Exploration 1: Identifying Polymers

In this exploration you will identify items that contain polymers.

How many of the items are made of polymers? ____

Which polymer comes from an animal?

- Cellulose
- Polyvinyl Chloride (PVC)
- Web silk

Which polymers occur in nature?

- Cellulose and Polyvinyl Chloride
- Web silk and Cellulose
- Polyvinyl Chloride and Nylon

Exploration 2: Constructing Polymers

In this exploration you will build some polymers by joining multiple monomers.

Select a polymer that you want to build. Which polymer is it?

- Ethylene Glycol
- Polyvinyl Chloride
- Polyaniline

What is it used for?

- Solder
- Medical
- Construction

Draw its structure.
Select another polymer that you want to build. Which polymer is it?

- Ethylene Glycol
- Polyvinyl Chloride
- Polyaniline

What is it used for?

- Solder
- Medical
- Construction

Draw its structure.

Select the last polymer that you haven't built. Which polymer is it?

- Ethylene Glycol
- Polyvinyl Chloride
- Polyaniline

What is it used for?

- Solder
- Medical
- Construction

Draw its structure.
**Exploration 3: Polymers and Circuits**

In this exploration you will explore the conductivity of several materials, including some polymers.

Test the conductivity of each material. Compare their conductivities and costs.

<table>
<thead>
<tr>
<th>Aluminum</th>
<th>Copper</th>
<th>Polyacetylene</th>
<th>Polystyrene</th>
<th>Platinum</th>
<th>Polyaniline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conductivity</strong></td>
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<tr>
<td><strong>Cost</strong></td>
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</tbody>
</table>

Which material is:

- more conductive? ______________________
- cheaper? ______________________

What material is most conductive? ______________________

**Application**

Let’s extend what you’ve learned by answering the following questions in your notebook:

1. What is a polymer? What is a conducting polymer?

2. Name 3 non-conducting polymers. How are they used in society?
3. Name 3 conducting polymers. What are some uses of conductive polymers in technology?

4. What are some other potential uses of conductive polymers?

You may need to do some additional research to answer these questions.