

Forty-Eight Concepts and Terms to Know for the New York State Elementary Science Test (Grade 4)

1. Plants must have the following to survive:

- sunlight
- air
- water
- nutrients
- Soil (associated with plant growth but not always needed for plants to survive)

2. Animals must have the following to survive:

- food (nutrients) – provides energy for growth and repair
- water
- air

3. Adaptations

Changes in living things that help them survive in their environment.

4. Behavioral Adaptations

Things that living things do that help them to react to changes in their environment.

5. Physical Adaptations

Body changes in living things that help them survive in their environment.

Examples:

- scales – protect the bodies of fish
- wings – allow birds to escape predators and find food

6. Inherited Characteristics

Features that are passed from parents to offspring

Examples: hair color, eye color

7. Learned Traits

Things which must be taught to offspring

Example: riding a bicycle

8. **Food Chain**

Shows how energy flows from the Sun to other organisms.

- Energy from the Sun is used by plants (producers) to make food.
- Some animals eat plants to get energy – herbivores
- Some animals eat other animals – predators
- Some animals eat both plants and other animals – omnivores

9. **Energy Flow in Food Chains – The sun’s energy is transferred on Earth from plants to animals through the food chain.**

Sun → Producers (Plants) → Predators (Animals)

10. **Decomposers**

Living things that get their nutrients from living things that have died.

11. **Life Span**

The amount of time an organism is alive.

12. **Competing**

When two animals live in the same area and depend on the same organisms for food.

13. **Hibernate**

To pass the winter in a dormant or resting state, such as bears.

14. **Plant Parts and their Function**

A plant has different structures that serve different functions in growth.

- Leaves – where food is made
- Flowers – make seeds
- Stems – support the plants
- Roots – support the plants and take-in nutrients and water

15. **Seed Dispersal**

Seeds can move from place to place in many ways

Examples:

- stick to people and animals
- carried by wind
- carried by birds

16. **Germination** - When a seed begins to grow

17. **Life Cycle**

Stages of development for living things.

Examples:

Four stages of a Butterfly's Life Cycle:

Egg → **Larva** (caterpillar) → **Pupa** → **Adult** (butterfly)

18. **Forms (States) of Matter**

- Solid – definite shape and volume
- Liquid – definite volume and takes the shape of the container it is in
- Gas – no definite shape or volume

19. **Boiling**

Liquid changing to a gas when heat is added.

20. **Freezing**

Liquid changing to a solid when the temperature decreases (lowers).

Example: Water freezes when the temperature drops to 32°F or below.

21. **Floating**

Materials float if they are lighter than the liquid they are put in or if they have a hollow shape (like a boat).

22. **Conductors**

Materials that let heat and electricity easily pass through them; they transfer energy from one place to another.

23. **Metals are the best conductors.**

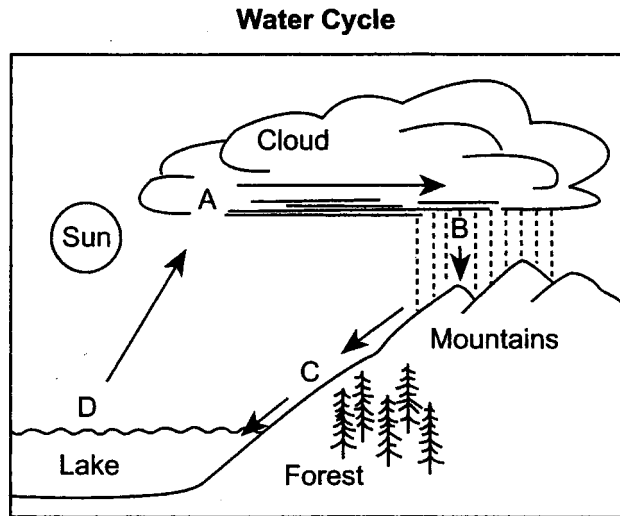
Examples: gold, silver, copper and aluminum

24. **Insulators**

Materials that do not allow heat and electricity to go through them easily.
Plastic is a good insulator.

25. **Water Cycle**

Constant movement of water from the Earth's surface into the air and back again.



26. **Forms of Precipitation**

- rain
 - hail
 - snow
 - sleet
- } frozen forms of precipitation (below 32°F)

27. **Evaporation**

When liquid changes to gas.

Example: Water changes into water vapor and moves into the air.

28. **Condensation**

Gas changes to a liquid.

Example: Water vapor changes into water droplets in a cloud.

29. **Runoff**

Water flowing along the surface of the Earth.

30. **Humans organize time into units (hour, day and year) based on natural motions of the Earth (rotation and revolution).**

31. **Earth's Rotation**

Spinning motion of the Earth on its axis.

The Earth takes 24 hours to make one complete rotation on its axis.

32. **Rotation of the Earth causes:**

- day and night.
- the sun to appear to rise and set.
- the sun to rise in the east and set in the west.

33. **Revolution of the Earth**

The Earth takes 365 days (one year) to orbit or revolve around the sun.

34. **Summer months in New York State have longer periods of daylight than winter months.**

Reason: The axis of the Earth is tilted as it moves (revolves) around the sun.

35. **Positive Things**

These are things which are “good” or have a “good” effect on other things.

36. **Negative Things**

These are things which are “bad” or have a “bad” effect on other things.

37. **Measuring Using Metric Units:**

- Length is measured with a ruler in **centimeters**.
- Temperature is measured with a thermometer in **degree Celsius**.
- Mass is measured with a balance in **grams**.
- Volume is measured with a graduated cylinder in **ml or cc**.

38. **Opinion**

What someone thinks is true.

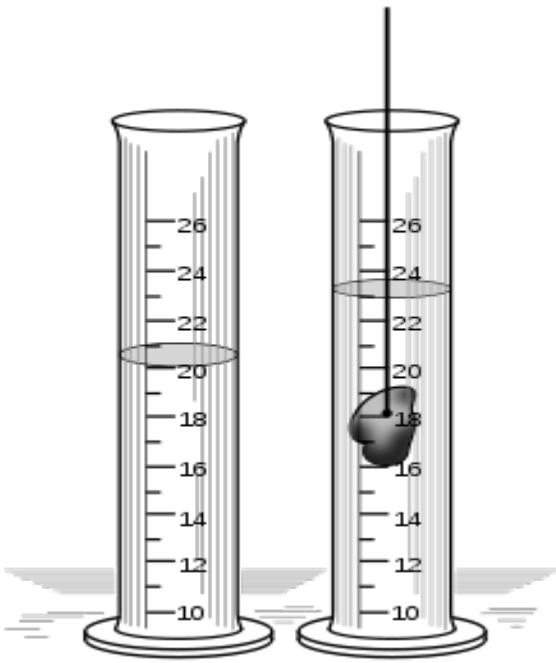
39. **Observation**

A description made using one or more of the senses.

40. **Increase**

Means to get bigger.

41. **Decrease**
Means to become smaller
42. **Fruits have seeds inside of them.**
Examples: apples, oranges, pumpkins and tomatoes
43. **There are many forms of energy.**
Examples: mechanical, electrical, heat, light, and sound
44. **Energy can change from one form to another.**
Examples:
 - light bulb – electrical energy changes to heat and light
 - beating a drum – mechanical energy changes to sound energy
45. **Erosion**
Wearing away of the Earth's surface.
Example: rivers carry away rocks and soil forming valleys.
46. **Summer months in New York State have longer periods of daylight than winter months.**
Reason: the axis of the Earth is tilted as it moves (revolves) around the Sun.
47. **Pollution**
The introduction of a substance into an environment that causes a harmful or poisonous effect.
48. **Displacement (in a liquid) -** When an object is immersed in a liquid it will push the liquid out of the way and takes its place.



The volume of the water on the left is 20 ml.
The volume of the rock and water is 23 ml.
Therefore, the volume of the rock or water displaced is 3ml.