

## Earth Science Unit Test #2 Study Guide

**\*\*\*Test is on Friday, February 6<sup>th</sup>\*\*\***

**Objective: (TEK4.8 B) The learner will describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process.**

- The water cycle is the movement of water from the earth's surface to the atmosphere and back again. It is how water is recycled on earth.
- The sun is the driving force of the water cycle.
- The water cycle involves the following processes:
  - Evaporation- the process of liquid water changing to water vapor
  - Condensation- the process of water vapor changing to liquid water
  - Precipitation- any form of water that falls to earth (rain, snow, sleet, hail, mist)
  - Transpiration- water vapor given off by plants
- Be able to explain the water cycle- the sun heats the water on earth and causes it to evaporate, as it rises into the atmosphere where it is cold the water vapor condenses onto dust particles and forms clouds, when the water droplets get heavy enough gravity pulls them toward the ground as rain or another form of precipitation. The water falls to earth and flows across the surface as runoff where it can go to many different places (rivers, lakes, oceans, animals, plants, groundwater, etc...) and the process can repeat itself.
- Water can be stored in many places on earth including oceans, lakes, rivers, plants, animals, clouds, groundwater, caves, glaciers, etc.
- Groundwater is water stored under the ground. Runoff is water that runs off the earth's surface into rivers, streams, lakes, and oceans, called accumulation.
- Without the atmosphere and sun, we would not have weather or the water cycle.
- Resources to help you study:
  - Science Notebook- Water Cycle Notes
  - Online Science Resource- Stemscoedia and Activities for 4.8B
  - Brain POP Videos- Water Cycle, Clouds
  - Ms. Passons Webpage (More to Learn and Do)- Water Cycle Games

**Objective: (TEK 5.8B) The learner will explain how the Sun and the ocean interact in the water cycle.**

- The water cycle begins when the Sun's energy evaporates water from oceans, which collectively cover approximately 71% of the Earth's surface. About 97% of the earth's water is found in the oceans.
- Water that evaporates from the ocean does not contain salt, the salt is left behind when it evaporates.
- Energy from the sun affects the temperature of the oceans and how water moves within them. The oceans and sun interacting also affects weather.
- Energy from the sun heats the ocean. The oceans are warmer near the equator and cooler at the poles. The ocean temperatures also change with the seasons.
- The currents can change ocean temperatures. Currents carry warm water from the equator toward the poles. Other currents carry cool water from the poles toward the equator.
- Resources to help you study:
  - Science Notebook- Water Cycle Notes
  - Online Science Resource- Stemscoedia and Activities for 5.8B

- Brain POP Videos- Oceans, Ocean Currents
- Ms. Passons Webpage (More to Learn and Do)- Water Cycle Games

**Objective: (TEK 5.8A) The learner will differentiate between weather and climate.**

- Weather is the measure of the atmospheric conditions at any given time.
- Weather happens in the layer of air around our earth called the atmosphere. We have weather here on earth because of our atmosphere.
- Weather conditions that can be measured are temperature, air pressure, precipitation, humidity, wind direction, and wind speed.
- Wind is caused by the uneven heating of the earth by the sun. Warm air masses meet cold air masses and cause wind.
- The sun is the cause of all weather on earth.
- Climate is an average of the weather conditions in an area over a long period of time, at least 30 years.
- Be able to give examples of weather vs. climate and tell the difference between the two.
- Resources to help you study:
  - Science Notebook- Weather vs Climate Notes and Activity
  - Online Science Resource- Stemscoopedia and Activities for 5.8A
  - Brain POP Videos- Weather, Climate Types, Earth's Atmosphere, Wind, Clouds, Temperature
  - Ms. Passons Webpage (More to Learn and Do)- Weather vs. Climate Game

**Objective: (TEK 4.8A) The learner will measure and record changes in weather and make predictions using weather maps, weather symbols, and a map key.**

- Weather maps can show the current weather conditions and also forecast what the weather is expected to be like.
- Weather generally moves west to east across the United States.
- Fronts are caused by moving air masses of different temperatures. Weather is usually changing at fronts.
- When reading a weather map there are symbols that indicate precipitation, fronts, and pressure areas.
  - A high pressure area is indicated by a blue H and means sinking air and usually clear, sunny skies.
  - A low pressure area is indicated by a red H and means rising air and usually clouds and precipitation.
  - A cold front is indicated by a blue line with triangles facing the direction the front is moving. Cold fronts bring cooler weather often accompanied by precipitation and storms.
  - A warm front it indicated by a red line with half circles facing the direction the front is moving. Warm fronts bring warm weather and sometimes clouds or light precipitation.
- Resources to help you study:
  - Science Notebook- Weather Data Chart, Weather Maps and Forecasting Notes
  - Online Science Resource- Stemscoopedia and Activities for 4.8A
  - Brain POP Videos- Weather, Climate Types, Earth's Atmosphere, Wind, Clouds, Temperature
  - Ms. Passons Webpage (More to Learn and Do)- Weather Reporting and Predicting Game

**Objective: (TEK 5.8C) The learner will demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.**

- The earth rotates or spins on its axis once every 24 hours (a day).
- This causes there to be day and night on earth. The side facing the sun has daytime and the side facing away has night. There is about 12 hours of daylight and 12 hours of nighttime.

- Different places on earth experience day and night at different times, opposite of each other. Because the earth is round and tilted on its axis, different places on earth receive different amounts of sunlight at different times causing different lengths of day and night throughout the year and in different seasons.
- The rotation of the earth also causes the sun, moon, and stars to appear to move across the sky from east to west. This is called apparent motion
- Resources to help you study:
  - Science Notebook- Earth's Rotation Notes, Day and Night Diagram
  - Online Science Resource- Stemscoopedia and Activities for 5.8C
  - Brain POP Videos- Solar System
  - Ms. Passons Webpage (More to Learn and Do)- Earth, Sun, and Moon Games

**Objective: (TEK 5.8D) The learner will identify and compare physical characteristics of the Sun, Earth, and Moon.**

- Know the physical characteristics of the sun, earth, and moon and how they are alike and different. For example the earth and moon are both made of rock. The sun however is made of gases. The sun and earth both have an atmosphere but the moon does not.
- Resources to help you study:
  - Science Notebook- Characteristics of the Sun, Earth, and Moon Tree Map and Venn Diagram
  - Online Science Resource- Stemscoopedia and Activities for 5.8D
  - Brain POP Videos- Earth, Moon, and Sun
  - Ms. Passons Webpage (More to Learn and Do)- Earth, Sun, and Moon Games

**Objective: (TEK 4.8C) The learner will collect and analyze data to identify sequences and predict patterns of change in shadows, tides, seasons, and the observable appearance of the Moon over time.**

- A shadow is caused when an object blocks light.
  - Shadows on earth are created when an object blocks the light from the sun.
  - The direction and length of the shadow depends on the location of the sun in the sky.
  - The direction of the shadow will be opposite the location of the sun. For example, if the sun is rising in the east, your shadow will be in the west.
  - Shadows can be used to tell the time of day or directions.
  - The lower the sun in the sky the longer the shadow, the higher the sun in the sky the shorter the shadow.
  - Shadows are longer in the winter and shorter in the summer.
- Tides are the regular rise and fall of the ocean levels on earth.
  - Tides are caused by the force of gravity pulling the earth and moon toward one another.
  - The tides change as the earth rotates and the moon revolves around the earth.
  - Tides change 4 times a day-with 2 high tides and 2 low tides.
  - The side of the earth facing the moon and away from the moon will have high tide while to other 2 sides have low tide.
- Seasons are the pattern of yearly changes in the Earth's climate.
  - We have seasons on earth because the earth is tilted on its axis as it revolves around the sun.
  - It takes a year for the cycle of seasons to occur.
  - The seasons are opposite in the northern hemisphere and southern hemisphere.

- Know the positions of the earth in relation to the sun for each season in the Northern Hemisphere.
- Also know the characteristics of the seasons and the dates they occur.
- The lunar cycle is the changes in the phases of the moon caused by the revolution of the moon around the earth.
  - The lunar cycle takes 28-29 days to complete- this is called a lunar month.
  - The phase or shape of the moon we see changes depending on the lit part of the moon we see.
  - Half of the moon is always lit but we see different amounts of the lit part.
  - Know the 8 main phases- new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, last quarter, waning crescent- and what they look like and where they occur in relation to the position of the sun, earth, and moon.
  - Know the pattern of the phases and be able to sequence phases.
- Resources to help you study:
  - Science Notebook- Seasons, Shadows, Lunar Cycle/Moon Phases, Tides Notes
  - Online Science Resource- Stemslopedia and Activities for 4.8C
  - Brain POP Videos- Seasons, Solstice and Equinox, Tides, Moon Phases
  - Ms. Passons Webpage (More to Learn and Do)- Seasons Interactive, Lunar Challenge Activity, Shadows Activities, Tides Interactive

**Objective: (TEK 3.8D) The learner will identify the planets in Earth’s solar system and their position in relation to the Sun.**

- Know the order of the planets is Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.
- The asteroid belt separates the inner planets from the outer planets.
- The inner planets (Mercury, Venus, Earth, and Mars) are small, rocky and dense.
- The outer planets (Jupiter, Saturn, Uranus, and Neptune) are large and made of gas and most have rings.
- Resources to help you study:
  - Science Notebook- The Planets in Our Solar System
  - Online Science Resource- Stemslopedia and Activities for 3.8D
  - Brain POP Videos- Solar System, and videos for each planet
  - Ms. Passons Webpage (More to Learn and Do)- Planet Order Game

**Basic Solar System Information**

- The sun is the center of our solar system its gravity keeps the planets orbit around it.
- The earth rotates on its axis once every 24 hours making one day and revolves around the sun once every 365 ¼ days making a year.
- The moon rotates on its axis and revolves around the earth and takes 28 days to do both.
- Rotate or rotation means to turn on an axis or center point.
- Revolve or revolution means to move around another object in space.
- Resources to help you study:
  - Science Notebook- Solar System/Space Notes
  - Online Science Resource- Stemslopedia and Activities for 3.8C
  - Brain POP Videos- Solar System, Earth, Sun, Moon
  - Ms. Passons Webpage (More to Learn and Do)- Build a Solar System Game and Earth, Sun, and Moon Games