

June 17, 2020



Dear 6th graders,
This is your summer packet for Science. This year we will be covering Earth and Space Sciences. This packet covers a section on Planets & the Moon and the history of the Earth that you will need next year when we talk about Space . It also contains a section on the Plastic. Try to think about how we solve the environmental problems that plastic causes. (Hint: This could tie in nicely with a STEM project).

Just to let you know that there are some reading passages in the packet. I do work with Ms. Brown, your ELA teacher on your writing for my class.

This packet needs to be turned into me on the first day of school in September. You have the option of doing it online in your Google Classroom. This will count as your first test grade so don't forget to turn it in.

Enjoy your summer! I miss each and every one of you.

Sincerely,

Mrs. Powell



The History of Planet Earth

by ReadWorks



Our planet is no spring chicken. The history of the earth stretches over billions of years. In that time period, a lot has changed. Some of those changes took place over a very long time, too slowly and gradually for people to discern. Some changes, on the other hand, took place very quickly.

Water, wind and ice slowly shape the surface of the earth, constantly moving all around us. Activity just beneath the surface of the earth's crust creates rapid changes in the shape of the land—that's where we get volcanoes, landslides and earthquakes.

Glaciers, which are huge, very old formations made out of water, earth and ice, can even change the size and shape of the oceans. These major shifts take place over millions of years. We can see the results, but apart from measuring them and seeing where growth or change took place, we can't observe these changes as they occur. They simply happen too slowly.

Erosion is an example of a slow process that changes the surface of the earth. Think of a windy beach, how sand from the beach is carried toward the dunes or, depending on the behavior of the wind, how the sand from the dunes is carried further down the beach. We can see and feel the sand moving over the land and through the air, but the long-term effects of that movement won't be visible for years.

The earth's surface is also made up of very slowly moving parts, called tectonic plates. These plates fit like puzzle pieces and make up the outermost layer of the planet. When this layer moves around, it can cause earthquakes and volcanic eruptions. It's very easy to spot these changes as they're happening! In fact, we have to be very careful and prepare for them in advance, and take safety measures before and after they occur.

Volcanoes, earthquakes and landslides aren't everyday events. If they were, we'd be in big trouble! Ordinarily, the movement of the plates is extremely slow, yet very powerful. Plate movement is one of the major forces that changes the location and shape of continents and oceans-major changes that we can't detect and that appear gradually over millions of years.

Some earth-changing events occur naturally, but others come from us, from humans. It's important to remember that we have our own impact on the earth. In many cases, humans influence the earth's natural processes on purpose, speeding them up, slowing them down, or manipulating them in other ways to get something we want-usually a natural resource, like water or oil. Some of what we do to our planet is on purpose, and some of it is accidental.

Cutting down forests, building new houses, bridges, office buildings and movie theaters, can lead to quickening natural events that might have taken much longer without humans' involvement.

You can walk outside any time you like and see the planet stir: wind moving particles of sand and rock, water dripping from one surface onto another, seasons changing each year. Everything you see on a walk around your neighborhood contributes to the earth's changing and maturing, just like everything we do every day contributes to what we'll be like as people 10 years, 20 years, even 50 years from now. And those changes in our bodies and personalities-unless something unusual happens-take time to show up too.

It's interesting to think about how what we do and the forces that act on us affect who we become. The earth is like a big, changing organism, just like we are.

Name: _____ Date: _____

1. How much has the earth changed in its history?

- A. a lot
- B. a little
- C. not at all
- D. not enough for anyone to notice

2. Two effects mentioned in this passage are earthquakes and volcanic eruptions. What is their cause?

- A. wind that blows sand from one place to another
- B. water dripping from one surface onto another
- C. the construction of houses, movie theaters, and bridges
- D. the movement of the earth's outermost layer

3. Some of earth's changes take place too slowly for people to notice them happening.

What evidence from the passage supports this statement?

- A. Changes like earthquakes and volcanic eruptions are not everyday events, but they are easy to spot when they are happening.
- B. People notice changes glaciers have made to the size and shape of earth's oceans after the changes have taken place.
- C. Earth's history goes back billions of years, and a lot of changes, both fast and slow, have taken place over that period of time.
- D. People sometimes influence earth's natural processes on purpose by speeding them up, slowing them down, or manipulating them in other ways.

4. What is an example of change on earth that people can see happening?

- A. glaciers changing the size and shape of earth's oceans
- B. sand blowing from one part of a beach to another
- C. tectonic plate movement changing the location and shape of earth's continents
- D. tectonic plate movement changing the location and shape of earth's oceans

5. What is this passage mainly about?

- A. glaciers and erosion
- B. landslides and earthquakes
- C. changes in the earth
- D. changes in the human body

6. Read the following sentences: "Water, wind and ice slowly shape the **surface** of the earth, constantly moving all around us. Activity just beneath the **surface** of the earth's crust creates rapid changes in the shape of the land-that's where we get volcanoes, landslides and earthquakes."

What does the word "**surface**" mean in the sentences above?

- A. a process that changes the shape of the earth
- B. an effect that takes many years for people to notice
- C. the middle or central part of something
- D. the outer layer or part of something

7. Choose the answer that best completes the sentence below.

The earth is shaped by the movement of different forces, _____ water, wind, and ice.

- A. never
- B. instead
- C. finally
- D. including

8. How do humans influence the earth's natural processes?

9. How are changes in the earth similar to changes in human beings?

10. The passage describes some ways that changes in the earth and changes in people are similar. What are some ways that changes in the earth and changes in people are different? Support your answer with evidence from the passage.

PLANET RESEARCH

Research the major planets in our solar system. When you have found the answers, fill in the planets.

Mercury

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Venus

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Earth

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Mars

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Jupiter

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Saturn

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Neptune

Distance from the Sun _____

Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____

Uranus

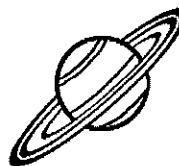
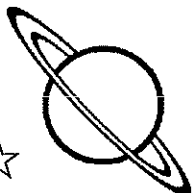
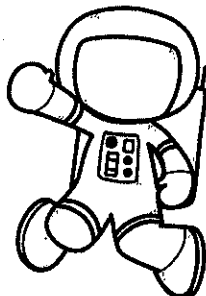
Distance from the Sun _____

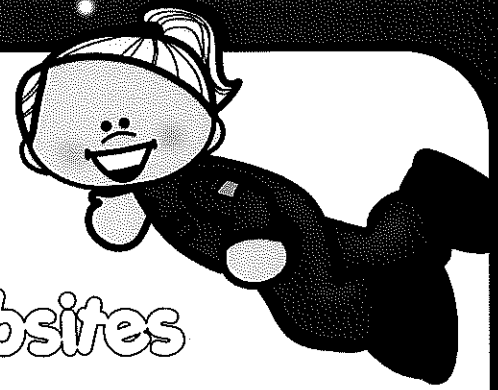
Length of time for one revolution around the Sun _____

Diameter _____

Temperature _____

Number of moons _____





Suggested Websites

The websites below are simply a starting point for your students to locate the answers for the recording sheet, or a place for the teacher to go to first to help with the answers!

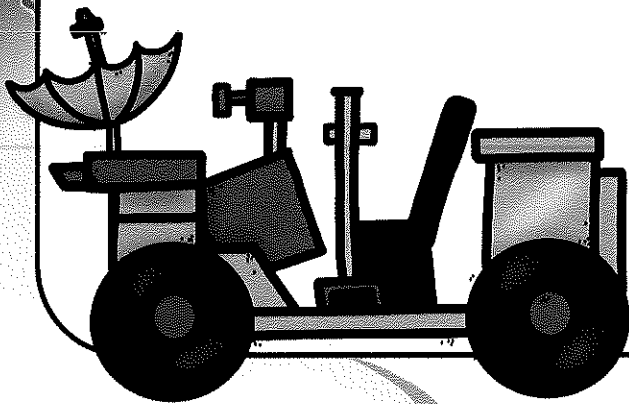
<https://space-facts.com/planets/>

<https://theplanets.org/planets/>

<https://solarsystem.nasa.gov/planets/overview/>

<https://nssdc.gsfc.nasa.gov/planetary/factsheet/>

<https://www.nationalgeographic.com/science/space/our-solar-system/>



Can You Find The Proof?

A Giant Planet: Jupiter

There are eight planets that orbit our sun. To orbit means to travel around a path. Jupiter is the fifth planet from the sun. Jupiter travels around the sun very slowly. It takes about twelve Earth years to complete one orbit. It is also the largest planet in our solar system. Jupiter is so huge, that if it were an empty ball, it could hold more than 1,000 Earths. It is made up of gases and liquids. When we see pictures of Jupiter, we are really seeing the clouds that surround it instead of a solid surface. From a distance, Jupiter's clouds look like colored spots and stripes. One of the spots is a huge storm called the Great Red Spot. That storm is more than twice as wide as Earth and started hundreds of years ago!

Scientists have counted more than 70 moons orbiting around Jupiter. Most of what we know about Jupiter we have learned from space probes. Space probes are machines that can fly through our solar system and take pictures to send back to Earth. Scientists believe that it is very important to study the other planets in our solar system and beyond because it can help us to better understand the history of the Earth.

Directions: Lightly color the pencils below in the colors listed. Answer each question using complete sentences. Underline where you found your answers in the text above using the same colors.

1. Who counted more than 70 moons orbiting Jupiter? BLUE
2. What is Jupiter made of? RED
3. When did the storm called the Great Red Spot begin? GREEN
4. Where do space probes send their pictures? YELLOW
5. Why do scientists believe it is important to study other planets? ORANGE

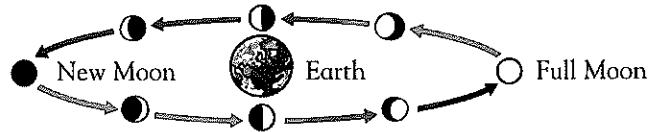


The many phases of the Moon

Background knowledge

Did you know that the Moon is not a source of light? The light from the Moon is actually reflected light from the Sun. The Moon orbits around Earth in about 28 days. Depending on which part of its orbit it is in, you can see either a whole, round Moon reflecting light or just part of it. The different shapes you see of the Moon in the evening sky are known as the *phases of the Moon*.

The Moon's changing appearance during one month as seen from Earth.



Science activity

The chart below shows how the Moon appears from Earth. Can you work out the missing shapes, and complete the chart below?

Date in January	Moon's appearance
1st	
6th	
10th	
15th	
19th	
24th	
28th	

Science investigation

You can model the way the Moon appears as it orbits Earth. Use a flashlight to represent the Sun and a ping-pong ball for the Moon. Ask a friend to hold the flashlight still in a darkened room. Hold the ball at arm's length in front of the flashlight. Turn around slowly in a circle, keeping your eyes fixed on the ball. Can you see the reflection of the light on the ball? How does it compare to the phases of the Moon?

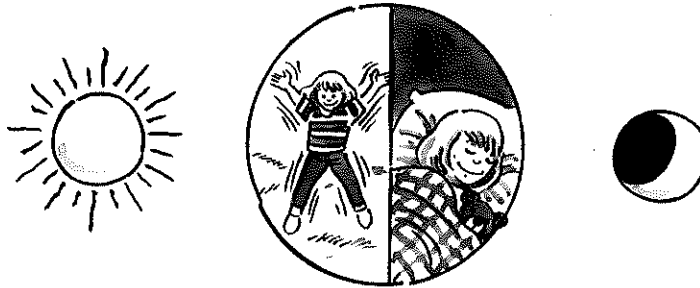


Night and day



Background knowledge

Earth completes one rotation on its axis every 24 hours. When the part of Earth where you live faces the Sun, it is daytime. Sunrise, also called dawn, occurs when the part of Earth where you are turns just enough for you to see the Sun. At sunset, Earth has turned so that again you can only just see the Sun. When it is night where you are, it is daytime for people living on the other side of Earth.



Science activity

Early one evening, Gus, who lives in London, England, was allowed to phone his uncle who lives in Montreal, Canada. Gus was very surprised to hear that his uncle was just about to have lunch because it was only 1:00 p.m.

What is the explanation for the difference in time?

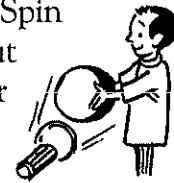
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Science investigation

Make a model of the Sun and Earth. Use a flashlight to represent the Sun and a basketball to represent Earth. Do this experiment in a darkened room. Place the flashlight on a table so that it shines into the room. Hold the basketball about 1 meter away, and turn it around slowly. The basketball is like Earth turning on its axis. Tape a white circle onto the ball. Spin the ball slowly at a slight angle so it is tilted like Earth. Notice at what part of the spin the circle appears lighted. Move it to other places and repeat. Are there locations that stay lighted longer than others?



ALL ABOUT PLASTIC

DIRECTIONS: Read the following passage about plastic, then answer the questions based on the nonfiction text.

Walk around your home and you are bound to find something made of plastic. Toys that make you smile and games that fill your family game night with laughter are probably made of plastic. Not to mention many of the yummy snacks you munch on are packaged in plastic. Plastic seems to be a very big part of our lives, but did you know that plastic has not always been around?



WHAT IS PLASTIC?

Plastic is one of the most useful inventions. It can be flexible or hard, depending on how people make it, and is now used in a lot of everyday items. A useful thing about plastic is that it can be all different shapes, sizes, and strengths. Plastic toothpaste holders are easy to squeeze, while hard plastic storage containers help preserve food and keep liquids from spilling. Plastic also lasts hundreds of years, so well-loved toys can last a long time.

HOW IS PLASTIC MADE?

Plastic is mostly made of oil. Oil comes from tiny plants and animals that have been squashed underground for a long time, and is created through a natural process.

To manufacture plastic, people need to gather the oil from deep underground using oil rigs. Then the oil is separated into different types of oils and gases at an oil refinery. When they separate the oil, refineries look for naphtha, which is a thin oil. At the petrochemical plant, people then heat naphtha to make the main ingredients of plastic. Finally, factories add color and chemicals to shape and mold the plastic into what they want to make.

**OIL
RIG**



**OIL
REFINERY**



**PETROCHEMICAL
PLANT**



**PLASTIC
FACTORY**

Plastic is cheap and relatively easy to make. If that weren't the case, then drink and snack companies would not use it to package their products.

Continued on the next page. →

WHEN DID WE START USING PLASTIC?

It took a while for scientists to discover plastic and realize its usefulness. Before we had plastic, people had fewer things. If those things broke, they would get them fixed instead of throwing them away. Most toys were made of wood or metal instead of plastic. Food was also wrapped in paper and used quickly, instead of being kept fresh for a long period of time.

Many innovators contributed to the invention of plastic, including Alexander Parkes in 1859. But the use of plastic didn't become popular until the last 80 years. During the Second World War, in the 1940s, a lot of military tools and equipment used plastic to help fight in the war. Some examples are parachutes and the plastic lining in helmets. About 50 years ago, plastic started to replace a lot of materials. Some materials that plastic replaced were steel in cars, glass in packaging, and wood in furniture.

DID YOU KNOW people make around **300 million tons of plastic every year**? That weighs as much as all the adults on earth!



Each year, 8 million tons of thrown-away plastic reaches the sea.



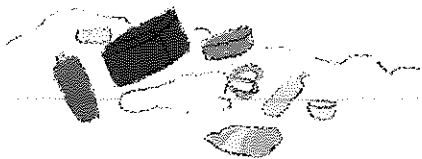
THESE TRIANGLES are placed on plastic products to identify the types of plastic. Numbers 3, 6, and 7 are plastics that are hardest to recycle because they give off the worst chemicals during the recycling process.

WHY ARE PEOPLE REDUCING THEIR PLASTIC WASTE?

While plastic is convenient because it lasts a long time and people can easily mold it into different shapes, its longevity is a problem. Since we make so much plastic every year, and much of the plastic is only used once – *hello plastic water bottles!* – the plastic waste people create is a lot for our environment to handle. Much of the plastic waste enters the oceans, which interferes with sea creatures and the ocean ecosystem.

Even though plastic can be recycled again, there are still some plastics that are non-recyclable. These plastics are called single-use plastics. These plastics include those used

to wrap greeting cards, or the plastic around new toys and games. Some plastic can be recycled, though. The type of plastic determines how easy or difficult the plastic is to recycle. The impact of plastics on society and the Earth is far-reaching. Plastic makes a lot of things easier, but there is a cost to that ease. The waste people create with their use of plastic is evident as well.



Continued on the next page. →

Name _____

Date _____

QUESTIONS

DIRECTIONS: Answer the questions based on the nonfiction text.

1. List one advantage and one disadvantage of using plastic based on information from the text.

ADVANTAGE	DISADVANTAGE
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2. Write one fact you learned from a sidebar.

3. Describe how the sidebars contribute to the article.

4. Create a sidebar to add to this article. Conduct research online or at the library to gather more information.

5. Consider this excerpt from the text:

“While plastic is great because it lasts a long time and people can mold it into different things easily, its longevity is a problem.”

What is the author’s view of plastic, based on this excerpt?

6. Circle the words from the text that show how the author feels about plastic.

7. Suggest an alternative title for the text. Why did you choose that title?