NYS SET Toolkit Activity Supply List

Series: Animal Science

I. Section: So You Think You Are Hot

a. Activity 1
   - Forehead thermometer for each participant OR a digital thermometer with protective sleeve OR ear scan thermometer with disposable covers
   - Paper and pencil for each participant
   - Large poster size paper to record data
   - Chart “Staying at right temperature” for each student (included here on last page)

b. Activity 2: Build a Nest
   - Two “cold cups” (plastic or paper, just make sure they aren’t insulated)
   - Two round cardboard oatmeal containers, cut so they are about 2 inches taller than cups
   - Source of warm water (100 degrees F)
   - Two thermometers
   - Wood shavings (used for chicken nests)
   - Feathers (can buy sterilized at craft stores)
   - Hay or straw (be aware of student allergies)

II. Section: Got Immunity

a. Activity
   - One disease card per student: One-third of the group should have airborne cards, one-third contact/touch and one-third insect/vector
   - Bandanas— at least one per student
   - Balls: either tennis, plastic, foam or golf balls -all the same size, three-five per student

III. Section: Basic Behavior Instincts

a. Activity
   - Note cards
   - Pack leader and pack follower instructions (shown below), already cut out
   - Safe space large enough to move around without obstacles – ideally a gym, playground or large hallway

IV. Section: Respiration

a. Activity 1: Build a respiratory system
   - Have cutouts of the following body parts available in craft foam, felt or colored paper. Label each part:
     - Dog: Mouth and nose/nasal cavity, pharynx and epiglottis, trachea, lungs, diaphragm
     - Fish: Mouth, gill filaments/gills, pharynx, gill openings.
     - Bird: Beak/nostril/mouth, lungs, 5 pairs of air sacs, abdominal muscles
b. Activity 2: Respiratory rate relay
   - Large clock with second hand, or stopwatches

c. Activity 3: Respiration game
   - Red yarn cut in 1-foot lengths, enough for 1/3 of your group (carbon)
   - Blue yarn cut in 1-foot lengths, enough for 1/3 of your group (oxygen)
   - Masking tape or chalk if outside

V. Section: Animal Sense Stations
a. Activity 1: Touch
   - Box with a hand-sized hole on one side
   - Cloth large enough to cover box
   - Three items, two with similar textures, one different (I used an orange, a golf ball, and a banana)

b. Activity 2: Smell
   - Film canisters or other small opaque containers (one per student)
   - Cotton balls
   - Different extracts (almond, banana, peppermint, vanilla, etc.)
   - Water

c. Activity 3: Hearing
   - Wire coat hanger with rubber band tied to each corner (one per two students)
   - Plastic coat hanger with rubber band tied to each corner (one per two students)

d. Activity 4: Sight
   - Pirate eye patch (or you can use a large dark plastic spoon)
   - Party blower for each student, try to find the ones that don’t make noise
   - Lightweight plastic fly or picture of a fly on a small wad of paper
   - Flower made by turning a paper cup upside down and drawing petals on the bottom
   - 10-inch tall thin column made of cardboard, paper or wood, anchored to a base.

VI. Section: People Pellets
a. Activity
   - Samples of various types of pelleted pet food with nutritional label (choose gourmet offerings that contain “people food” like fruits and vegetables).
   - Pre-made bingo cards with fruits and vegetables (make your own or use pre-fab)
   - Scissors
   - Rolling pins (one per group)
   - Spoons
   - Food service gloves
   - Sandwich sized plastic bags that zip closed
Grains: Pre-measured ½ cup bags of: corn, rice, and oat cereal - will need 2 bags of each grain per group

- Proteins: Bowls of powdered milk, soy nuts or sunflower seeds – will need 2 of each per group
- Energy: Squirt bottles of honey and maple syrup
- Flavors: Raisins and chopped dried apples
- Index cards labeled “Energy” “Protein” “Flavor” and “Grains” (1 per group)
- Ingredient label from a human meal replacement bar or drink

Series: Lost Lady Bugs K-2

I. Section: Lady Bug Life Cycle
   a. Activity: Create ladybugs
      - Green felt or construction paper
      - Packing peanuts
      - Toilet paper rolls
      - Black pipe cleaners
      - Empty egg cartons
      - Masking tape
      - Scissors
      - Stapler
      - Yellow paint
      - Red and black markers or paint
      - Hole punch
      - Glue
      - Printed photos of real ladybug eggs, larvae, pupae and adults from www.lostladybug.org

II. Section: Ladybug Diversity
   a. Activity 1: Drawing, modeling ladybugs
      - Large ladybug poster (download from www.lostladybug.org) (optional)
      - Ladybug field guides (download from www.lostladybug.org)
      - Blank paper or ladybug outlines (download from www.lostladybug.org)
      - Crayons, markers, or paints
b. Activity 2: Ladybug Bingo
   - Ladybug bingo chips (can be made of paper, felt, or anything)
   - Up to 30 different ladybug bingo game boards (download from www.lostladybug.org)

III. Section: Getting Ready to Collect
a. Activity: Making a homemade sweep net
   - Pillow cases
   - Two wire coat hangers / pillow case
   - One piece of wood or dowel approx 2 - 3 feet long for a handle
   - Scissors
   - Duct tape
   - Pliers
   - One piece of poster board
   - Crayons or markers

IV. Section: Collecting
   a. Activity: Collecting
      - Your own sweep nets
      - Your poster board chart
      - Large plain cloth or sheet
      - High-sided wash basin or box
      - Jars, vials, or Ziploc bags
      - Cooler w/ cold pack or ice

V. Section: Collecting Part 2
   a. Activity: Collecting at a new site
      - Your own sweep nets
      - Your poster board chart
      - Large plain cloth or sheet
      - High-sided wash basin or box
      - Jars, vials, or ziplock bags
      - Cooler w/ cold pack or ice
      - Camera (preferably digital with a close-up function.
      - Printed page of "the perfect grey" (downloaded from www.lostladybug.org)

VI. Section: Submitting Data
   a. Activity
      - A computer with online access
      - The camera with the ladybug photos in it
      - Your data from the two collection times
Series: Lost Ladybugs 3-6

I. Section: Food Webs and Biodiversity
   a. Activity
      - A copy of the Food Web Game Plan (from www.lostladybug.org)
      - The right number of printed or drawn owls, toads, ladybugs, aphids, and plants.
      - A single hole punch
      - Yarn

II. Section: Ladybug Sampling
   a. Activity 1
      - A copy of the Food Web Game Plan (from www.lostladybug.org)
      - The right number of printed or drawn owls, toads, ladybugs, aphids, and plants.
      - A single hole punch
      - Yarn
   b. Activity 2: Lost Ladybug Bingo
      - Lost Ladybug Bingo cards (downloaded from the lostladybug.org Web site)
      - Chips or markers

III. Section: Nothing But Net
   a. Activity: Making a homemade sweep net
      - Ladybug Field Guides (from www.lostladybug.org)
      - Pillowcases
      - Two wire coat hangers per pillowcase
      - A piece of wood or dowel 2-3 feet long for handle
      - Scissors
      - Duct tape
      - Pliers
      - A piece of poster board
      - Crayons or markers

IV. Section: Collecting, Part 1
   a. Activity
      - Your own sweep nets
      - Your poster board chart
      - Large plain cloth or sheet
      - High-sided wash basin or box
      - Jars, vials or Ziploc bags
      - Cooler w/ cold pack or ice
V. Section: Collecting, Part 2
a. Activity
   - Your own sweep nets
   - Your poster board chart
   - Large plain cloth or sheet
   - High-sided wash basin or box
   - Jars, vials, or ziplock bags
   - Cooler w/ cold pack or ice
   - Camera (preferably digital with a close-up function.
   - Printed page of "the perfect grey" (downloaded from www.lostladybug.org)

VI. Section: Submitting Your Data
a. Activity
   - A computer with online access
   - The camera with the ladybug photos in it
   - Your data from the two collection times

Series: Entomology

I. Section: Pollinator Power
a. Activity: Design and Build a Flower
   - Construction paper
   - Tissue paper
   - Two or three pieces of graph paper
   - Scissors
   - Glue
   - Tape
   - Markers
   - Pipe cleaners or small dowels
   - Reference chart on parts of a flower
   - Perfect Pairs worksheet
   - My favorite pollinator worksheet
   - Reference books on insects
II. Section: Aria Dispersal
   a. Activity
      - A spider egg case to examine (someone needs to find one and bring it to the meeting, handle gently)
      - Package of seeds to represent baby spiders (carrots work well)
      - Bag of craft-store feathers
      - Sewing thread
      - Scissors to cut thread and trim feathers
      - Glue (fast drying) or child-safe nail polish

III. Section: Beetle Scavenger Hunt
   a. Activity
      - Plastic jars with lids for collecting insects (peanut butter jars work well)
      - Field, meadow or wooded area
      - Insect net (helpful, but not necessary)
      - OR -
      - Accurate models of beetles (plastic or rubber toys, 10-20), plus a model of a beetle with its wings spread (or a photograph of the beetle with wings spread) and a model or photograph of life cycle of beetle

IV. Section: The Hornet and the Yellow Jacket Nest
   a. Activity
      - An abandoned aerial hornet or yellow jacket nest (best collected during the winter)
      - A serrated bread knife (for adult use only)
      - Notepaper
      - Pencils
      - Ruler and/or tape for measuring nest size

V. Section: Canaries of the Pond and Stream
   a. Activity
      For Each Team:
      - Ice-cube trays or shallow white-bottomed pans
      - D-nets
      - Plastic spoons
      - Magnifying glasses or bug boxes
      - Identification charts/books
VI. **Section: Exploring Plant Galls**

a. **Activity**

*(See fact sheet “Some Plant Galls” for illustrations and descriptions of common galls)*:

- Meadow or wooded area to look for plant galls
- Bag for collecting
- Sturdy garden shears for clipping branches with galls
- Hack-saw for cutting woody galls (adult supervision required)
- Pocket knife (adult use only)
- Magnifying glass, hand lens or microscope
- Notepaper
- Pencils to write/draw with
- Insect guide

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**Series: Geospatial**

I. **Section: What is GPS?**

a. **Activity 1: You Measure Distance with a Clock?**

- Five volunteers (a “satellite”, a “signal”, two “hikers” and a “timer”)
- Stop watch (watch, clock with a second hand, cell phone with a timer, etc)

b. **Activity 2: What is trilateration?**

- Three pieces of rope of different lengths (Between 10 - 25 feet long)
- Sidewalk chalk
- Four temporary place markers (pieces of tape, cones, etc)
- Six volunteers (three “satellites” and three “signals”)
- Large open area where you can draw with chalk on the floor or ground

II. **Section: Geocaching**

a. **Activity 1**

- A GPS receiver (GPSr), ideally one unit for every two to three students
- A variety of weatherproof containers of different shapes and sizes
- An outdoor natural area, ideally a blend of natural areas including forest and field, but any outdoor area will do.
b. Activity 2
- A GPS receiver (GPSr), ideally one unit for every two to three students
- Computer with internet connection

III. Section: Using a GPS Receiver:
   a. Activity 1
- A GPS receiver, one unit for every two to three students
- The user’s manual for the GPS receiver
- A handful of temporary place markers (cones, Frisbees®, anything that won’t blow away in the wind)
- A large outdoor natural area
- Note pad and pencil

Series: Flight

I. Section: Rockin’ Rockets
   a. Activity
   - Scissors
   - Monofilament fishing line
   - Plastic drinking straws
   - Balloons (long, sausage-shaped)
   - Masking or freezer tape
   - Measuring tape or yardstick
   - Pen, pencil, chalk, or marker
   - Paper or chalkboard to record results

II. Section: Hanky Parachute
   a. Activity
   - Handkerchief or other square of fabric
   - Four strings at least 12 inches (30.5 cm) long
   - Plastic container with snap-on lid (yogurt cup, film canister, etc.)
   - Miscellaneous items to add weight by increments (e.g., popcorn, beans, pennies, washers)
   - Stopwatch or watch with second hand (optional)
III. **Section: Straw Kites**
   a. **Activity**
      - Typing Paper
      - Tyvek (a Tyvek mailer yields two kites)
      - Tissue Paper
      - Scissors
      - Waterproof paints or markers (optional)
      - Nine plastic straws
      - Cellophane tape
      - Elmer's white glue
      - Hole punch
      - Kite string, 12 inches (30.5 cm) for bridle; 60 yd. (55m) for the towline or flying line

IV. **Section: Spinning Saucers**
   a. **Activity**
      - Paper plates
      - Cellophane tape or stapler with staples
      - Scissors
      - Decorations (crayons, markers, stickers, glue, tissue paper, aluminum foil, glitter, tinsel, paper clips, ribbons, pipe cleaners, scraps of cloth or paper, etc.)

V. **Section: Boomin’ Boomerangs**
   a. **Activity**
      - Boomerang pattern
      - Two pieces of cardboard at least 7 inches (18 cm) square (medium-sized cereal box panels work well)
      - Pencil or pen
      - Scissors
      - Masking tape

VI. **Section: Awesome Airfoils**
   a. **Activity**
      - Piece of paper (8 ½ in. square works well)
      - Cellophane tape
Series: Astronomy

I. Section: Making a Star Chart
   a. Activity
      - Copies of star chart on cardstock or regular paper pasted to
        cardboard (See pages 3-4. It is also available at http://
        lawrencehallofscience.org/starclock/starwheel.pdf)
      - Tape or stapler
      - Scissors
      - Optional constellation activity

II. Section: Mystery Shadows: Solar and Lunar Eclipse
    a. Activity 1: Lunar Eclipse
       - Ping pong ball
       - Hula-hoop (or large quilting hoop)
       - Lamp without a shade (or clamp lamp)
       - Dark room
       - Tape

III. Section: Going through a Phase: Moon Phase
     a. Activity
        - Lamp without a shade or clamp lamp
        - Softball or large polystyrene ball on a stick
        - A dark room.
        - Alternatively, you can use polystyrene balls (2” or larger) for each
          person, held with a stick or pencil.

IV. Section: How Big and How Far? Scale Model of our Solar System
    a. Activity
       - Basketball
       - Grain of sand
       - Two peas of different sizes
       - BB
       - Golf ball
       - Ping pong ball
       - Two gum balls
       - Meter stick
       - A half-mile field, football field or at least 15 feet of clear space
       - Cardboard and sturdy bamboo skewers (optional for making signs)

V. Section: Constellation in a Can
    a. Activity
       - A Pringles® can for each participant, with clear plastic lid.
       - Black construction paper
       - Hammer
• Large nail
• Copies of the constellation template (on page 3)
• Pin or needle
• Decorating materials (optional)

VI. Section: What time is it? Make a Sundial
   a. Activity
      • Copies of the sundial design on cardstock (one for each student)*
      • Scissors
      • Tape
      • Crayons or markers
      • The latitude at which you live (see http://jan.ucc.nau.edu/~cvm/latlon_find_location.html)
      • Blocks of wood or stones (optional)

Series: Climate

I. Section: What causes a storm?
   a. Activity 1: Cloudy sky — make it rain!
      • Empty, clean glass jar (pickle jar, jam jar)
      • Disposable pie pan
      • 6-8 ice cubes
      • Hot water
   b. Activity 2: Stormy weather — make a thunderstorm!
      • Clear plastic/glass container (9x11 baking pan recommended)
      • Water with blue food coloring
      • Lukewarm water
      • Red food coloring
      • Ice cube tray

II. Section: Focus on Snowfall
   a. Activity: Confetti snow maps
      • Colored construction paper
      • At least 15-20 paper cups. You may choose to use a numbered cup for each individual, or assign each group/individual a row of cups. Groups may choose to name their cups instead of numbering them, as long as each cup is distinctly identifiable
      • Graph paper (Students could make their own graph paper on a plain piece of paper.)
III. Section: Temperature through Time
   a. Activity: Tree ring treasure hunt
      - The History of Temperature handout
      - The Stump Worksheet

IV. Section: Focus on Wind
   a. Activity: Make your own wind dial
      - Five 3-oz paper Dixie cups
      - Two straws
      - Pin
      - Paper punch
      - Scissors
      - Stapler or tape
      - Sharp pencil with eraser

V. Section: Waters Incredible Journey
   a. Activity: The incredible journey game
      - Nine large pieces of paper
      - 30-50 beads in each of nine different colors (dependent on number of participants)
      - A pipe cleaner for every person participating
      - Nine home-made dice (see below for description)

VI. Section: Climate and Organisms
   a. Activity: Climate change game
      - Three to five recess balls/rubber balls
      - Color-coded cards or stickers for your group; two green, three red, four blue and five yellow

Series: Water

I. Section: Canaries of the Pond and Stream
   a. Activity
      For Each Team:
      - Ice-cube trays or shallow white-bottomed pans
      - D-nets
      - Plastic spoons
      - Magnifying glasses or bug boxes
      - Identification charts
II. **Section: Fishy Food Chain**  
a. **Activity**  
- 250 feet of yellow nylon rope  
- 100 feet of white nylon rope  
- Five fishing hats or vests  
- 40 copies of sunfish handout (attached)  
- Whistle  
- Copies of the most recent New York State Department of Health publication “Health Advisories for Chemicals in Sportfish and Game.” Available at [http://www.health.state.ny.us/environmental/outdoors/fish/fish.htm](http://www.health.state.ny.us/environmental/outdoors/fish/fish.htm)

III. **Section: Take a Water Vacation**  
a. **Activity**  
- A sign for each of the seven water stations  
- Seven empty wide-mouth plastic jars or large envelopes, one for each station  
- Copies of water station cards  
For each Team:  
- Clipboard  
- Paper  
- Pencil

IV. **Section: Won’t you be my neighbor**  
a. **Activity**  
- A five-gallon bucket for every four-five students.  
Pollutants:  
- ½ cup vegetable oil  
- 1-5 drops food coloring  
- 2 teaspoons sand/gravel  
- 5 drops dish detergent  
- One handful of leaf litter  
- 1 teaspoon salt  
- Trash (bottle caps, Styrofoam, etc.)  
Clean-up Apparatus:  
- One piece of screen (15cm square)  
- Cotton facial pads  
- Funnel  
- Eye dropper/turkey baster  
- Paper towels  
- Empty plastic or metal pan
Series: Plant Science

I. Section: Be a Human Camera
a. Activity
   - Paper and pencil for each participant
   - Flowers, houseplants, an outdoor garden, indoor garden or any other available plants.

II. Section: Making Chlorophyll Prints
a. Activity
   - Green leaves (vegetables like kale and spinach; herbs like basil and mint; green leaves from trees and shrubs)
   - Pieces of white fabric or watercolor paper
   - Metal spoons
   - Masking tape

III. Section: Patterns in the Grass
a. Activity
   - A shallow, rectangular container
   - A shallow tub-like container at least 8 x 10 inches long, or a long, shallow window box. The bigger the container, the larger the items you can use, and the more dramatic your results will be.
   - Tray to rest container on, so that water does not run out onto surface.
   - Potting soil
   - Grass seed
   - Quarters, nickels, dimes, and half dollar coins

IV. Section: Climate Change Superhero
a. Activity
   - Flipchart and marker
   - Art supplies (construction paper, markers, glue, scissors, and anything else that could be used in designing and creating a plant superhero)
   - Updated garden zone map from the National Arbor Day Foundation. Available at http://www.arborday.org/media/zones.cfm. It can be printed or viewed online.

V. Section: Plant a Rainbow Garden
a. Activity
   - Seed catalogues
   - Scissors
   - Paper
VI. Section: Veggie Taste Testing
a. Activity
- Greens
- Charts
- Pencils to record responses
- Glasses of water