My World and Me™

RESOURCES AND THE ENVIRONMENT

Developing an Object or Tool

Written by Barbara Tharp, M.S., Nancy Moreno, Ph.D., and Paula Cutler, B.A.

from *Resources and the Environment Teacher's Guide* and for *Tillena Lou's Big Adventure*.

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This activity is part of the Resources and the Environment teaching unit. The *teacher's guide* may be used alone or with integrated unit components. The Resources unit is comprised of the guide, *Tillena Lou's Big Adventure* (storybook), and two supplements: *The Reading Link* and *The Math Link*. For more information on this and other educational programs, contact the Center for Educational Outreach at 713-798-8200, 800-798-8244, or visit http://www.bioedonline.org./

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Developing an Object or Tool

Students learn how resources are processed or transformed to create objects used in everyday life. Using pictures, they sequence the process of making an object from beginning to end (tree to chair, cotton to couch, etc.), and learn how tools and objects are designed to perform a function or solve a problem.

CONCEPTS

- We use resources from the living and nonliving components of the environment to meet our needs and wants.
- Humans make objects from natural materials.
- Simple problems can be solved through the development of an improved object or tool.
- The shape of objects helps them function as needed to solve problems.

SKILLS

- Observing
- Gathering Data
- Sequencing

TIME

Set-up: 10 minutes to make copies and to cut out the cards
Class: One class period

MATERIALS (see Setup)

Teacher Materials

- 12 sheets of white cardstock
- 12 resealable, small plastic bags

Materials per Two-student Team

- Prepared set of Process Cards

Throughout history, people have created objects that meet particular needs or solve problems. Our homes and the items inside provide many examples of how things are designed and created to fulfill a need. Technology, the practical application of scientific knowledge (or knowledge about the how the world works), is reflected throughout the spaces in which we live, work and go to school.

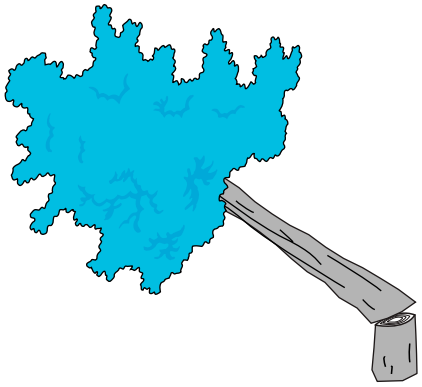
SETUP

Each of the six student sheets contain a different set of steps (or processes) needed to create one object. You will need 12 sets of Process Cards for a class of 24 students working in teams of two. Photocopy the student sheets onto cardstock. Cut out the cards and place each set of cards in a plastic bag prior to class.

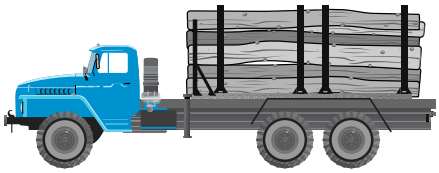
PROCEDURE

1. Distribute one bag of Process Cards to each student team.
2. Challenge students to place the cards in order, beginning with the first step. Ask, *Why is it necessary to make this item? Why do we need it? Does it make our lives more comfortable? Save time? Make a job easier? Could we get along without this item?*
2. As students finish a sequence, check their understanding and let teams trade cards with other groups.
3. Have students share their sequencing experiences. Ask, *Was the process involved in making any item more difficult or easier to figure out? How do you know you have the right sequence?*
4. Ask students to describe how the shape of each object contributes to its function. For example, the frying pan is convex, so that it can contain food; chocolate candies are small and round, so that they are easy to carry and eat, etc. Have each student think about a common object they use every day and sketch its shape.

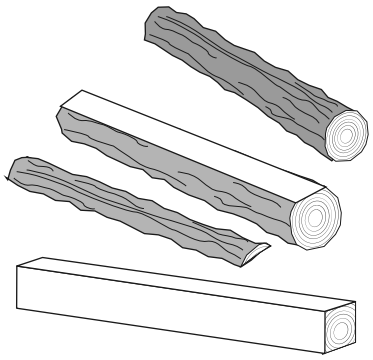
Process Cards: Wooden Chair



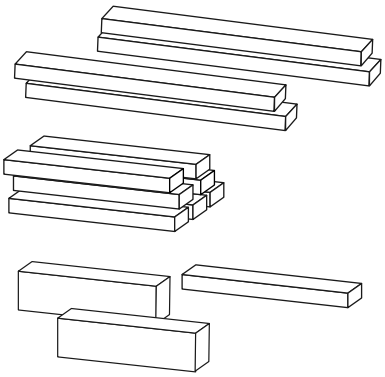
Cut down a tree.
Saw off the branches.



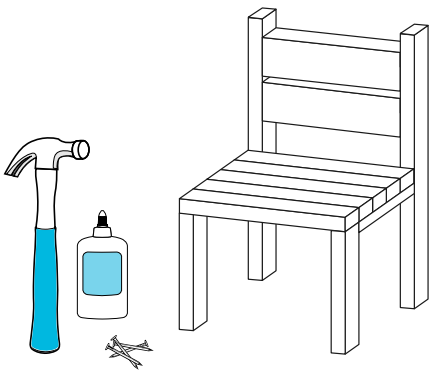
Transport the tree trunks
to a lumber mill.



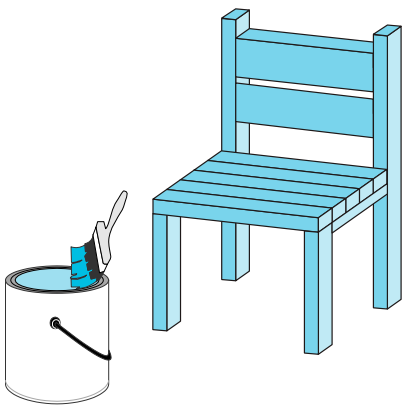
Saw the tree trunks
into boards.



Make different sizes and
shapes of the boards.

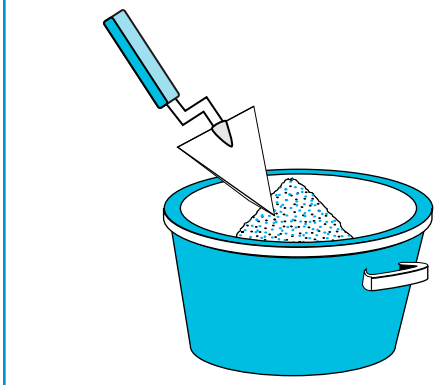


Use glue and nails to
put the boards together.



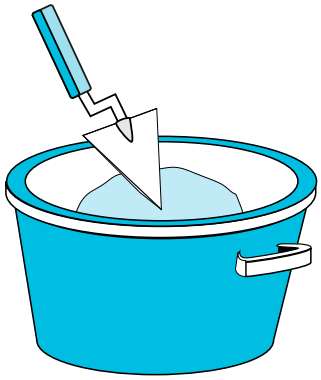
Paint the chair

Process Cards: Adobe Bricks

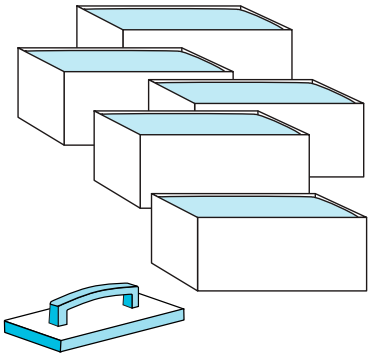


Mix fine mud and sand.

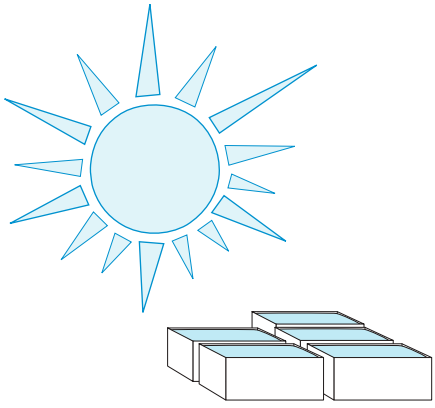
Add some water.



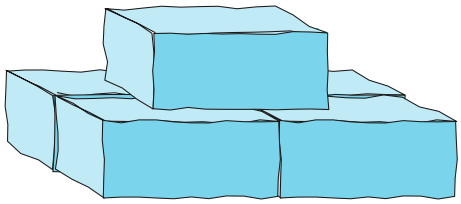
Mix until you can make a ball that sticks together.



Pack the mud mixture in boxes.

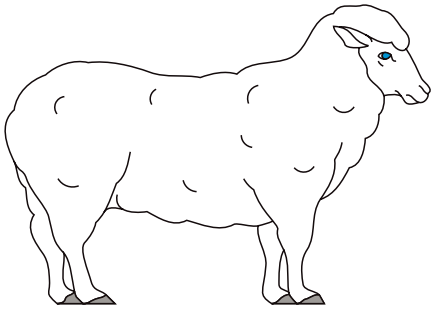


Let the mud dry in the sun.

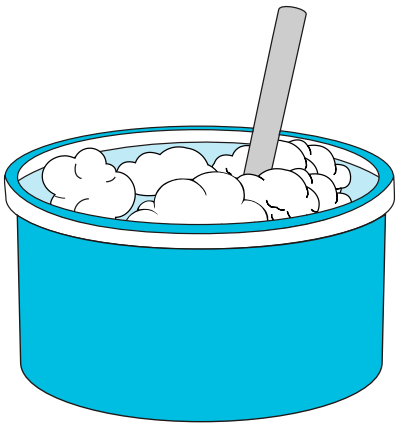


Remove the bricks from the boxes.

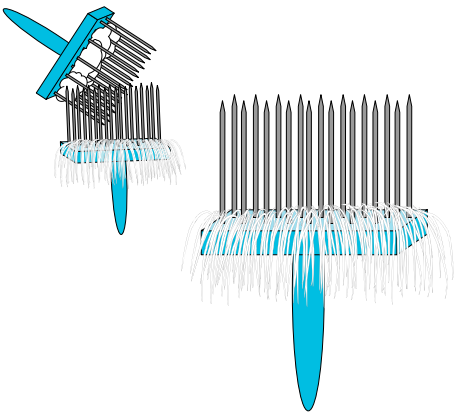
Process Cards: Wool Sweater



Shear the wool off of a sheep.

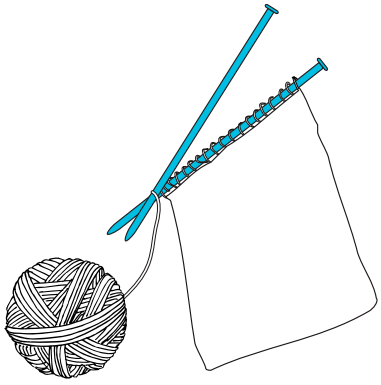


Wash the wool.

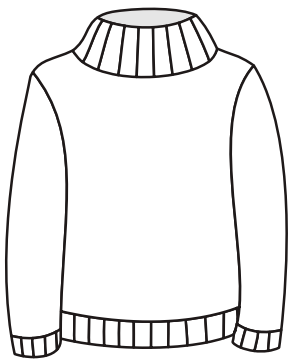


Comb the wool.

Twist the wool into yarn.

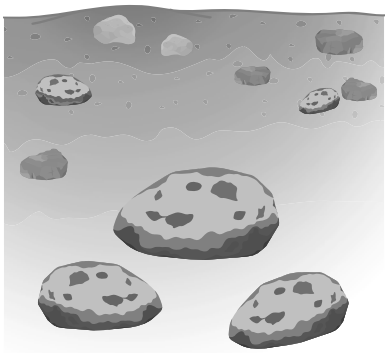


Knit the yarn
into different shapes.

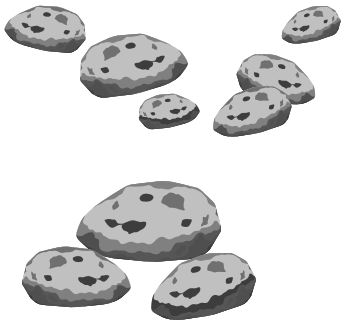


Sew the shapes together to
make a sweater.

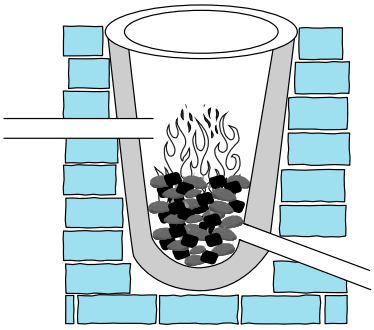
Process Cards: Frying Pan



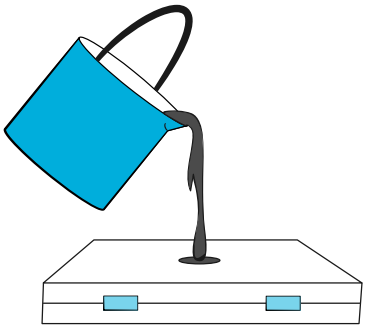
Locate minerals
in the ground.



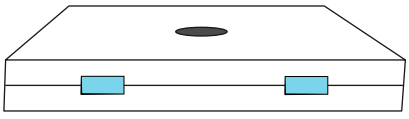
Take rocks with minerals
from the soil.



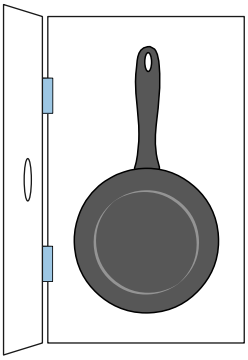
Heat the rocks in a furnace
to melt the minerals.



Pour the melted mineral,
iron, into a mold.

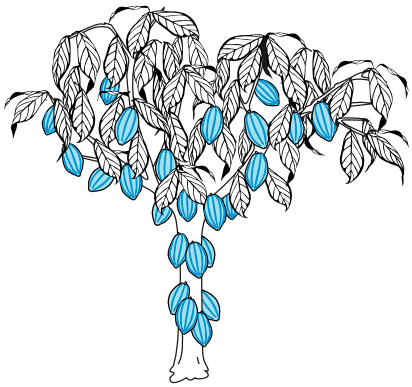


Let the melted iron cool
and get hard.

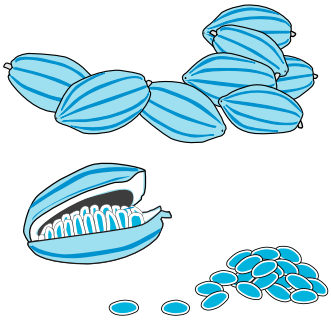


Open the mold.
Take out a new pan.

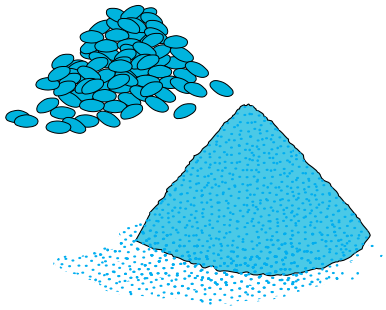
Process Cards: Chocolate Candy



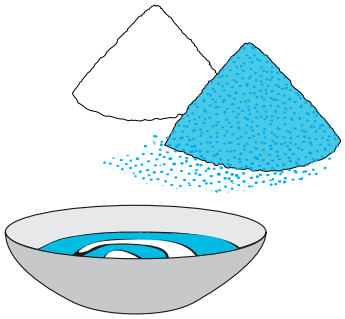
Pick the ripe cacao pods from the tree.



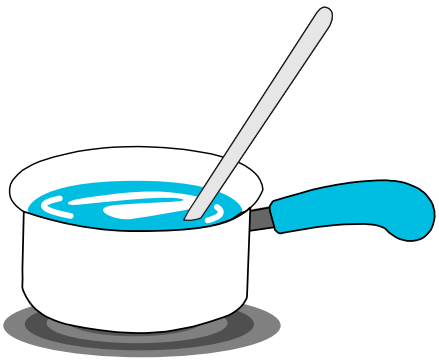
Remove seeds and pulp from pods. Let sit and ferment until the pulp sweats off the seeds.



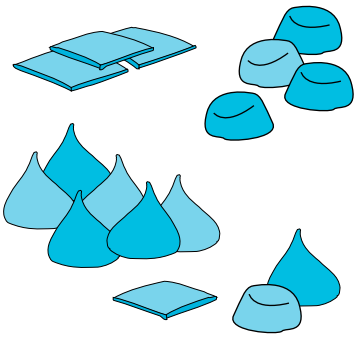
Wash the seeds and let dry. Grind seeds into a powder.



Mix the powder with cocoa butter and other ingredients.

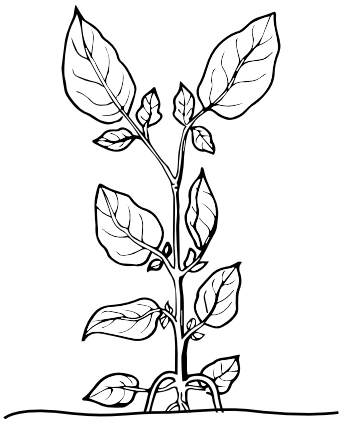


Place ingredients into a pot and melt to make chocolate.

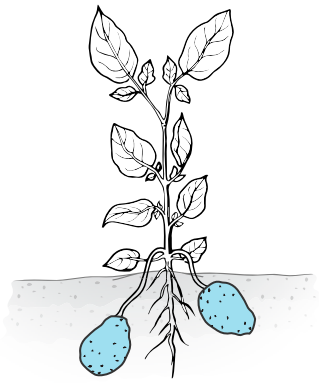


Shape or mold the melted chocolate into candies.

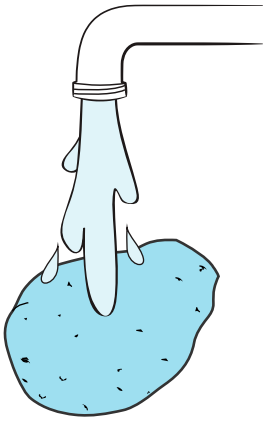
Process Cards: French Fries



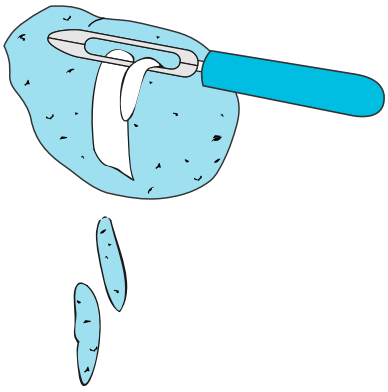
Grow a potato plant.



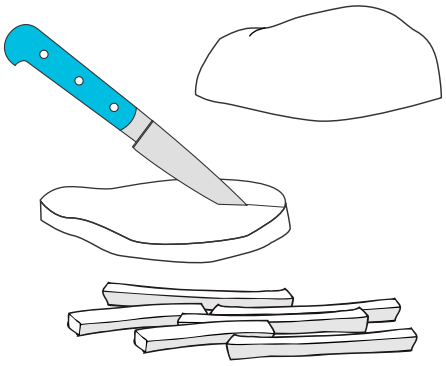
Dig up the plant to get to the potatoes underground.



Wash the potato.



Peel the potato.



Cut the potato into strips.

Fry the potato strips in hot oil to make French fries.