Station 1

Part one: the making of jeans

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>
Station 1

Part two: tie-dye activity

1. What is the pH of the water? (Record the number) __________

2. What is the pH of the dye solution? ________
   a. Is the dye solution acidic or basic? How do you know? ______________________________

3. How many carbon, nitrogen, chlorine, hydrogen, oxygen atoms are in the dye molecule?
   Carbon (C) __________
   Nitrogen (N) __________
   Chlorine (Cl) __________
   Hydrogen (H) __________
   Oxygen (O) __________
   Carbon (C) __________

4. Predict how your cloth would look like after tie-dye treatment. Make a sketch below.

5. Record your observations during the tie-dye treatment process. Sketch and label the materials on the desk. Record the color, smell, texture, etc.
Self-checklist

1. Did we test the pH of the water? □ Yes □ No

2. Did we test the pH of the dye solution BEFORE dying the white cloth? □ Yes □ No

3. Did we follow ALL steps of the tie-dye procedure? □ Yes □ No

4. Did we LABEL the baggie with the dyed cloth INSIDE? □ Yes □ No

5. Did we record ALL my observations onto my worksheet? □ Yes □ No

6. Did we place all “Making of Jeans” cards back into the envelope? □ Yes □ No
Station 2

Part one: how does your shirt affect the environment?

1. Sketch the “State-of-the-Art” filtration system” in the space provided below.

2. Record your observations before and after you filter the River Water.

<table>
<thead>
<tr>
<th>Water Before Filtration</th>
<th>Water After Filtration</th>
</tr>
</thead>
</table>

3. Is the water clean after filtration? □ Yes □ No
   a. If no, what is still in the water? ______________________________________________________

Part two: fashion revolution trailer

1. What is dye effluent?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. What is causing this dye effluent?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
3. Why is the dye effluent a concern?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

4. What have some people do to solve this problem?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

5. Why is it important to preserve the water?
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

Self-checklist

1. Did we sketch the filtration system? □ Yes □ No

2. Did we record our observations before and after water filtration? □ Yes □ No

3. Did we pour the filtered water back into the “River Water” bucket? □ Yes □ No

4. Did we watch the Fashion Revolution video? □ Yes □ No

5. Did we answer **ALL** questions related to the video? □ Yes □ No

6. Did we understand each question about the video? □ Yes □ No
   a. If no, which question(s) are you confused on? ____________________________
Station 3

Part one: How much is wasted?

1. Write down 3 new facts you learned from the graph titled “A Profile of NYC’s Residential Waste Stream”
   a. ____________________________________________________________
   b. ____________________________________________________________
   c. ____________________________________________________________

2. What type of waste should each item be classified as?

<table>
<thead>
<tr>
<th>Rigid Plastics</th>
<th>Textiles</th>
<th>Household Hazardous Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Food Waste</th>
<th>Paper</th>
<th>Electronic Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Which of these wastes can be recycled? ____________________________________________________________
Station 3

Part two: NYC Department of Sanitation video

Complete the graphic organizer below:

Self-checklist

1. Did we understand the graph in Part One of this station? □ Yes □ No
2. Did we classify all the items in the WASTE envelope? □ Yes □ No
   a. If not, which one(s) are you not sure of? ____________________________
3. Did we watch the video on the NYC Department of Sanitation? □ Yes □ No
4. Did we fill out the graphic organizer? □ Yes □ No
5. Did we place all the waste items back into the WASTE envelope? □ Yes □ No
STATION 4

PART ONE: FIBERS INSPIRED BY COTTON CANDY

1) Describe the phase change as the cotton candy is made. (liquid, solid, or gas)

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

2) How is the making of cotton candy similar to the making of nano-fibers using force spinning?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

3) How is a micrometer different from a nanometer?

______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

4) **Vocab Match-up:** Match the correct definitions to the vocabulary terms in Column A.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sucrose ______</td>
<td>A. A straight line passing through the center of a circle or object.</td>
</tr>
<tr>
<td>2. Millimeter ______</td>
<td>B. A chemical compound made up of repeating subunits bonded together.</td>
</tr>
<tr>
<td>4. Polymer ________</td>
<td>D. The scientific name of sugar</td>
</tr>
<tr>
<td>5. Diameter ________</td>
<td>E. One millionth of a meter (0.000001 m)</td>
</tr>
<tr>
<td>6. Micrometer ______</td>
<td>F. One billionth of a meter (0.000000001 m)</td>
</tr>
<tr>
<td>7. Force-spinning ______</td>
<td>G. One thousandth of a meter (0.001 m)</td>
</tr>
</tbody>
</table>
5) Take a small piece of cotton candy to observe under the microscope. Make your observation in the space provided below.

<table>
<thead>
<tr>
<th>Image 1</th>
<th>Image 2</th>
<th>Image 3</th>
<th>Image 4</th>
<th>Image 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sketch</td>
<td>Sketch</td>
<td>Sketch</td>
<td>Sketch</td>
<td>Sketch</td>
</tr>
<tr>
<td>Morphology</td>
<td>Morphology</td>
<td>Morphology</td>
<td>Morphology</td>
<td>Morphology</td>
</tr>
<tr>
<td>Color</td>
<td>Color</td>
<td>Color</td>
<td>Color</td>
<td>Color</td>
</tr>
<tr>
<td>Diameter</td>
<td>Diameter</td>
<td>Diameter</td>
<td>Diameter</td>
<td>Diameter</td>
</tr>
</tbody>
</table>

**part two: fibers under the scope**

1) Observations
   a) Sketch it
   b) Morphology (smooth, rough, scaly, thin, thick, etc…)
   c) What does it remind you of?
   d) What color is the fiber?
   e) Measure the size of diameter of each fiber, in terms of micrometer

**Hint**: 1 centimeter = 10,000 micrometers
2) Which image do you think is the cotton candy fibers? Use your observations to explain your answer.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

3) Which image do you think is the human hair? Use your observations to explain your answer.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Self-checklist

1. Did we read about how electrospinning works? □ Yes □ No

2. Did we answer **ALL** the questions about how electrospinning works? □ Yes □ No

3. Did we observe cotton candy fibers under the microscope? □ Yes □ No

4. Did we make observations about each type of fiber in Part Two? □ Yes □ No

5. Did we measure the diameters of each type of fiber? □ Yes □ No

6. Did we include the correct units when measure the diameters of the fibers? □ Yes □ No

7. Did we clean up our work area? □ Yes □ No
Station 5

Part one: How do enzymes work?

1. What do enzymes do in our bodies?

____________________________________________________________________
____________________________________________________________________

2. What are the two parts of an enzyme?

____________________________________________________________________
____________________________________________________________________

3. Match the proper substrate into the active site and sketch the molecules below:

   
   + =

   Active Site  Substrate  Enzyme

Part two: how can enzymes help?

1. Using the images in Figure 2, what or who may be most affected by pollution produced by these textile factories?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
2. How do you think this will affect the environment?
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

3. How do you think this will affect people who do NOT live near these environments?
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

4. What is bioremediation?
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

Part three (optional): enzyme action

1. Describe, sketch, and label what you see in the space provided below:

<table>
<thead>
<tr>
<th>Apple Half #1</th>
<th>Apple Half #2</th>
</tr>
</thead>
</table>

2. If ALL living things have enzymes, what do you think caused the apples to brown or not to brown?
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
Self-checklist

1. Did we read and understand how enzymes work? □ Yes □ No
   a. If not, what are you not sure of?
   ____________________________________________________________

2. Do we know what enzymes are used for? □ Yes □ No

3. Did we put all the Lego models back to their original places? □ Yes □ No

4. Did we complete Part One **AND** Part Two of this station? □ Yes □ No