**Earth, Moon, & Sun: Study Guide**

**Earth in Space**

* The Earth **rotates** about its own axis every **24 hours**
* The Earth **revolves** around the sun every **365 ¼ days**

**Days and Years**

* **Day and night** fall upon the earth as it rotates about its **axis**
* One complete **revolution** of the earth around the sun is called a **year**

**Seasons**

* Earth has **seasons** because its axis is tilted at **23 0**
* Draw a picture of the earth’s position relative to the Sun when it is

summer in California

**Solstice and equinox**

* A **solstice**  occurs only 2 days a year in **December and June**. These days mark the longest and shortest **day** (sunlight hours) (respectively).
* The spring and fall **equinoxes** mark **when the earth is neither tilted towards or away from the sun** and equal lengths of daytime and nighttime.

**Phases of the Moon…**

* The moon revolves around the earth every **27. 3 days**
* The moon also rotates on its axis every **27. 3 days**
* “Moonlight” is actually **reflected** from the sun
* The different shapes of the moon are called “**phases**”

Name 8 different Phases of the moon

**New moon waxing crescent**

**Full moon waning crescent**

**Waxing gibbous waning gibbous**

**1st quarter 3rd quarter**

* What causes the moon’s Phases? **Moons revolution around the earth**
* The **phase** of the moon you see depends on how much of the “**near**” side of the moon faces the Earth…..

**Eclipses**

* The moon’s **revolution** around the earth is **tilted** with respect to the earth’s orbit…if it wasn’t, we would have an **eclipse** every month!
* A **solar** eclipse occurs when the moon passes **between** the earth and the sun, **preventing light** from reaching the earth.
* A **lunar** eclipse occurs when the earth is directly between the **Sun and the moon**
* Unlike solar eclipses, lunar eclipses can be seen from **everywhere.**

**The Tides**

* **High and low tides** result from the moon’s **gravitational pull** on the Earth’s waters.
* As Earth **spins,** the moon’s **gravity** pulls **oceans** toward the point on Earth’s surface **facing towards and away from the moon.**
* Every **day**, every location on earth experiences **2 high tides** and **2 low tides** as the Earth rotates.

**Spring and Neap Tides**

* When the moon and Sun are **in a line** (during a new or full moon), their **gravitational pull is amplified** resulting in a **spring** Tide.
* When Spring tides occur, **high** tides and **low** tides are extremely pronounced.
* When the moon is at a **900 angle** to the sun, the gravitational forces are **opposed**, and a **neap** tide results.
* This arrangement results in the **smallest distance** between high and low tides.
* Draw a picture of the earth, moon, and Sun During Spring and Neap tides (respectively)