Day 1 – H_2O and YOU

STEM Camp Notebook

Setting the Stage:
- glass of water

Activity 1: You Are What You Drink
- butcher paper (length of students)
- pencils
- crayons
- bathroom scale
- graph paper (inch or centimeter)
- calculators

Activity 2: How Sweet Is It?
- 250 mL each sugar solutions: 1%, 5%, 10%, 15% and 20%
- distilled water

Project: Water Content of Fruit
- bowl with a variety of citrus fruits (e.g., lemons, limes, grapefruits, oranges)
- plastic knives
- paper plates
- calculator
- balance or scale

Recess Activity
- water balloons

Engineering Challenge: Who's Thirsty?
Supplies (per team)
- sticks or dowels of various sizes
- rubber bands of various sizes
- balloons
- 3 wooden rulers
- 1/2 cup measuring cup
- paddle ball paddles
- baseball cap
- empty styrofoam egg cartons
- long tube sock
- drinking straws
- 3 film canisters
- small blocks of wood
- pool "noodle"
- tote or container to hold these items

Tool Kit (per team)
- duct tape
- electric tape
- twine/string
- flat thumb tacks
- screw driver
- screws that match the driver
- scissors
- super glue
- permanent marker
- tote or container to hold these items

Are You Thirsty Relay (per team)
- bucket/pitcher of water
- 3 disposable plastic cups
- device created in *Who's Thirsty?*

Day 2 - Properties of Water

STEM Camp Notebook

Activity 1: Discovery Education Hands-On Lab: Cohesion and Surface Tension
Per group:

- coin (e.g., penny, dime, or nickel)
- two 25 mL graduated cylinders
- 200 mL beaker
- 4 eyedroppers
- liquid soap or dish detergent in a small container
- distilled water
- cooking oil
- food coloring
- glass stirring rod
- stopwatch or timer

Recess Activity

- 2 large sponges (car wash sponges)
- 2 jars
- 2 buckets

Engineering Challenge: Building Building
For building the boat (per pair or group)

- box of pencils (unsharpened)
- large latex balloon
- drinking straw
- rubber band
- disposable aluminum baking pan or pie pan
- roll of aluminum foil
- roll of duct tape or bottle of glue
- 2 or 3 clothespins

Additional materials:

- meter stick or measuring tape
- scissors
- 5 or 6 waterproof weights, such as sealed plastic bags containing 10 to 20 dried beans
- sink or bucket, filled with water
- calculator
- balance or scale
- stopwatch
- pool or tank (per class)

Day 3 – Water in Ecosystems

STEM Camp Notebook

Activity 1: Building an Aquarium - Setting up the Aquarium
Per each group of students:

- two 2-liter bottles
- scissors
- a sample of local water (3-4 cups)
- drill
- cotton string (10-12 inches)
- small stones (2 cups)
- a sample of local soil (3-4 cups)
- marker
- at least two different types of seeds (e.g., grass, lettuce, radishes, beans)
- a floating water plant

Activity 2: *It's All Downstream*
Per each group of students:

- at least eight feet of aluminum foil
- medium-sized hardcover book
- cooking oil
- food coloring
- 2 cups of water
- large cookie sheet (or other similar-sized flat and rigid material)
- map of Virginia with watersheds clearly delineated
- modeling clay

Recess Activity

- 1 bucket of water (per team)
- 1 cup (per team)

Day 4 – Water As An Energy Source

STEM Camp Notebook

Activity 1: Well In A Cup

- one 10 ounce clear, flexible plastic cup (i.e., Solo TP10)
- lid for cup (i.e., Solo 600)
- wooden pencil
- 2x3 inch piece of window screen (metal)
- pea-sized gravel (i.e., aquarium gravel)
- water
- food coloring (optional)
- colored powder drink mix (optional)

Activity 2: Water Power

For each group:

- 4 plastic containers
- laboratory aprons
- sand (enough to half-fill the bowls)
- beaker
- graduated cylinder
- tap water
- meter stick or metric ruler
- metric tape measure
- funnel
- digital or video camera

Recess Activity

- 1 bucket and 4 cups per team
- whistle
- any obstacle you can find

Engineering Challenge: Hydropower Challenge

- 3 hot glue guns
- 100 pack hot glue sticks
- 5 rolls of tape
- 1 pair of scissors per group
- 1 DC motor per group
- 2 wires with alligator clips per group
- 1 light bulb per group
- 1 light bulb socket per group
- multimeter
- variety of general materials for building blades or wheel (such as plastic cups, styrofoam, popsicle sticks, manila folders, etc.)

Day 5 – Human Impact

STEM Camp Notebook

Setting the Stage: Water Contamination Demonstration

- 7 clear water bottles
- long spoon for stirring
- spring/tap water
- salt
- pieces of trash
- motor oil
- aquarium gravel
- dirt/soil from outside
- white vinegar
- can of cola

Activity 1: Effects of Pollution on the Water Supply

- water
- 2 plastic containers
- sand
- feathers
- aquarium gravel
- corn oil
- chenille sticks
- popsicle sticks
- clay
- sponges
- straws
- twigs
- flowers
- cotton balls

Activity 2: Observing the Influence of Acid Rain on Plant Growth

- 4 cups or jars
- distilled water
- white vinegar
- measuring cups
- stirring spoon
- 2 cuttings of a philodendron plant (1 leaf and small amount of stem)
- 2 cuttings of a begonia or coleus plant (1 leaf and small amount of stem)
- notebook and pencil

Cyber Investigation: Water Pollution Paperslides

- colored pencils
- video cameras or phone cameras
- blank white paper

Recess Activity

- water
- water balloons
- water balloon catapult/launcher
- 3 black garbage bins per team of 5 students - bins should be spray painted or marked with a color to distinguish teams
- large outdoor field