

# SCHOOL AGE

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Week

25

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Smart Activities



SMART CHOICE. SMARTER CHILD.®

## Milk into Plastic

**Materials:** milk (2% or less - you can even use chocolate milk to add smell to your figure), white vinegar or lemon juice, food coloring (optional), bowl, spoon, strainer, paper towels, molds (i.e. Lego® minifigures, dinosaur molds, silicone molds, or other tools for shaping), microwave, jar

**Preparation:** Gather materials.

**Instructions:**

1. Measure out 1 cup of milk.
2. In a bowl, heat up the milk in microwave at 50% power for five minutes.
3. Next, add 4 tsps. of vinegar or lemon juice. Stir gently for about one minute. (You will notice the milk immediately begin to curdle like the nursery rhyme "Little Miss Muffet" eating her curds and whey.) Add your desired coloring using food coloring if you want to add color to your project.
4. Then, strain off the whey using a strainer or if you have a cheese cloth you can do it this way. (Ask your parents.) Let the mixture drip for a few minutes until almost all the liquid has drained off. Gently smooch the curds around in the strainer as needed.
5. Now, remove the curds and place them on a few layers of paper towels. Carefully pat and squish to remove any remaining liquid. You will need to replace the paper towels and do this a few times to ensure the liquid is removed as much as possible. They will look crumbly but can be reshaped.
6. Place the curds in a jar or bowl soaking in vinegar for an hour if you want a smoother product. Once the hour is up repeat step 5 and your curds will not look as crumbly.
7. It is time to put your curds in your molds. Use cookie cutters or you can even shape the curds to create beads. (If you want to make beads, use a skewer to put a hole through it before setting aside to dry.)
8. It takes about 2 days for the drying process, but you can remove your object from the molds after 24 hours helping with the drying time. Once it is dry, clean up any rough edges using your fingers or sandpaper.
9. It is hard like plastic and now you can use acrylic paints or markers to decorate.



## String Art Masterpiece

**Materials:** wood slice or small square shape of wood, scrap piece of wood (big enough to go under your project), hammer, nails of various sizes, (common nails work best - since most plywood is about 1/2" thick, you probably want to look for 3d & 4d sized nails), string or yarn in different colors, scissors, liquid watercolor paint, bowls, paintbrushes, old toothbrushes (if you want to splatter paint), marker

**Preparation:** Gather materials. Place a piece of scrap wood under the wood slice to protect your work surface from nails going through the wood.

**Instructions:**

1. Draw out your design on the wood or just make your pattern as you go.
2. Then, start hammering your nails in following your drawn lines.
3. Cut your string. It does not have to be set lengths but do not make it too long or it will get tangled. Taking one end of the string, tie a knot around a nail (your anchor point). Pull the long end of the string to another nail and wrap it underneath the nail head. Tie the other end of the same string to the nail you ended on.
4. Repeat this process (tie – stretch – wrap – stretch – wrap – tie) as many times as it takes, with as many colors as you would like. The strings can be woven under or over one another as well as stretched to reach opposite points.
5. Splatter-paint the wood using your old toothbrush and paintbrushes! Fill bowls with watercolor paint and paint your masterpiece.

Variation:

Try this project with rubber bands or hair bands and use it like a geoboard.



## Straw Roller Coaster

Did you know LaMarcus Adna Thompson patented the first roller coaster on January 20, 1865 in the United States. He named his ride the "Switchback Railway," and workers pulled the carriage to the top of the track. The first modern steel roller coaster was the Matterhorn Bobsleds at Disneyland. It opened in 1959.

**Materials:** ping-pong balls, straws (solid colors), low-heat hot glue gun (**Adults or supervision**), cardboard box, bowl or container (to catch the ball)

**Preparation:** Gather materials.

**Instructions:**

1. First, have your child think and design how he/she would like his/her roller coaster to look. Remind your child that this will be trial and error.
2. While your child is designing the track, set your cardboard box upside down or piece of cardboard for the base. Remind your child that the track will consist of 2 straws set apart horizontally wide enough to hold the ping-pong ball. Look at this website for inspiration and guidance: <https://frugalfun4boys.com/engineering-project-kids-build-straw-roller-coaster/> .
3. Encourage your child to begin at the top and work to the bottom. Show him/her how to hold the straws while you place glue around the straws. This is definitely a great project for partners. (Tip: cutting some straws into small pieces and placing next to the vertical straws can give additional support to hold up the track. Also, test it out as you build to ensure the ball can roll on the tracks.)



## Inflating Balloon Bottle

**Materials:** plastic bottle of soda, pack of Pop Rocks®, balloon, funnel

**Preparation:** Gather materials.

**Instructions:**

1. First, attach the balloon to the bottom of the funnel.
2. Next, pour the Pop Rocks into the balloon.
3. Then, take off the top of your soda bottle.
4. Now, carefully stretch the opening of the balloon to cover the opening of the bottle. (**Do Not Let the Pop Rocks spill into the bottle!**)
5. Then, stand up the balloon and shake the Pop Rocks into the bottle.
6. Now, wait and watch! What happened to the balloon? Why do you think this happened?



**The reason behind the Why:** Pop Rocks candy is pressurized carbon dioxide gas. Each of the tiny little candy pebbles contains a small amount of the gas. The balloon inflates from the carbon dioxide contained in the candy. The candy isn't enough to start the inflation. The soda will cause this because it is pressurized carbon dioxide gas. Once you have dropped the candy into the soda, the carbon dioxide gas will cause the balloon to inflate because it has nowhere to go in the bottle.



## Foil Painting: Van Gogh

**Materials:** foil, 8x11 piece of cardboard, tape, cotton swabs, various colors of paint (yellow, blue, black, white, orange), paper plate

**Instructions:**

Here you will see a picture of Vincent Van Gogh's famous painting "Starry Night." You will recreate this painting on a foil canvas using paint and Q tips.

1. Prepare your workstation with newspaper or other material to protect it while you paint.
2. Using the foil, cover your cardboard with foil.
3. Wrap the foil of the edges of the cardboard piece.
4. Using tape, secure the foil tightly on the back of the cardboard. Be careful not to rip the foil by pulling too hard on it.
5. Squirt a small amount of each color of paint onto a paper plate.
6. Begin recreating "Starry Night" using a mixture of blues, yellows, white, and black.
7. Look closely at the painting, you will see that he used circular brush strokes in many areas of the painting.
8. Once you feel your painting is complete, find a great place to put it on display!



## Cooking: Fruit Rockets

**\*CAUTION:** Wash hands for 20 seconds before and after this activity.

**Materials:** large marshmallows, strawberries, other fruit you have available, food skewers, butter knife, cutting board, large plate

**Preparation:** Prepare your materials at the table or counter in the kitchen.

**Instructions:**

1. Wash all fruit that you will be using.
2. Carefully cut strawberries in half and remove the green leaves from the top.
3. When your fruit is prepared, you can begin making your rocket skewers.
4. Set aside the halves of strawberries that are pointed on one side. These will be placed last on each skewer as the point of the "rocket."
5. Layer your fruit and marshmallows in the order you wish pushing them halfway down the skewer and working your way towards the end.
6. When you have room for one more piece, add your strawberries that you set aside that are pointed.
7. Continue this until you have made your desired amount of Fruit Rockets. Enjoy this delicious treat with your family!



<https://www.mamacheaps.com/fruit-space-rocket-snack/>

## Heartbeat

### How does blood flow through the heart?

We have four chambers in our heart, the right and left atrium and right and left ventricle. Blood will flow in only one direction – into the heart, to the lungs to be oxygenated, back into the heart, then back out into the body. The four valves of our heart are important for ensuring this one-way blood flow. We have 4 heart valves. The Tricuspid and Mitral are located between the atrium and ventricle. The Aortic and Pulmonary valves control blood flow out of the ventricles into the arteries.

**Materials:** 3 plastic water or soda bottles with caps (labels removed), 4 bendy straws, 3 cups of water, pitcher, food coloring, tape, playdough, drill or sharp tool (**Adults only**)

**Preparation:** Bottle caps - drill 2 holes (one small and one straw-sized) in one of the caps and the second cap drill two holes that will fit the straw (the third cap is a backup).

### Instructions:

1. In a pitcher, mix your water and food coloring to create your “red blood.”
2. Take two straws, stretch and bend them to create a 90-degree angle. Slide one straw into the other straw (pinch one to make it smaller so it slides in), then tape up where they join. Repeat with the second set of straws.
3. Place your three bottles on the table. Fill the first two with your water to about 80% full. Leave the third one empty.
4. On the first bottle, place the cap with one straw hole and one small hole. On the middle bottle, place the cap with two straw holes. Leave the third bottle without a cap.
5. Carefully slide the straws through the bottle caps. Place playdough around the straw bases on the middle bottle to make an airtight seal with the bottle cap. You are now ready to put your heart model to work!
6. The first bottle is the atrium of the heart, the second bottle is the ventricle, and the third bottle represents either the lungs or body. Your fingers will function as the valves of the heart.
7. Next, begin to squeeze the middle bottle only. Start by pinching the straw between the atrium bottle (1<sup>st</sup> bottle) and the ventricle bottle (2<sup>nd</sup> bottle) and watch the blood squirt into the body (3<sup>rd</sup> bottle). *When you pinch the straw between the first two bottles, you are mimicking the Tricuspid or Mitral valves. When you pinch the second straw you are mimicking the Aortic or Pulmonary valves.*
8. Keeping the middle bottle “squeezed” move your fingers and pinch the straw between the ventricle and body. Now, release the middle bottle and watch your blood move from the atrium into the ventricle.



## Balloon Stretch and Poke

**Materials:** 6 balloons, permanent marker, freezer, lip balm or petroleum jelly, skewer

**Preparation:** Gather materials.

**Instructions:**

1. Mark two balloons with a marker (X marks the spot) and cool in the freezer for at least two hours. Leave the other two balloons at room temperature.
2. Take a room temperature balloon and blow a breath of air into it and continue blowing breaths into it. (Is it getting harder or easier to blow into the balloon?).
3. Let the air escape from the balloon.
4. Now, take one of the balloons out of the freezer and repeat step 2. Was it harder to blow up this balloon?
5. To make a fair comparison of which is harder to blow up, repeat the process with one room temperature balloon and the other balloon from the freezer. Which one was easier?
6. Now, take one of the room temperature balloons that you just blew up and blow it up until you are afraid it may burst. Let the air escape.
7. Lay a new balloon next to the two other used room-temperature balloons. *Think about: In what ways do these three empty balloons look similar and different?*
8. Now let's do something a little different. Rub some lip balm on the skewer starting from the tip.
9. Blow up one of the balloons until about 2/3 full and knot it so the air is trapped. *Think about: What do you think will happen when we poke the balloon with the skewer?*
10. Look at the blown-up balloon. Poke the balloon to pop it. Did it pop?
11. Inflate another balloon until it is 2/3 full and knot it. Think of where you could poke the balloon without popping it. (Hint look at the rubber near the knot of the balloon where it is darker. This is where there is still stretch available.)
12. Keep trying with the balloons until you can poke the skewer through without popping it.



## DIY KITE

**Materials:** internet access, two sturdy pieces of colored paper, pencil, stapler, string, markers, scissors, website: <https://youtu.be/dismSOx3q0g>

**Preparation:** Begin by watching the video at the link above.

**Instructions:**

1. Begin by decorating your piece of paper that you are going to use as the main part of your kite. You can use markers, crayons, stickers, etc.
2. When you have finished decorating your paper, fold it in half with your design on the inside of your fold.
3. Using a pencil, draw a small line in the middle of your paper on the creased side. Next to that line, draw another line closer to the edge of the paper as shown in the video.
4. Take one corner of the top of the paper and fold it down to touch the line closest to the edge. While continuing to hold the corner to the line, repeat the same on the other side.
5. You should now be holding both corners of the paper between your fingers in the same spot.
6. Using your stapler, staple both corners at the same place where you are holding them as shown in the video.
7. Place a staple on the other pencil line in the middle of the paper.
8. Using your string, thread it through the small lopes of the staple and tie a tight knot.
9. Using the other piece of paper, you will create a tail for your kite. You can create the tail as they do in the video or you can design your own long tail for your kite.
10. Attach your tail to the back of your kite using a staple.
11. Your kite is now ready to try out!!

Take your kite outside in a safe area and try flying it! Start running! How does it fly? Have fun watching your kite soar up high!



## Paper Plate Marble Racetrack

**Materials:** paper plates with a rim (do not use the cheap paper plates), marbles, cardboard tubes, tape, glue, scissors

**Preparation:** Gather materials.

**Instructions:**

1. First, draw or plan out a design on how you want your track to go. Do you want it to go in a circle? How about looping around? How high do you want your racetrack? Do you want the marble to travel through the cardboard tubes? Are there other tubes or obstacles you can add to the track? Think and plan it out before starting. Plan to place a plate or bowl to catch the marble so you do not have to go looking for it.
2. Then, cut the rims off your plates and cut cardboard tubes to desired lengths.
3. Now, begin building your track using tape and/or glue to attach your pieces together. Look at the pictures below for inspiration but make it your own.

**TIP:** Try out your marble racetrack as you build it to make sure it is working from the beginning of your track.

