

Career Connection

Will that be an artificial heart or roller blades?

They are both possible because of oil. Oil is used to make thousands of products that make our lives easier—and in many cases—help us live better and longer lives. As a **consumer economist**, you will analyze the production, distribution, and consumption of a variety of products that we need and enjoy. Your work may help companies decide which items to make and may help spark the creation of new products.

Facts True or False?

There are over 6,000 products that come from petroleum: chewing gum, crayons, deodorant, golf balls, photo film, athletic shoes, telephones, toothpaste, soft contact lenses, rubber and batteries.



TRUE.

Graphic Organizers

Using a Chart to Record Data

Charts help organize, display and arrange data making it easier for students to conduct research, perform experiments and understand outcomes. When students learn how to organize information they can create their own charts as part of laboratory journals.

Density Table				
	Vegetable Oil	Alcohol/Water	Water	Glycerin
Pete				
HDPE				
V				
LDPE				
PP				
PS				

National Standards

Science as Inquiry

- CONDUCT SCIENTIFIC INVESTIGATIONS

Science and Social Perspectives

- UNDERSTAND THAT HUMANS USE RESOURCES IN THEIR ENVIRONMENT TO IMPROVE THEIR EXISTENCE
- UNDERSTAND THAT MATERIALS FROM HUMAN SOCIETIES AFFECT BOTH PHYSICAL AND CHEMICAL CYCLES OF THE EARTH
- UNDERSTAND THAT HUMAN ACTIVITIES CAN INCREASE POTENTIAL HAZARDS

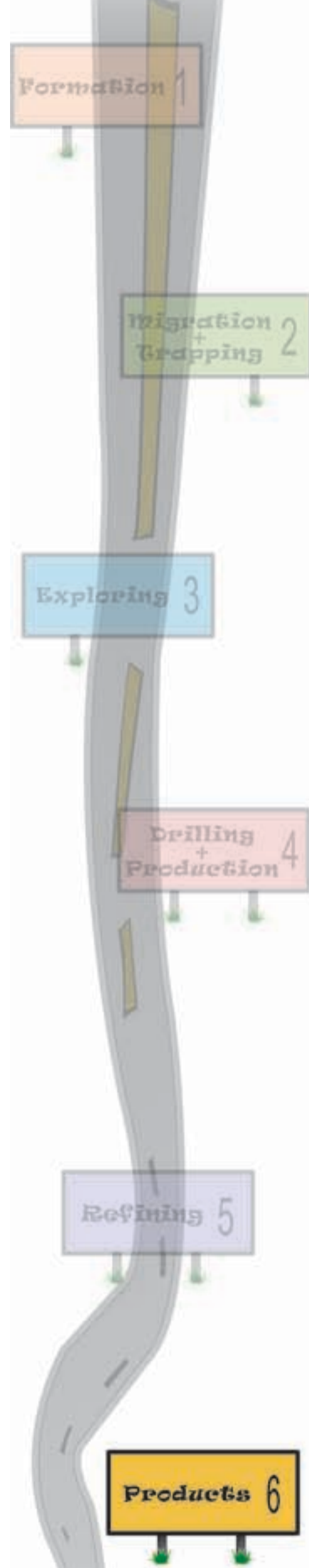
Science and Technology

- UNDERSTAND THAT TECHNOLOGY HELPS SOLVE HUMAN PROBLEMS

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Products

from Natural Gas and Oil



In addition to fuel and lubrication for cars, trucks, planes and ships, crude oil is used to make over six thousand different products that we use every day: medicines, paint, cosmetics, fabric and plastics. Plastics play an important part in cutting edge technologies such as the space program, bullet-proof vests and prosthetic limbs. Plastic packaging is convenient and sanitary, and it can be molded into any size and shape. The petroleum polymer industry continues to develop new ways to recycle and reuse this valuable resource.



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Experiment

Polymer Plastic Recycling

Can differences in density be used to efficiently sort plastics for recycling?

Materials:

- Samples of six types of polymers (see Recycling Code chart), cut into small size and/or shape; samples of each kind for each group
- One styrofoam egg carton or several small containers per group to hold liquid
- Craft sticks or other stirrers per group
- Set of four liquids per group: water, vegetable oil, glycerin, and solution that is three parts 70% isopropyl rubbing alcohol to two parts water
- One copy worksheet per group: Recycling Codes (see below)

Procedure:

1. Drop a piece of plastic into one of the liquids. If it does not sink immediately, push it gently down below the surface with the craft stick and release. Observe until it stops moving.
2. Record whether it sinks or floats in that particular liquid.
3. Repeat with the same type of plastic in the other liquids and record.
4. Repeat steps one, two and three with samples of the other plastics.
5. Use the chart to determine the identity of your samples.
6. Notice the PETE and V give the same results. You can tell them apart by bending a sample. V will whiten when bent, but PETE will not.

Questions and Explanations:

1. How could the density testing be accomplished on a larger scale?
2. What kind of petroleum is used for these products? How are they produced?
3. How much plastic is in our landfills? How much could be recycled?
4. What are some of the petroleum polymer products that you use?
5. Does your community recycle? Why or why not?

Reflection:

1. What other ideas do you have for recycling plastics?

Recycling Codes

Recycling Symbol	Name of Polymer	Sample Uses
1 PETE	polyethylene terephthalate	soft drink bottle, carpets, fiberfill rope, scouring pads, fabrics Mylar tape (cassette and computer)
2 HDPE	high density polyethylene	milk jugs, detergent bottles, bags plastic lumber, garden furniture flower pots, trash cans, signs
3 V	vinyl	cooking oil bottles, drainage and sewer pipes, tile, bird feeders institutional furniture, credit cards
4 LDPE	low density polyethylene	bags, Elmer's® glue bottles and other squeeze bottles, wrapping films, container lids
5 PP	polypropylene	yogurt containers, automobile batteries bottles, lab equipment, carpets rope, wrapping films
6 PS	polystyrene	disposable cups and utensils, toys lighting and signs, construction, foam containers and insulation
7 Other	all other polymers	catsup, snack and other food containers, hand cream, toothpaste, and cosmetic containers