

# SCIENCE – Grade 8

**Science Standard 1 Activities:** Students understand the unifying concepts and processes of science.

**Choose one activity for standard 1**

**Benchmark 1.1** Explain how models can be used to illustrate scientific principles and processes (e.g., osmosis, cell division)

1. When presented with ice cubes and liquid water, TSW identify that heat will make the ice melt and become a liquid and cold will make water freeze and become a solid (what can we add to the ice cubes to make them melt?)
2. Given a diagram showing the three repeating processes of the water cycle, TSW explain what is happening in each part by matching labels to the picture/diagram (a) the sun heats water and it evaporates, or water evaporates and becomes a gas; (b) water vapor cools and forms clouds or water vapor makes clouds; (c) water drops become heavy and fall as rain, sleet, or snow.
3. Given a diagram showing the repeating processes of photosynthesis, TSW explain what is happening in each part by matching labels to the picture/diagram: (a) sunlight/energy from the sun hits a leaf; (b) water comes to the leaf through the roots; (c) water mixes with carbon dioxide in the leaf to make sugar; (d) the plant uses sugar as food; (e) oxygen goes out of little holes in the leaf into the air.

**Benchmark 1.2** Identify the components (e.g., tissues, organs, living and nonliving things) within a system (e.g., body systems, ecosystems)

4. When given a picture or model with five body parts missing, TSW place the body part in the correct location.
5. When given five pictures of body organs, TSW point to the location of the organ in the body (e.g. brain-head, stomach-middle).
6. When asked five questions about body part location, TSW touch the correct body part asked for.
7. TSW arrange pictures to show a food chain model for land and water ecosystems (plants/producers make food, herbivores eat plants, carnivores eat animals, omnivores eat both plants and animals). [An example of a water ecosystem: pondweed – snail – minnow – perch - human. An example of a land ecosystem: corn – mouse – snake – eagle]

**Benchmark 1.3** Identify examples of feedback mechanisms (e.g., hunger, perspiring)

8. Given an example of a feedback system, TSW communicate a response that correlates with the system (e.g. hunger-food, thirst-water, sweat, exercise, tired-sleep, cold-shiver), over five trials.

**Benchmark 1.4** Identify the relationship between form and function (e.g., wings, fins and feet)

9. Given five pictures of body forms, TSW match which body form is used for which movement (e.g. feet-people, legs-dogs, wings-birds, fins-fish).

10. The student will state/match the correct body part to function (e.g. eye-see, nose-smell, ears-hear, fingers-touch, mouth-taste).

11. Using five sensory stimuli (e.g. phone ringing, cinnamon smell, furry object), TSW respond by pointing to the correct sense to match the stimuli (e.g. ear to phone, nose to smell, hand to furry object).

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**Science Standard 2 Activities:** Students use the process of science inquiry.

Use this Prescribed Anchor Item for Standard 2

**Benchmark 2.1** Communicate the results of scientific investigations using an appropriate format (e.g., journals, lab reports, diagrams, presentations, discussions).

**Activity:** TSW match at least five tools/equipment to how they would be used in an experiment/investigation (e.g., thermometer – temperature; clock to time speed; magnifying glass to see tiny things; microscope – to see very tiny things; balance scale to find weight or mass; ruler to find length or height; wind vane to find direction of wind; rain gauge to find out how much rain or snow fell).

**Materials:** Print the pictures provided. Mount them separately on a half sheet of white construction paper. You will have ten pictures and five questions.

**Note:** If you need to use concrete items to test this activity, use the pictures as a guide for "like items" used in science investigations.

**Teacher behavior:** Present two different pictures/objects at a time and ask the question provided.

**Question Directions:** Pair the cards as indicated with each question. The correct answer is highlighted.

Question 1: What tool would be used to make something (that the eye cannot see because it is too small), able to be seen?

**Microscope** binoculars

Question 2: Which tool would you use to measure the time it takes for a ball to roll across the gym floor?

**Stop watch** hour glass

Question 3: Which tool would you use to measure the temperature of a glass of water?

Outdoor thermometer **liquid thermometer**

Question 4: Which tool would you use to measure the length of different text books in the classroom?

Rope **Tape Measure**

Question 5: Which tool would you use to measure how much sodium is needed in a science experiment?

**A scale** A shovel

**Student response:** Student may respond in whatever means necessary to answer the question. For example: point, verbal response, eye gaze, yes/no, gesture, etc.

**Record Data:** Use the “**NDAA 1 Data Chart for Teachers**” to record the response for each set. You will present each one of the sets of five questions once during each trial/day/week and therefore have five student data responses to record. Four trials of five questions each will give you 20 responses.

<b>SAMPLE</b>	Day/Week 1	Day/Week 2	Day/Week 3	Day/Week 4
Item 1-microscope				
Item 2- stop watch				
Item 3- liq. thermometer				
Item 4- tape measure				
Item 5-scale				
<b># correct</b>				
<b># possible</b>	5	5	5	5

**USE  
REGULAR  
DATA  
SHEET**

*indicate with a + or - if student answered a given item correctly*

\* **Secondary Indicators:** You do not need to collect data on secondary indicators for this anchor item.

\* You do need to do the Teacher Validation questions and the Parent Validation Survey for this item.

Note: All Pictures were taken from Microsoft Clip Art



Stop Watch



Hour Glass

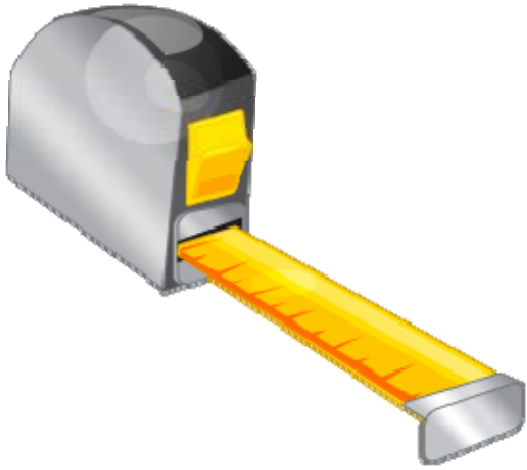




Outdoor Thermometer



Thermometer



**Measuring tape**



**Rope**



Scale



Shovel

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**Science Standard 3 Activities:** Students understand the basic concepts and principles of physical science.

**Choose one activity for standard 3**

**Benchmark 3.1** Explain how forms of energy can be transferred. (e.g., photosynthesis, metabolism, battery)

1. Given five items, some that are warm and some that are cold, TSW communicate if the item is cold or warm.
2. Given a container of warm water, TSW record temperature/feel temperature of the water, predict what will happen when ice is added to the warm water (select if the water get warmer or colder? What will happen to the ice - get warmer or colder?), and then test the prediction by observing ice melting and stating or recognizing a correct a conclusion about change of temperature (e.g., cold ice made the warm water colder; warm water made the ice melt and get warmer)
3. TSW use diagrams of energy transfer to identify and trace the correct flow of energy in a system (e.g., in an ecosystem, energy flows from sun to plants, to herbivores, to carnivores that eat herbivores, to carnivores that eat other carnivores; in a circuit, energy flows from the battery to make light energy or sound energy or movement/kinetic energy, and back to battery to make a complete circuit)

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**Science Standard 4 Activities:** Students understand the basic concepts and principles of life science.

**Choose one activity for standard 4**

**Benchmark 4.1** Explain the functions of the cell (e.g., growth, metabolism, reproduction, photosynthesis, response)

1. Given a model of a plant or animal cell, TSW replicate the model using prepared labels and shapes: nucleus – control center of the cell; cell membrane – controls what goes in and out of the cell; vacuole – structures that store things used by the cells; cell wall – outer protection, gives the cell shape – only in plants; chloroplast – make food, green color in leaves - only in plants.
2. TSW match the function of at least 3 plant cell parts when given prepared labels and cell model: nucleus – control center of the cell; cell membrane – controls what goes in and out of the cell; vacuole – structures that store things used by the cells; cell wall – outer protection, gives the cell shape; chloroplast – make food, green color in leaves;
3. TSW match the function of at least 3 animal cell parts when given prepared labels and cell model: nucleus – control center of the cell; cell membrane – controls what goes in and out of the cell; vacuole – structures that store things used by the cells.

**Benchmark 4.2** Identify levels of organization in living systems (e.g., cells, tissues, organs, organ systems, organisms, ecosystems)

4. TSW identify some parts (cells, tissues, organs) of at least three body systems (skeletal system – bone cells, bones, teeth, skull, skeleton; muscular system – muscle cells, muscle tissue, muscles – biceps, triceps, heart, etc.; respiratory system – nose, mouth, windpipe/trachea, lungs, diaphragm; digestive – tongue, stomach, esophagus intestines; circulatory system – red and white blood cells, blood, veins, arteries, heart; nervous system – nerve cells, spinal cord, brain).

**Benchmark 4.3** Identify the characteristics of reproduction (e.g., sexual, asexual)

5. Given pictures of both plants and animals, TSW categorize the pictures into those that reproduce using seeds (trees, flowers, vegetables) and those that reproduce using eggs (insects, birds, reptiles, fish, amphibians).

**Benchmark 4.4** Identify interactions among organisms and their environment (e.g., competition, mutualism, predator/prey, consumers, producers)

6. Given a food web model, TSW identify producers /plants, consumers that eat plants, and consumers that eat other animals.

7. Given a model of an ecosystem, TSW identify at least 5 living (plants and animals) and 3 nonliving (soil, water, air, sunlight, space) factors

**Benchmark 4.5** Classify organisms (e.g., taxonomic groups)

8. TSW sort five cards into animal and plant groups. REVISE – add TAXONOMIC groupings, such as fish, mammal, bird, reptile, amphibians, insects for animals; flowering and non-flowering plants or deciduous and coniferous trees for plants

9. TSW classify plants using given scientific criteria (e.g., with and without seeds; flowering and non-flowering, coniferous and deciduous trees; compound and simple leaves)

10. TSW classify animals using given scientific criteria (e.g., vertebrates – invertebrates; fish/bird/amphibian, reptile, mammal; carnivores, herbivores, and omnivores; cold- or warm-blooded)

**Benchmark 4.6** Explain how different adaptations help organisms survive.

11. TSW explain how at least 3 adaptations help animals or plants to survive (e.g., how different bird beaks allow them to eat different kinds of foods specific to habitat – scoop up fish, crack seeds, tear flesh; how seed pod structures allow them to float in water, or be carried on the wind or animal fur to a place where they have a better chance to germinate; how coloration helps them hide from predators)

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**Science Standard 5 Activities:** Students understand the basic concepts and principles of earth and space science.

## Choose one activity for standard 5

**Benchmark 5.1** Identify the factors (e.g., latitude, altitude, mountains, bodies of water) that affect the Earth's climate

1. TSW match the correct weather symbols or descriptions with at least 3 typical climates found in different parts of the world (e.g., north and south poles – extreme cold, frozen water; equator - extreme heat and rainfall; rain forests – moderate temperatures and lots of rain; deserts – extreme heat and cold and little or no water)

**Benchmark 5.2** Explain how seasons affect organisms (e.g., hibernation, photoperiodism, migration)

2. TSW answer yes/no questions or point to the correct picture about activities that occur as a result of seasonal weather (e.g. bears hibernate, birds migrate, birds hatch eggs, squirrels gather food for winter, etc.).

3. TSW identify what season it is by what changes are occurring with organisms, over five trials. (e.g., plants go dormant in winter, produce leaves in spring, make fruit in the summer and fall)

4. TSW communicate five yes/no responses to seasonal questions related to activities of organisms: winter: plants go dormant, bears hibernate; spring: plants produce leaves, birds build nests; summer: birds and animals raise their young, plants grow & produce vegetables, berries, fruits; fall: birds and butterflies migrate, trees lose leaves

**Benchmark 5.3** Identify the Earth's renewable and nonrenewable resources (e.g., solar, wind, fossil fuels, water, soil, metals)

5. TSW sort five items into the correct recycle boxes (e.g. paper, aluminum, glass, etc.).

6. TSW answer five “yes – no” questions when presented an item and asked if it is renewable (e.g., wood, wind, solar) or nonrenewable (e.g., oil, gas, coal).

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## **Science Standard 6 Activities:** Students understand relations between science and technology.

## Choose one activity for standard 6

**Benchmark 6.1** Identify ways in which technology has influenced the course of history and improved the quality of life.

1. TSW categorize examples of technology by the way it has influenced lives: (a) helped to make life more fun (e.g., radio, TV, cell phone, computer), (b) make work easier (e.g., washing machine, dishwasher, refrigerator, car, bull dozer, lawn mower), (c) travel faster or farther (bikes, planes, ships, rockets), (e) keep us healthy (e.g., microscopes, MRI, x-ray, lasers).

**Benchmark 6.2 Identify technologies (e.g., communications, agriculture, information processing, transportation) that are influenced by societies.**

**2. Given assorted pictures related to different technologies, TSW choose at least two pictures that relate to each specific category: communications/ information processing, weather reporting, medical, space travel and exploration**

**Benchmark 6.3 Identify intended benefits and unintended consequences that result from the development and use of technologies.**

**3. Given at least 5 pictures related to different technologies, TSW identify or explain a benefit of using each one (e.g., school nurse uses a thermometer to find out if you have a fever; a telescope lets us see things too far away to travel to; radar and weather maps warn us about storms)**