



How People Make Things

Rich Task Activity

Cutting

This engaging rich task has been developed by the Education Department at the Children's Museum of Pittsburgh. Rich tasks are open-ended investigations designed for you to work alone or in a group and may be conducted during, before or after your visit to How People Make Things to enhance your experience.

Soap Cutting

Cutting is when material is removed to form a new shape. In manufacturing, people use machines to cut material. By using machines, people can cut large amounts of material at one time. A tool is determined by the material needed to be cut. Some tools are designed to be used and reused to make the same exact shape. For example a die cutter, like a cookie cutter, cuts a shape over and over again. While other cutting tools are used to cut in three-dimensions, like a **lathe**.

In this activity, you will use the cutting process to make a soap sculpture using everyday tools found at home or school.

Suggested Materials

- Several bars of **soft** soap (enough for each person to make one soap sculpture)
- Suggested tools to cut soap
 - pencil
 - craft sticks (the ones that look like sticks)
 - toothpicks
 - fork
 - paperclip
 - any other household items
- Newspaper

Task Tools

- Observation Page (see Rich Task Tool Sheet)
- An inquiring mind!

Procedures/Investigation

- Use newspaper as your work surface floor to catch the pieces of soap that you will carve off the bar of soap.
- Support the soap in the hand you do not write with. Don't hold it too tight. You could crush the soap or cause it to overheat. Your hand creates heat and the longer you work with a bar of soap, the softer it is will become.
- Use your pencil and very lightly sketch any major parts of your design directly onto the soap.
- Use a craft stick to being scraping off small portions of the soap bar. Use gentle, yet firm, motions.
- As you gradually begin to form the soap into the shape you want, use a toothpick, fork, or paperclip to create detail work or unique textures.
- Use your fingers to smooth rough patches of your soap. The heat from your hands will help soften the soap and will make it easier to create a smooth surface.
- Small cracks in the soap sculpture can be repaired by dampening the area. You can use a wet toothpick to dampen the area and then use your fingers to smooth the cracks over.
- When finished, store your soap in a cool and dry location. Too much heat or exposure to moisture can cause it to lose its shape.

Teacher Hints





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- Be sure to lay newspaper on the floor, because soap scrapings can be quite slippery
 - Take your time. If you try to hurry the sculpting process, you'll likely crack or break the soap.
 - Keep a paper plate handy in case you what to periodically set the soap down and let it cool and firm.
 - Review the following definitions:
 - **Cutting** is when a material is removed to form a new shape
 - Die Cutters, like cookie cutters, are used to cut a shape over and over again. This cutting method is similar to using a **lathe**, a manufacturing tool used to removed material from all sides of an object. Baseball bats are turned on a lathe.

Questions to Think About

- How is this project similar/different from other forms of cutting?
- What were the steps you used in creating your shape?
- Why does the soap start to get soft?
- How can you change your shape or fix any mistakes?
- What are some cutting materials you could use, other then the items suggested?
- Can you think of anything else created in a similar way?

Ways to Extend Your Investigation

- Creating a soap sculpture is a 3-d model; have students draw their design on a piece of paper first to demonstrate the difference between two dimensions and 3 dimensions?
- Team up with the industrial arts teacher. Have students use a computer-aided drafting program to complete their 3-d drawings before beginning to sculpt.
- Bring in different items that represent the four different manufacturing methods. Have students figure which ones were created by the cutting process.

International Technology Education Association Standards

- ITEA STL The Nature of Technology – 3. Understanding the relationship between technologies and the connection between technology and other fields of study.
- ITEA STL Technology and Society – 6. Understanding the role of society in the development and use of technology.
- ITEA STL Technology and Society – 7. Understanding the influence of technology on history.
- ITEA STL Design – 9. Understanding troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
- ITEA STL Abilities for a Technological World – 13. Assess the impact of products and systems.
- ITEA STL The Designed World – 19. Understanding and selection and use of manufacturing technologies.

National Academic Standards

- NA-VA.K-4.1 Understanding and Applying Media, Techniques, and Processes.
- NA-VA.K-4.2 Using knowledge of Structures and Functions
- NA-VA.K-4.4 Making connections between visual art and other disciplines.



Soap Cutting

1. Before you begin this activity, predict what will happen to the soap. Will it be easy to carve your design? Why or why not?

2. List the different tools you use to carve the soap. Which ones do you think will be easier to use?

3. Did your soap crack or deform. If so, why and what did you do to remedy the situation. If not, what do you think you would do to remedy the situation?

5. Was your prediction from question 1 accurate? What happened differently? What may have caused this? _____

6. Describe your soap sculpture. Use as many descriptive adjectives as you can: _____

7. Describe some other cutting tools that you may use on a day-to-day basis. _____
