2	<ul style="list-style-type: none">• Topographic maps• Location of mountains, earthquakes, and volcanoes on Earth.• Structure and function of waves including seismic waves, sound waves, and ocean waves.• Amplitude and wavelength of waves• Weathering and erosion• Fast and slow changes in land over time	<p>Point out examples of topographic maps that may be around the home, or do an internet search for images of topographic maps. Discuss how they help people understand the land.</p> <p>Look at a map of the U.S. or the World together. A topographic map will show places where mountains happen. Talk about the way tectonic plates push together to form mountains very slowly over time.</p> <p>Notice and discuss how sounds can be changed in different situations. Listen for an ambulance siren and notice how the pitch changes as it drives past you. Notice how it's harder to hear a sound that is far away because the waves have less energy when they reach your ear drum.</p> <p>Look at waves happening at the beach, a local pond, or even in the bathtub! How do waves of water affect the motion of objects floating on them? Put a rubber duck or other floating object in the bathtub and notice how it bobs up higher the more energy is put into the water wave.</p> <p>Ask your child to look for places of apparent erosion in your yard, neighborhood, or in parking lots. Look for crumbling or cracking rock or cement. Point out places where the grass has been worn away and observe how much easier it is for soil to be blown or washed away when there is no grass over it.</p>
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Theme 3	<ul style="list-style-type: none">• Energy transfer• Electricity and circuits• Collisions	<p>Point out power outlets in your home, the electric meter on the side of your home, and power lines in your neighborhood. Discuss with your child how electricity travels from the original power source to your home.</p> <p>Read the book “Wired” by Anastasia Suen. It tells the story of how power is generated for communities and travels all the way to your home outlets.</p> <p>Find examples of circuits in your home. Find an old toy that has sound or motion, remove the batteries, and let your child take it apart to study the circuits inside. This may require the use of a screwdriver or other tools, so only do this with adult supervision.</p> <p>Play games to study how objects react to collisions. For example, observe what happens to a ball when it is kicked or hit with various amounts of energy. If you have access to a pool table, this can also be a great way to show how energy is transferred among objects that collide.</p>
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Theme 4	<ul style="list-style-type: none">• Renewable and Non-Renewable Energy Sources• How energy use affects the environment• Engineering Design (tsunami-resistant house)	<p>Talk to your child about where gasoline comes from when you're at the gas station. Have a conversation about the pros and cons of hybrid vehicles and electric vehicles.</p> <p>Discuss why burning gasoline or fossil fuels is harmful to the environment.</p> <p>In the engineering design unit at school, students will be designing and building models of a house that can withstand the dangers of a tsunami or flood. Consider showing your child footage of a tsunami or its aftermath to build background knowledge. Think about how homes are designed to protect us from natural disasters. Ask your child questions like: Why aren't most homes in Anne Arundel County on stilts? Are there places near us where homes are designed to protect from flooding?</p>
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