



SfS Away from the Classroom!

AP15: All About your Heart (Recommended for Grades 3-8)

Please use the following resources to learn about our heart and circulatory system!

Watch this Video: <https://www.youtube.com/watch?v=CWFyxn0qDEU>

Answer these questions:

- Where is your heart located?
- What is the role of lungs in our circulatory system?
- Why do we need our heart to keep beating all the time?

Activities: Follow these directions to build a styrofoam cup model of the heart:

You will need:

<ul style="list-style-type: none">• Styrofoam or plastic cup• Water• 2 straws	<ul style="list-style-type: none">• Large balloon• Rubber band (optional)• Tape	<ul style="list-style-type: none">• Sink• Scissors• Toothpick or skewer
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1. Fill the cup with water. The cup acts as the model for the heart and the water is the blood.
2. Cut the neck of a large balloon off with scissors. Use the largest balloon available to you. Set the neck aside for later.
3. Stretch the balloon over the cup's opening. Pull it down over the cup as tightly as possible, the surface of the balloon should be as flat as possible. This is the diaphragm in your model.
4. Poke 2 holes into the balloon's surface with the toothpick. Gently press down on the surface of the balloon with the sharp end of the toothpick to create the holes. Try to make them roughly the size of your straws' diameter or slightly smaller. Be sure to create each hole on opposite edges of the balloon about 1 inch (2.5 cm) apart.
5. Insert the 2 straws into the 2 holes. Gently insert each one to avoid ripping the balloon. Be sure that the straws fit snugly into the holes so that no air escapes. These are the arteries in your model.
6. Wrap the uncut part of the balloon neck or a rubber band onto 1 straw. This is to close the opening of the straw so that no air can escape. After sealing the opening of the straw, tape it to hold it in place. This will act as a valve for your model heart.
7. You can now pump the model heart into a sink by pressing onto the balloon (diaphragm). Start by aiming the open straw into a sink, which will act as the body. Gently press one of your fingers down onto the center of the balloon. Each time you press down, the water (blood) from the cup is pumped through the straws (arteries) and into the sink. Try pressing gently, which will model normal breathing, and then pressing harder which will model deeper breathing - like when you run or jump a lot. How does your model heart work for each test?



8. Experiment by removing the seal from the 1 straw so both straws are open. Press down on the balloon. Does the model heart work the same way? What's different?

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** When I'm active and my breathing is deep, my heart pumps more blood through my body.
 - **Evidence:**

 - **Reasoning:**

2. **Claim:** Heart valves are necessary for a heart to pump blood.
 - **Evidence:**

 - **Reasoning:**