Mrs. Stell

7th Science

Packet days 17-26

Read the information and complete one worksheet per day
Moon Phases and Ocean Tides

- When you look up in our night sky, you will see the moon!
- The way that the moon looks changes during the month.
- We say that the phases of the moon are a cycle in nature.

- The Earth has one moon that revolves around the Earth. It is a satellite of Earth.
- It takes 29 ½ days – almost 1 month – for the moon to move (revolve) around the Earth.
- The moon does not make any light of its own. The lighted parts that we see are called phases.
- The moon reflects light from the sun.
As the moon moves (revolves) around the Earth, it looks like it has different shapes. The shape of the moon does not really change. It just changes its location in space.
Phases of the moon.

• During a new moon, the moon looks dark.

• As the surface of the moon that we see gets bigger, we say that the moon is waxing.

• When the moon is ¼ of the way around the earth, it is in its first quarter phase. We see it as half lit.
• After the quarter moon, the moon is moving towards a full moon. We call this a waxing gibbous moon.

Notice that the bright part of the moon is getting larger. That’s what we mean by “waxing.”

• Now it’s time for a full moon. The entire face of the moon that we are able to see shines during the full moon.

• Now that the moon is ¾ of the way around the Earth, it seems to be half lit. We call this a waning quarter moon.
• Following the full moon, the surface of the moon seems to be getting smaller. We call this a waning moon.

This is a **waning gibbous moon**.

• Before we get to the new moon, we see a sliver of moon shining up in the sky. This is a waning crescent.

• Now we see a **new moon** again.
The following picture gives the idea of the Phases of the Moon.

It takes the moon about 1 month (29 ½ days) to go through the phases.
• The moon affects the oceans.

• The moon’s pull is called gravity.

• **Gravity pulls on the oceans and causes the tides.**

• **What objects will have a gravitational attraction to the Earth?**
Tides

– Tide is a periodic rise and fall of the sea level under the gravitational pull of the sun and moon.
– Thus an alternating pattern of rising and falling sea level with respect to land is what we know as the tides.

• *High tide* – water level is at its highest
• *Low tide* – water level is at its lowest

Cause of Tides

• The gravitational pull of the moon on Earth and Earth’s waters is the major cause for tides.
• Moon has greater gravitational pull on the earth’s tides because it is more closer to the earth than the sun.
• Sun also plays an important role to cause tides but they are smaller because the sun is so much farther from Earth than the moon.

Gravitational effect of Moon

• The moon’s gravity pulls on the earth, and pulls the water towards it. The water moves up into a slight bulge on the side of the earth that faces the moon.
There are **two big bulges** of water form on the Earth.

1. The side of the earth **facing** the moon

2. The side of the earth **facing away** from the moon
The side of the Earth facing the moon.

The side of the Earth facing away from the moon.
High tides

Low Tides
Key features of ocean tides

• Each day TWO high tides and TWO low tides occur.
• Generally one low-tide/high-tide cycle takes at every 12 hrs and 25 min.
• So, there are 6 hours between a high tide and a low tide.
• The difference in ocean level between high-tide and low-tide is called as Tidal Range.

   **Tidal range is given as follow:**
   
   1. High Tide = 30 ft, Low Tide = 20 ft
   2. High Tide = 20 ft, Low Tide = 12 ft
   3. High Tide = 50 ft, Low Tide = 20 ft
The declination of Moon affects the timing of tides generation.

The following factor affects to timing of tides:
1. Local geography of the coastline,
2. Topography of the ocean floor,
3. Depth of the water.

Types of Tides
**Spring Tides:**

- Spring tides occur when the Earth, the Sun, and the Moon are in a line.
- Spring tides are strong tides because the Moon & the Sun’s gravitational force combine to create a strong tide.
- Spring tides occur during the full moon and the new moon.
- In spring tides, high tides are higher and low tides are lower than normal.
Gravitational effect of Sun

• **Neap Tides:**
  - Neap Tides occurs when Moon & Sun are perpendicular to each other.
  - Neap tides are weak tides.
  - The gravitational forces of the Moon and the Sun are perpendicular to one another.
  - Neap tides occur during quarter moons.
<table>
<thead>
<tr>
<th>K</th>
<th>What do you know about the Moon Phases?</th>
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</thead>
<tbody>
<tr>
<td>W</td>
<td>What do you want to know about the Moon Phases?</td>
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<tr>
<td>L</td>
<td>What did you learn about the Moon Phases?</td>
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</tbody>
</table>
Worksheet – 2

Write as many words or phrases about the Moon Phases.
<table>
<thead>
<tr>
<th>K</th>
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<td>L</td>
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</tr>
</tbody>
</table>
Worksheet – 4

Write as many words or phrases about the Ocean Tides.
Draw and label the phases of moon. Write a short description of it.
Watch the moon for a month beginning when it is either Full or New. Record the changes you see on the calendar below.

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<th>Friday</th>
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Draw each phase of the moon and label its name.
Write the answer of below questions.

• Which are the things you know about the Moon?

• What are the different type of tide? Write in detail.

• What are causes of tide?
Read the facts below. Write true or false.

• The moon is smaller than the Sun.
• The moon makes the waves move. (Affects the tides.)
• The moon is very young.
• The moon makes its own light.
• The moon orbits the Earth.
• The moon is a planet.
• The moon is made of cheese.
• The moon is very hot in the day and very cold at night.
- **Write the characteristics of following groups.**

<table>
<thead>
<tr>
<th>Spring tides</th>
<th>Neap Tides</th>
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</table>
Write the characteristics of following groups.

<table>
<thead>
<tr>
<th>New moon</th>
<th>Full moon</th>
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