

Children are born scientists. They use their senses to explore, experiment, wonder, guess (hypothesize), and share their findings with others. California Science Content Standards are physical, life, and earth sciences, investigation, and experimentation. Here are some science experiences that align with these standards.

Cause and Effect

Domino Trails Provide your child enough blocks of different sizes for them to line up so they can create a domino effect when knocking the blocks over. Begin by lining up 3-4 blocks close together and 3-4 blocks further apart and asking them what will happen when the first block is knocked into the second one.

Will both sets of blocks knock over in the same way? This example will provide your child the knowledge that blocks being closer together will continue to knock over the next blocks in the trail. Have them try using different sizes of blocks and create different lengths of "trail".

Note: You can provide masking tape to create their own length of trail either in a straight line or a slight curve. Your child can measure the length of their "trail". Make a graph of the number of blocks used and/or length of trails. They will gain an understanding of how one action (lining up blocks) and a second action (pushing them into the next block) will create a result.

How Plants Drink Provide your child with either a white carnation or stalk of celery (or both). Have them place their celery or flower in a tall clear container that is filled with water. Ask them how they think plants drink water and what would happen if food coloring was added to the water.

Allow them to add drops of food coloring to the water and have them predict what might happen. Document their responses. You can also have them draw/sketch their flower/celery (pre food coloring) and then draw it again once they see what actually happens with the food coloring.

This process will take awhile so revisit the flower on a regular basis until a discovery is made. Each flower/celery will take on the color of the water. Your child will visibly see how plants drink water and also the reaction that takes place when food coloring is added to the water and what effect it has on the plant.

Popping Popcorn In this activity, your child will experience what actually happens to corn kernels when they heat up. First, play a game of pretending to be popcorn kernels in a giant corn popper. Ask what happens when corn is heated up. Have them get into a small ball on the floor. Tell them the pan is getting hotter and hotter. What happens to corn as it gets warmer? What sound does

popcorn make? Your child can start jumping around wiggling their arms and legs, gently bumping into each other and making the sounds popcorn makes. If you have the music "popcorn" this could be played during this time. <https://youtu.be/kNjcdfZu3c0>

After a few minutes have your child, "popcorn", gather around a clean bed sheet. Tell them you are going to get to see what really happens to popcorn when it is popped. You will need a clear electric popper with an extension cord that will reach the middle of the sheet. Pour popcorn into the popper without the lid on.

Ask your child what they think will happen when the machine is turned on. How high/far will the popcorn go? They will experience what popping corn looks like as it pops out of the machine onto the sheet. Gather the popcorn in the sheet and eat. Your child will visibly see how heat reacts with the corn kernels and causes them to pop and change.

Movement of Objects

Rolling Along Provide enough materials for your child to create an inclined ramp (blocks, planks, cookie sheets etc.). They may work individually or with other family members to build a ramp as high as they want. Have several round objects that can roll down the ramps (marbles, ping pong balls, small rubber balls, Styrofoam balls, rocks, cars or other small toys).

Ask your child where they have seen ramps and what they are used for? Tell them that we will be making ramps and testing how far they can make something roll/slide down. Let them know they can use whatever they would like to construct the ramp.

Provide masking tape to measure the distance of each object. Have your child make predictions about how far an object will roll down or which objects will roll the fastest. Have them test out their predictions. Possible questions: Why do some objects roll faster than others? What are some of the characteristics of the objects that rolled the furthest?

Note: Your child could create ramps out of recycled materials. Encourage them to create different heights of ramps to see if it makes a difference in the rolling of the objects. Find other round objects in the room to roll down the ramp. What about outside? This activity will give your child an opportunity to experience how heavier denser objects may roll faster than lighter ones.



Movement of Objects

Spinners Provide your child with small plastic lids. For example, margarine or cottage cheese lids, small cardboard circles, and small paper plates. Have them use a push pin to poke a hole in the middle of the circle. Your child can decorate the spinners with crayons or markers. Push a round toothpick through the hole and they are now ready to spin the tops. Notice how your child is spinning them. Some children may need some help getting started.

Your child can also make predictions about how long the top will spin. **Options:** provide square or triangle shapes for your child to use. Provide a thin marker and push through a yogurt lid. Spin on paper to make different designs. Questions to ask: Do the tops spin the same? What might happen if the hole was not in the middle, but to the side of the spinner? Let your child experiment and test out their theories.

Effect of Water on Objects

Sink or Float? This activity requires a bowl, bucket, or tub to provide at least 4–6 inches of water. Your child will have an opportunity to find out if certain objects float or sink. Provide a variety of objects such as corks, pieces of foil, Styrofoam, paper clips, wax paper, shells, buttons, toothpicks, leaves, twigs, small pieces of play dough, fabric, rocks etc.

Have your child predict which of the items will sink or float and then have them try out their predictions. Encourage them to share their discoveries. Now ask them if there is a way to make the items that sank be floaters and if the items that floated can sink.

You could ask your child to share their thoughts about how to accomplish this and then have them try out their ideas. They can also look for other items to try to sink and float. Encourage them to try different combinations of objects to see if they sink or float.

Mixology Provide your child with a variety of dry materials. Liquid can be added to (corn starch, flour, baking soda, dirt, sand, etc.). Provide a few different liquids (water, vinegar, club soda).

Place the labeled dry materials in bowls in one area with scoops for your child to access. Labeled liquids can be placed in small pitchers. Ask them what scientists might do with the materials they see on the tables and record your child's responses. Tell them they are going to act just like a scientist and experiment by mixing together some of the solids and liquids that are on the table.

Provide your child with a few plastic bowls and a spoon. Encourage them to explore and find out what happens when they mix certain ingredients together. Your child will discover that adding vinegar to baking soda will create bubbles; adding water to cornstarch will create a different consistency.

As your child starts to see how different liquids have an effect on each other, document their discoveries. Just like a scientist does, your child can write or draw what they discover.

Scientific Tools

Magnificent Magnifiers Go on a walk around your neighborhood with your child and collect a variety of objects (leaves of different sizes and shapes, rocks, flower petals, weeds, tan bark, twigs etc.). You can also have some other objects available to look at such as various shells, bark from trees, flower buds, rocks of various shapes, sizes and colors, fossils etc.

Provide your child with a magnifier, paper, crayons, pencils, and markers. Discuss what magnifiers might be used for and who uses them. Let them know that they will be scientists as they explore their collections with a magnifying glass (as well as what you brought).

Encourage your child to draw what they see under the magnifier. Invite them to label each object they draw with a comparison drawing. Questions to explore: What do you see? How does it look different with the magnifier, without the magnifier?

Your child will understand that magnifiers give more detail and enable them to make discoveries they would not be able to do without magnification.



Movement of Objects

Eye Dropper Play Provide your child with an eye dropper. Ask them if they have ever seen this tool and how it might be used. To practice, your child can dip their dropper in a small cup of water and practice drawing water up into it and squeezing it out. Ask them what they think they would have to do to squeeze out only one or two drops. Demonstrate how to do this if necessary.

Your child can experiment with dropping liquid water colors onto different surfaces to discover what might happen. Provide them with small containers of liquid water colors (primary colors) and one with just water. Have a variety of different surfaces to drop their paint/water onto. Examples: construction paper (wet and dry), tissue paper, foil, wax paper, paper bags etc. Your child will gain experience using the eye dropper and make discoveries about how colors and liquids respond differently to the surfaces.

You can set up challenges such as: How many drops can you get close together without touching each other? What happens to the color when you use four small drops of yellow and one big drop of water? How would using small drops differ from using big drops? What happens when drops are put onto foil or wax paper? Observe how they are using the eye dropper and discoveries are made.

Variation: Give your child a penny or other item with a small surface area. Have them guess how many drops of water will fit onto it. They can practice using a scientific tool, discover how water reacts on different surfaces and experiment with blending of colors using water based paint.

Measuring/Graphing

How Far Can You Jump? Ask your child how far they can jump. Ask them how they might measure how far they can jump. What could they use? Your child may say a ruler. Encourage them to think of other ways to measure how far they jumped.

Help them understand they can measure anything if the object is the same length. Next, ask them to jump and then take off your shoe and use it to show how many shoe lengths it takes to measure the distance. Ask for other ideas of what could be used to measure the length of jumps.

You could go on a measurement hunt in the house (or outside) and have your child find objects to use (block, crayon, toothpick, Popsicle stick, pencil etc.). This will help them understand that measuring can happen in many ways. Give them a piece of paper and have them draw what they used to measure their jump (could be more than one jump) and how many times they used the object (7 blocks, 20 toothpicks etc.). Another option would be to have several objects of measurement drawn on a piece of paper for your child to document how many lengths was used to measure their jumps.

Variation: They could also try measuring different objects (i.e. arms/ legs or another distance) and using different tools to measure with. Your child will learn that measuring can be done using a variety of objects as long as they are the same length.

Prediction

Sprouting Seeds Ask your child what seeds need in order to sprout (begin to grow). What happens if a seed has water, but no sun? What happens if a seed has no water, but has sun? Create a chart with these questions and document your child's predictions.

Provide your child with a fast growing seed (sunflower or bean). For the first experiment, have them place a seed on a damp paper towel. Place it in a zip lock baggie that they have labeled Sun and Water (picture or dictation is ok if your child doesn't yet write). Place in a warm, sunny place. Have your child help figure out where that will be (inside or out).

In the second experiment, place a seed on a dry paper towel and place in a plastic zip lock baggie. Have your child label with Sun and no water. Predictions: What seeds will sprout first? Last? Encourage them to also think of other experiments, could the seeds go in a closet? What would happen if it is placed in the refrigerator?

Have your child check seeds daily. When seeds have sprouted you can help them plant it in soil to continue growing. They can predict how long it will take for their plant to "pop out" above the soil.

