Marlin Elementary
Ms. Blacconiere – Sci/SS/SEL
Grade 5

Day 3

Name ____________________
Ms. Blacconiere - Grade 5: Day 3, Offline Packet

Student Name: ______________

Directions:

- If you do NOT have access to Canvas and/or the online work, please complete the following offline work pages for **DAY 3**
- Please return the completed packet to your teacher upon your return to school.
Properties of Matter: Volume, Mass & Weight

Volume

Volume is the amount of space an object takes up. Volume is measured in milliliters (mL), cubic centimeters (cm³ or cc), and liters (L).

Measuring Volume of a Liquid

An object's volume is the amount of space that it fills. The volume of a liquid is often measured using measuring cups, beakers, and graduated cylinders.

Liquids have no shape of their own. So, to measure the volume of a liquid, we have to put it into a container. Lab tools used to measure liquid volume have special markings on them. When the liquid inside the container lines up with one of the markings, that is the amount of liquid that is present.

To measure the volume of a liquid, read the mark that lines up with the surface of the liquid. The beaker shown below measures liquid volume in milliliters. (Milliliters is shortened to "mL" on the beaker to save space.) What is the volume of the liquid in the beaker?

Since the surface of the liquid is at the 150 mL mark, the volume of the liquid is 150 milliliters.
Calculating Volume of a Box

For objects that are shaped like a box, you can find its volume by measuring each side and multiplying them together. The box below has width (W), length (L), and height (H). So, the formula is:

\[ \text{Volume} = \text{length} \times \text{width} \times \text{height} \]

Example problem:
Find the volume of a box with a length of 5 centimeters, a width of 4 centimeters, and a height of 6 centimeters.

Step 1: Start with the formula for the volume of a box:
\[ \text{Volume} = L \times W \times H \]

Step 2: Fill in the measurements from the problem:
\[ \text{Volume} = 5 \text{ cm} \times 4 \text{ cm} \times 6 \text{ cm} \]

Step 3: Solve the equation:
\[ \text{Volume} = 120 \text{ cubic centimeters}, \text{ or } 120 \text{ cm}^3 \]

Calculating Volume by Water Displacement

Another way to find the volume of something is to see how much water it displaces. To measure this, use a graduated cylinder or some other tool for measuring the volume of liquids. When you put an object in the water, the water level will rise. How much the water level changes is equal to the volume of the object. For example, look at the pictures of the graduated cylinders below.
In the first graduated cylinder, which contains only water, the volume is 18 mL (or 18 cm$^3$). In the second picture, a marble has been added, and the volume of the two materials in the cylinder is 21 mL (or 21 cm$^3$). To find the volume of the marble, we have to subtract the volume in the first cylinder from the volume in the second one.

The marble's volume is $21\text{ cm}^3 - 18\text{ cm}^3 = 3\text{ cm}^3$

**Mass vs. Weight**

*Mass* is a measurement of how much matter is present in an object, whereas *weight* is the force of gravity acting on the mass of an object.

**Mass is Constant**

Mass is a physical property of all matter in the Universe. Mass describes the amount of matter in something, and it is measured in grams or kilograms. The mass of an object is constant and does not change with location. So, a person with a mass of 45 kg on the surface of the Earth will have a mass of 45 kg on the Moon, or even in outer space.
The mass of an object or individual does not change with location, so it is the same everywhere. (Note: Image not drawn to scale.)

Weight is Variable

Weight is a force, which is measured in Newtons (N), and it is dependent on two things:

- the mass of the object
- the amount of gravity acting on the object

Weight is different from mass because weight depends on the amount of gravity pulling on the object. Since the strength of gravity varies throughout the Universe, the weight of an object also varies throughout the Universe. For example, the gravity on the surface of the Earth is about six times stronger than gravity on the Moon. This is because Earth is much more massive than the Moon.

The weight of an object or individual is dependent on the strength of gravity acting on its mass. (Note: Image not drawn to scale.)
In the example above, the man's mass is 45 kg. Since the gravity on Earth is six times more than it is on the Moon, the same man weighs six times as much on Earth as he does on the Moon.

While in space, an astronaut's weight might be 0.0 N since the gravitational force acting on him or her is very, very small.

**Measuring Weight**

A spring scale can be used to measure the weight of an object. Spring scales are used by attaching an object to the hook at the end of the scale. The weight of the object is displayed on the tube of the scale in newtons (N).

The weight of the red ball is just over 5 newtons.
Properties of Matter: Volume, Mass & Weight

Question 1.

Angela has just purchased a new purse to match her favorite shoes. The purse has a length of 13 cm, a width of 5 cm, and a height of 8 cm. What is the volume of the purse?

A. 520 cm$^3$
B. 585 cm$^3$
C. 480 cm$^3$
D. 560 cm$^3$

Question 2.

A spring scale is a tool that is used to measure the weight of an object. Weight is the measure of the force of _______ that is acting on a particular mass.

A. magnetism
B. friction
C. gravity
D. all of these

Question 3.

Alice's teacher has given her a cup of water. She needs to find the volume of the water.

How can Alice find the volume of the water?

A. Alice can set a thermometer in the cup of water to find the volume.
B. Alice can pour the water into a graduated cylinder to find the volume.
C. Alice can put a ruler into the cup of water to find the volume.
D. Alice can look at the cup of water and estimate the volume.
Question 4.

The image below shows an object hanging from a spring scale.

What is the weight of the object?

A. 0.23 N
B. 2.25 N
C. 1.25 N
D. 3.75 N

Question 5.

Jake did an experiment in his science class. He found two of the same kind of beaker, and he filled them with different liquids. Then, he measured the volume and mass of each. The image below shows the two beakers.

Based on the image, which of the following is the best conclusion?

A. The liquids have the same volume and different masses.
B. The liquids have the same volume and the same mass.
C. The liquids have different volumes and different masses.
D. The liquids have different volumes and the same mass.
Question 6.

The table below compares the weight of three students on the Earth and on the Moon. The students' weight on the Moon is approximately \( \frac{1}{6} \) of their weight on the Earth.

<table>
<thead>
<tr>
<th>Student</th>
<th>Weight on Earth</th>
<th>Weight on the Moon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carly</td>
<td>54 pounds</td>
<td>9 pounds</td>
</tr>
<tr>
<td>Tracy</td>
<td>65 pounds</td>
<td>11 pounds</td>
</tr>
<tr>
<td>Greg</td>
<td>71 pounds</td>
<td>12 pounds</td>
</tr>
</tbody>
</table>

Which of the following best explains why the students weigh more on the Earth than on the Moon?

A. The gravitational force of the Moon is less than the gravitational force of the Earth.
B. The atmosphere of the Earth is much thicker than the atmosphere of the Moon.
C. The magnetic field of the Moon is smaller than the magnetic field of the Earth.
D. The surface temperature of the Earth is higher than the surface temperature of the Moon.

Question 7.

Which of the following measures the amount of matter in a given object?

A. volume
B. density
C. mass
D. weight

Question 8.

What causes an object with mass to have weight?

A. the object's volume
B. electric circuits
C. the force of gravity
D. nearby magnets

Question 9.

Which of the following is a force?

A. volume
B. weight
C. length
D. mass
Question 10.

Mike needs to find the volume of a box. He has measured the sides of the box with a ruler and knows that it is 2 inches tall, 5 inches wide, and 10 inches long.

Which of the following expressions should Mike use to find the volume of the box?

A. length × height
B. width × length + height
C. length × height × width
D. height × width
Native American Culture

The Mississippian civilization stretched from the Great Lakes to the Gulf of Mexico. It spread from the Mississippi River to the Appalachian Mountains. The Mississippian civilization dates back from 600 A.D.

These Native Americans were also known as **Mound Builders** because they built more than 5,000 mounds of earth across the land. Some of the mounds were religious centers and tombs, but some were central meeting places for cities. Here are more facts about the Mississippi Mound Builders.

- **Architecture**: They built the city of Cahokia, the biggest city of its time. More than 100 mounds are found in the area of the city. Today, Cahokia is found in Illinois.

- **Government**: Chiefs ruled the individual cities. They oversaw the work when building mounds. A complex government structure probably provided assistance and council to the chief, but specific details about it are not known today.

- **Agriculture**: They grew maize (corn), squash, and beans. These crops were called the "Three Sisters." The northern areas had to grow foods that could thrive during the shorter growing season.

- **Religion**: Farming was important to the civilization, so their religion was developed around a sun god. They built some of their mounds to be closer to their god.

- **Cultural Contributions**: They were skilled at crafts. They made artistic pottery and pipes. Later, they also made bows and arrows to help them hunt.

The Anasazi

Many Native American groups have lived in the United States. One of these groups, called the Anasazi, lived for hundreds of years in the southwestern part of the country. Although the Anasazi are no longer a tribe, they hold an important place in history.
The Anasazi were a Native American group that lived in the southwestern United States a long, long time ago. The Anasazi lived there from 100 B.C. until around 1300 A.D.

The Anasazi lived in what is today called the Four Corners area of the country. The Four Corners is a place where four states connect: New Mexico, Colorado, Utah, and Arizona.

The climate of the Four Corners area is very dry. In the beginning, many of the Anasazi people hunted animals and gathered food. Later they were able to grow food crops by building irrigation systems. The Anasazi depended on the crops for their food.

Not much is known about the Anasazi people. Scientists think that at first, the Anasazi carved caves into the sides of cliffs, and they lived in them. Later, the Anasazi may have built homes called "pit houses" out of mud and stone. Over time, they learned to build stone houses near or under cliffs. Scientists still don't know for sure, because there are no Anasazi people around to ask.

Around the year 1300, the Anasazi began to move away from their homeland. Scientists think that a long dry period called the Great Drought caused the Anasazi to move away. There was not enough water to grow food. The Anasazi may have moved north to find a better place to live.

Native American Groups

There were many different groups of Native Americans who lived in North America before the arrival of the Europeans. Native American tribes who lived in the same region often had many things in common with other tribes that lived nearby. Listed below are some of the regional groupings of Native Americans.
Native American Cultures, 1500 AD

Arctic

The Inuit settled in the Arctic. The Inuit:

- were hunters and fishers
- built homes called igloos out of blocks of snow
- used dogs to pull sleds
- settled in Alaska, Canada, and Greenland

Plains

Some tribes in the Plains region were the Sioux (Lakota), Cheyenne, Pawnee, and Comanche. The Plains Indians:

- hunted animals like buffalo for meat and hides
- gathered berries for food and dyes
- planted vegetables in the fertile land
- built teepees that were easy to transport because they had to move to find food
- had warm summers and cold winters, so the teepee was a shelter from the weather

Eastern Woodlands

Some tribes in the Eastern Woodlands region were the Mohicans, Powhatan, Wampanoag, Iroquois, and Huron. The Eastern Woodland tribes:

- lived in a forest area with an abundance of trees for making homes and boats
- built longhouses out of wooden poles and bark that housed several families
- hunted deer and other animals in the forests for food and hides
- also fished in streams and rivers
- had a large quantity of rain, which made the soil good for growing crops
- grew corn, beans, and squash
- joined together to form the Iroquois Confederacy (Mohawk, Oneida, Onondaga, Cayuga, and Seneca tribes)
- had a matrilineal society, meaning family lines were passed down through the mother

Southeast

Some tribes in the Southeast region were the Seminole, Cherokee, Chickasaw, Choctaw, and Creek. The Southeast Indians:

- cleared forests in order to have land on which they could farm
- built wigwams out of wood poles and bark
- lived in a warm, wet climate

Southwest

Some tribes in the Southwest region were the Anasazi, Apache, Hopi, and Navajo. The Southwest Indians:

- ate wild turkeys and buffalo when they could
- did not have many animals in the area, so they grew crops
- had frequent hot weather in some areas and did not wear much clothing
- grew cotton to make cool, lightweight clothing
- built adobe homes out of clay or stone to protect them from the hot weather

Pacific Northwest
Some tribes in the Pacific Northwest region were the Kwakiutl, Nez Perce, Tlingit, Chinook, and Quinault. The Pacific Northwest Indians:

- had a considerable amount of trees to make canoes, boats, and houses
- made clothes out of tree bark and the skins of animals found in the ocean, such as seals
- ate fish if they lived along the coast or near streams
- had mild weather in most areas
- used oil to waterproof their clothing because it rained often
- lived in the area around the Columbia River Plateau in Washington, Oregon, and Idaho, and British Columbia in Canada
Native American Culture

Question 1.
What are some contributions in the arts by the American Indians?
A. plays, painting, and jewelry
B. statues, books, and pottery
C. jewelry, pottery, and weaving
D. paintings, books, and weaving

Question 2.
Early North American Cultures

Where did the Lakota Indians live?
A. Southwest
B. Eastern Woodlands
C. Plains
D. Northwest Coast

Question 3.
What types of houses did the Pueblo people live in?
A. wood houses
B. adobe houses
C. lodges
D. teepees
Question 4.

What were the three main plants grown by the Powhatan people?
A. carrots, potatoes, and squash
B. tomatoes, potatoes, and beans
C. potatoes, celery, and corn
D. corn, beans, and squash

Question 5.

The tribes living in the Mississippi River Valley from around 800 A.D. until the 1500s were known for
A. sailing to places around the world.
B. killing all of the buffalo in North America.
C. being friendly to American colonists.
D. building large earthen mounds.

Question 6.

What are some contributions of the American Indians?
A. farming, legends and stories, and respect for nature
B. lumber industry, government, and legend and stories
C. electricity, ranching, and farming industry
D. wagons, shipbuilding, and arts

Question 7.

What types of houses did the Lakota people live in?
A. teepees
B. lodges
C. wood houses
D. adobe houses

Question 8.

The Powhatan Indians helped the English settlers survive by
A. showing them new crops such as corn.
B. showing them how to make clothing.
C. sharing their jewelry and pottery.
D. telling them stories and folktales.
Question 9.

Cahokia was the cultural center for the people known as the Mississippian. The Mississippian peoples lived in the Midwestern, Eastern, and Southeastern areas of what is now the United States. What was one reason the Mississippian people would travel to the city of Cahokia?

A. to serve in the army
B. to vote for a new chief
C. to help build a mound
D. to buy and sell goods

Question 10.

What are some of the features of the land where the Powhatan Indians lived?

A. deserts, forests, and prairies
B. deserts and high flatlands
C. plains, prairies, and rolling hills
D. forests, rivers, mountains, and coastline