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UNIT 2: Properties of Matter

Name: _____

Physical Properties of Matter

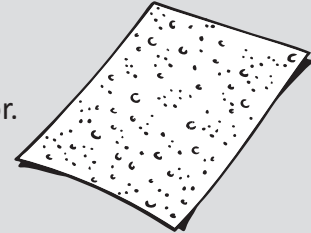
Matter takes up space and has weight. Some examples of matter are water, plants, and people. We can study matter by looking at the **properties**, or qualities, of different substances. A **substance** is matter that has certain physical properties. If these change, the substance changes. Here are some physical properties of substances:

State—The state of a substance can be a *solid*, a *liquid*, or a *gas*.

Color—A substance can have color. It can also have a lack of color.

Texture—This is how the surface of a substance feels.

Example: Sandpaper has a rough texture.



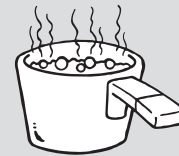
What is the melting point?—At this temperature a substance changes states. It changes from a solid state to a liquid state.

Example: Ice is a solid substance. It turns into water, a liquid, at 32°F (0°C).



What is the boiling point?—At this temperature a substance changes states. It changes from a liquid state to a gas state.

Example: Water is a liquid substance. It turns into water vapor, a gas, at 212°F (100°C).



Solubility—When a substance is **soluble**, it is able to dissolve completely. Something that is **insoluble** cannot dissolve completely.

Example: Sugar is soluble in water. It dissolves completely.

A marble will not dissolve in water. It is insoluble.



Does it conduct or insulate?—To **conduct** means to carry, or transmit. Substances that can conduct electricity or heat are called **conductors**. Those that cannot are called **insulators**.

Examples: Metals are conductors. They are used in wires to conduct electricity and in pans to conduct heat. Plastic is an insulator. It does not conduct electricity.

- Look at the image on the right. Which of the following is *not* true about the object?
 - The physical state of the object is solid.
 - The object's texture is smooth.
 - The object's melting point is when it turns from a solid to a gas.
- How do you know if a substance is *soluble* or *insoluble* in water?



- How would you know if a substance was an *insulator* or a *conductor*?

Name: _____

Food Web Consumers

Directions: Study the facts below. Then, complete the activity on the following page.

Consumers are animals that cannot make their own food. They survive by eating plants (producers) and other animals. In a food web, there are different types of consumers. Here are some examples from an ocean food web:

Primary Consumer—*Primary* means something that happens first. These living things are the first consumers in a food web. Animals that eat only plants are called **herbivores**.

Example: In an ocean food web, zooplankton, crustaceans, and certain types of fish and turtles are primary consumers. They eat only producers, including plants, such as kelp and algae.

Secondary Consumer—These consumers may be **carnivores**, which means they eat only meat or, they may be **omnivores**. Omnivores eat both plants and animals.

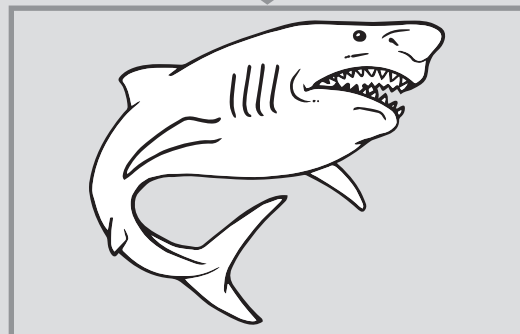
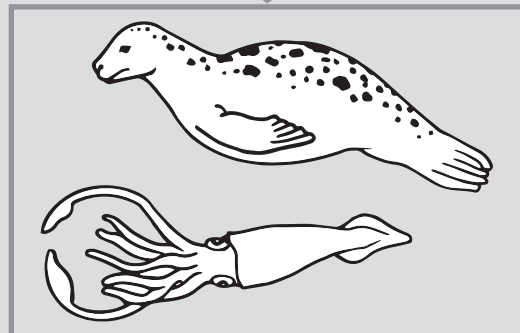
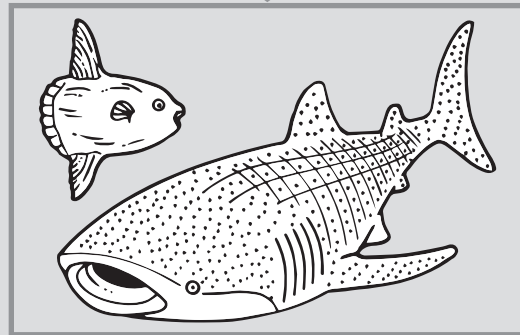
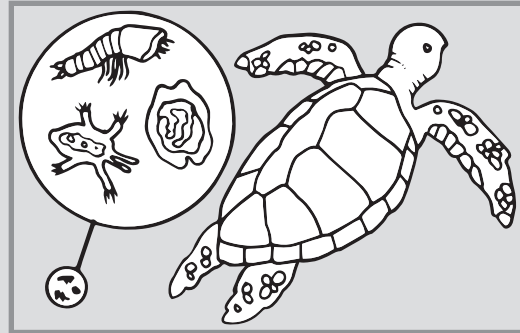
Example: In an ocean food web, some fish, such as sunfish and whale sharks, and mammals such as whales are secondary consumers. They may eat primary consumers such as crustaceans, plankton, or plants.

Tertiary Consumer—Tertiary consumers may be omnivores or carnivores. They may eat primary and secondary consumers.

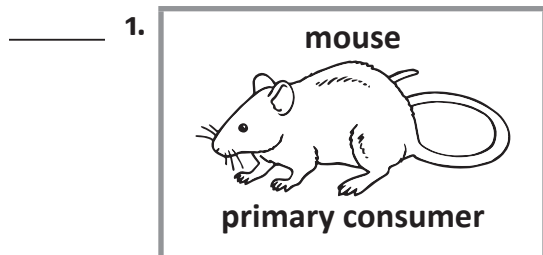
Example: In an ocean food web, leopard seals and reef sharks are tertiary consumers. They may eat fish, squid, krill, or other aquatic animals.

Apex Predator—This is the top consumer in a food web. *Apex* means the highest point of something. With the exception of humans, these predators do not have enemies. Apex predators may be either omnivores or carnivores.

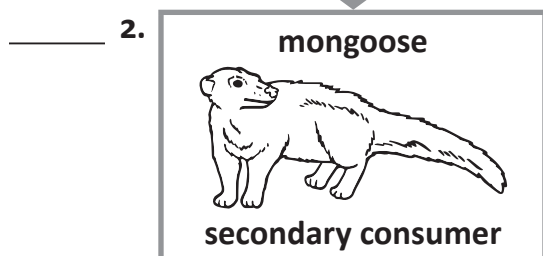
Example: In an ocean food web, great white sharks and orcas are apex predators.



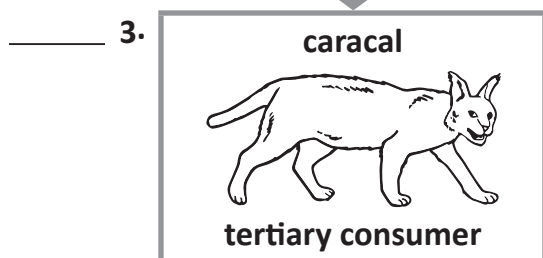
Name: _____

Food Web Consumers (cont.)**Directions:** Match each consumer with the caption that *best* describes it.

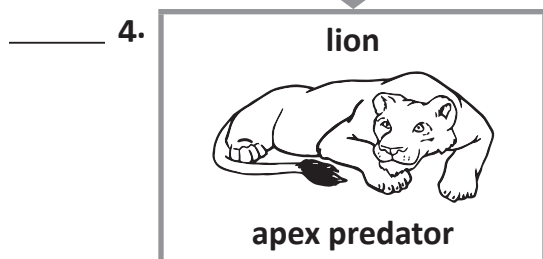
- (a) This consumer feeds on primary and secondary consumers. This consumer may be an omnivore or a carnivore.



- (b) This consumer is an herbivore. It only eats producers, such as grass.



- (c) This consumer may be a carnivore or an omnivore. Except for humans, this consumer does not have any enemies.



- (d) This consumer feeds mainly on primary consumers. This consumer may be an omnivore or a carnivore.

Draw It! Draw a picture of a consumer. Write a caption that describes the type of consumer (primary, secondary, tertiary, or apex predator).

Caption: _____

UNIT 12: The Four Systems of Earth

Name: _____

Flight of the Osprey

Flying above the lake, the osprey looked closely at the water's surface. He was on the hunt. Suddenly, the bird saw a glint of silver: a fish! The osprey dove toward the water, flexing his talons with anticipation. In a flash, the bird snatched the fish from the water. He had found his dinner!

In his many travels, the osprey had seen much of the world. The bird knew each of the Earth's four **systems**. A system is something that is made up of many connected parts. The Earth's four systems are the **atmosphere**, **hydrosphere**, **lithosphere**, and **biosphere**.

When the osprey flew through the sky, he was in Earth's atmosphere. This system is made up of all the gases that surround Earth, such as oxygen and carbon dioxide.



When the bird dove down to the water, he made contact with the hydrosphere. This system includes all the water found on our planet and is made up of lakes, oceans, and rivers. Fog and clouds are also part of the hydrosphere.

When the osprey returned to his nest in the trees, he came in contact with the biosphere. Trees and all living things are part of Earth's biosphere. This includes plants, animals, and people.

When the osprey landed on the ground, he came in contact with the lithosphere. This is the system that makes up Earth's outer layers, including the ground we walk on and the ocean floor. Landforms, such as mountains and valleys, are also part of the lithosphere.

Directions: Complete the sentences below with the correct system: *atmosphere*, *hydrosphere*, *lithosphere*, or *biosphere*.

1. Animals and plants are part of the _____.
2. The _____ includes all Earth's water.
3. Oxygen is part of Earth's _____.
4. The _____ is made up of Earth's outer layers.

Name: _____

The Four Systems

Directions: Think about what you have learned about Earth's four systems. Match each sentence starter with its correct ending.

- | | |
|--|------------------------------|
| _____ 1. Oceans, lakes, and rivers are part of | (a) the <i>lithosphere</i> . |
| _____ 2. The gases that surround Earth make up | (b) the <i>hydrosphere</i> . |
| _____ 3. The ground we walk on and the ocean floor are part of | (c) a system. |
| _____ 4. Something that is made up of many connected parts is called | (d) the <i>atmosphere</i> . |
| _____ 5. All the living things on Earth make up | (e) the <i>biosphere</i> . |

Label It!

Directions: Label each of Earth's four systems on the image below.

