

Daily Routine

- Sit in your appropriate seat quietly
- All back packs on the floor
- All cell phones away
- All iPods off and headphones out of your ears
- Have all necessary materials out
- No food or drink except for water

Bell Work

- How did Kepler help the development of astronomy?
- How did Galileo help the development of astronomy?

Announcements

- Homework – Phases of the Moon for February
- Finish Ellipse Lab Questions

Moon, Sun, Earth Relationships

The Solar System:

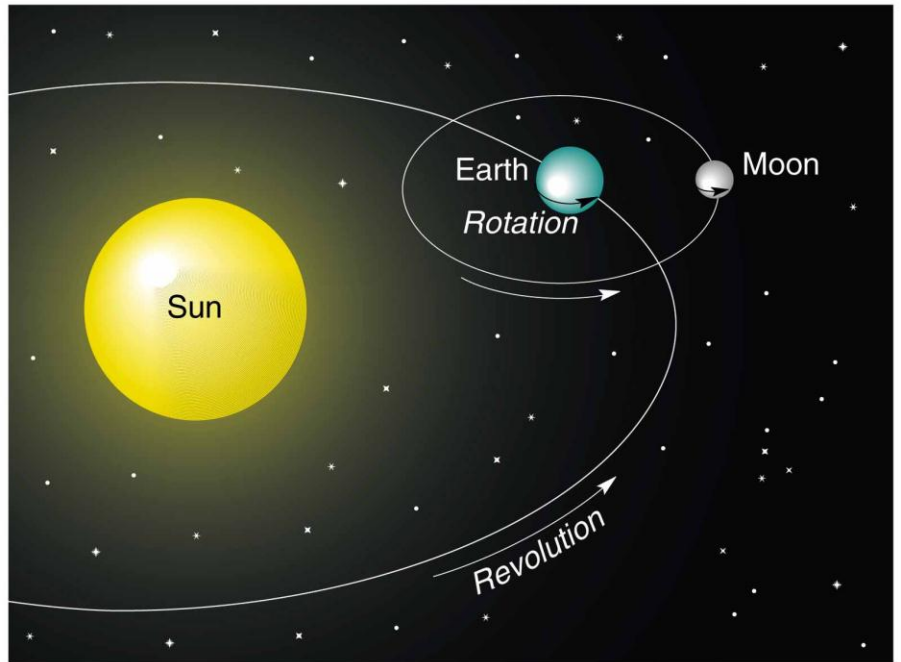
Is Pluto a planet or a dwarf planet?

Today we will

- Model Kepler's First Law of Planetary Motion
- Discuss the phases of the Moon and how it cycles through different phases due to Earth's positioning towards the Sun

Moon – Sun – Earth Movement

- Moon moves around the Earth (satellite) and Earth moves rounds the Sun
- Two types of movements: Rotation and Revolution
- Rotation – Spinning on an axis
- Revolution – Motion around an object around another (orbit)



Ellipse Lab

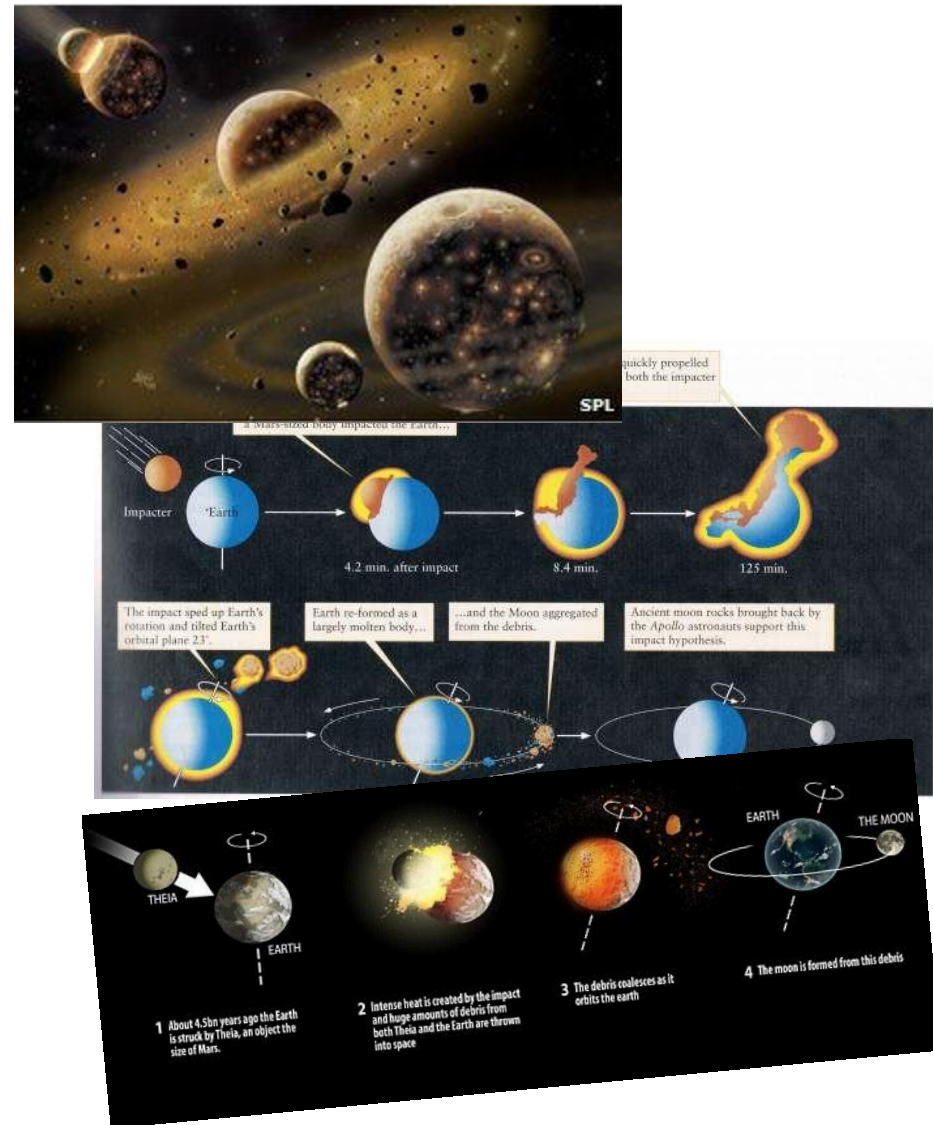
- You will be working in groups of four
- Rules for Lab:
 - Phones should remain in your backpacks or at your desk
 - Use the equipment properly
 - Remain at your lab station at all times
 - Work with each other respectfully

Ellipse Lab

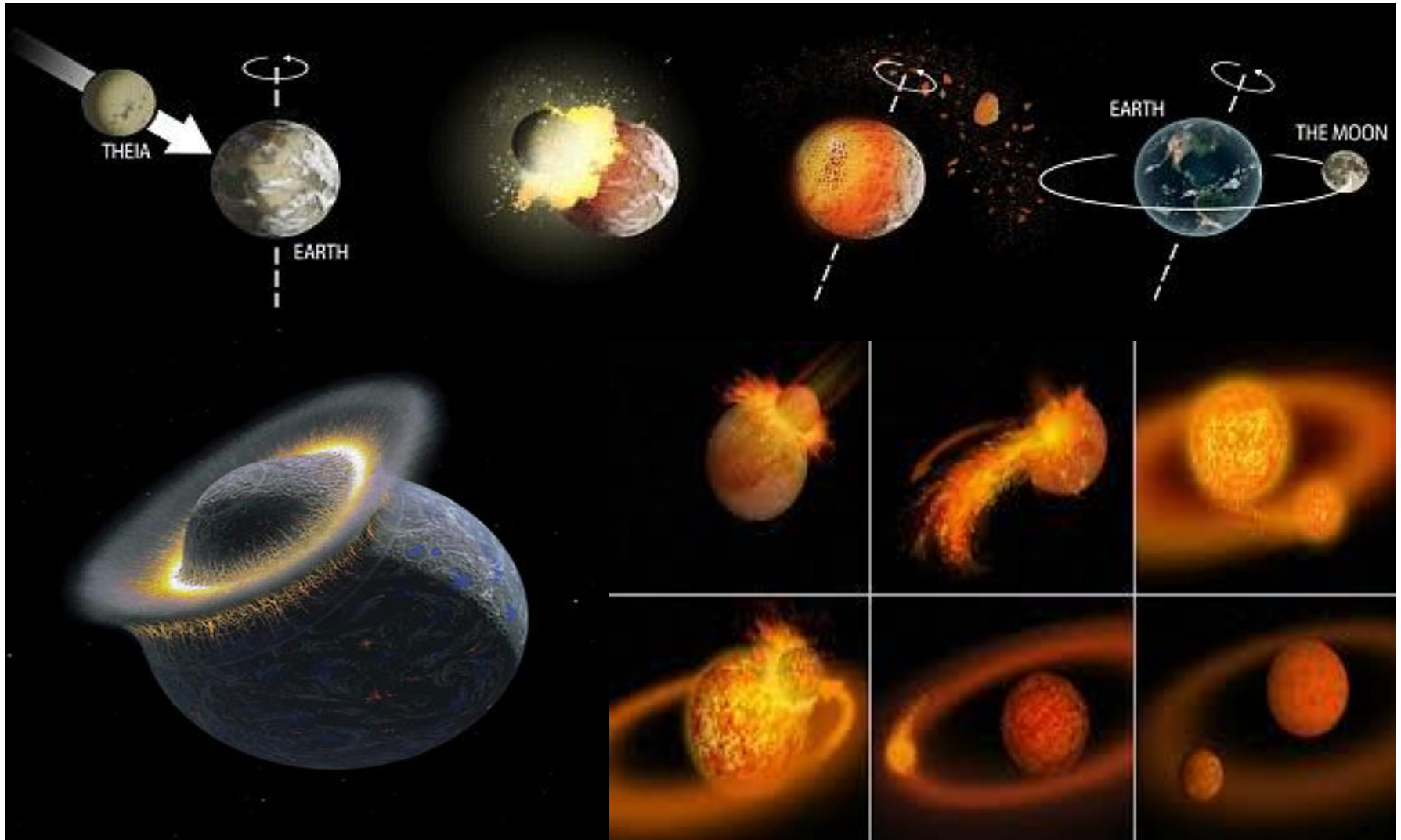
- Procedure:
<https://www.youtube.com/watch?v=EtiA5Aqx7il>
- Measurements between foci-
 - 4 different measurements: 2 cm, 5 cm, 7cm and 9 cm
 - Everyone in the group must do at least one example
 - Use pencil
- Eccentricity - deviation of a curve or orbit from circularity
- Eccentricity = foci distance (d) \div major axis length (l)

How did the Moon Form?

- Formed 4.5 billion years ago
- The planetesimal Theia impacted Earth
- Heat and debris were released from Earth and Theia
- Debris joins together and creates orbit around Earth to form Moon



How did the Moon Form?



How did the Moon Form?

- <https://www.youtube.com/watch?v=hahpE8b6fDI>

Geology Qualities of the Moon

- Rocks and minerals similar to Earth's
- Crustal layer consists rugged cratered highland and dark, dense lava maria
- Highland = granites; thick
- Maria = basalt; thin
- Has weak moonquakes, but tectonically dead
- Heavily crated by meteorite impacts



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Bell Work

- What is an ellipse?
- Describe how the Moon formed?

Announcements

- No Homework

Moon, Sun, Earth Relationships

The Solar System:

Is Pluto a planet or a dwarf planet?

Today we will

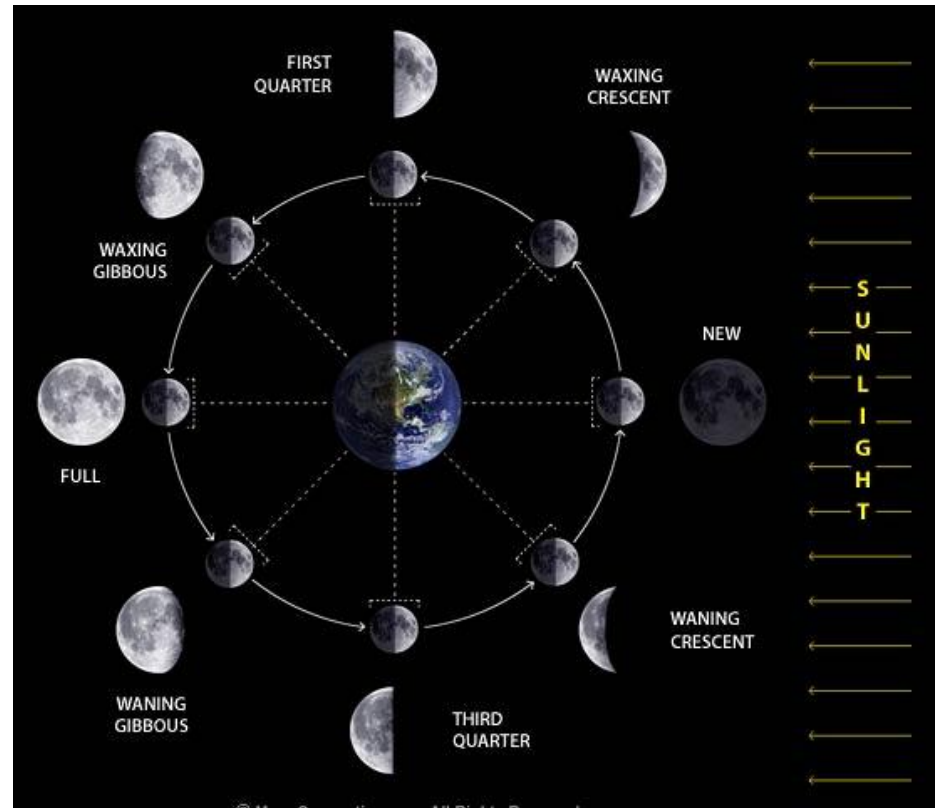
- Discuss the phases of the Moon and how it cycles through different phases due to Earth's positioning towards the Sun

What happened to the Moon after it formed?

- <https://www.youtube.com/watch?v=UIKmSQqp8wY>

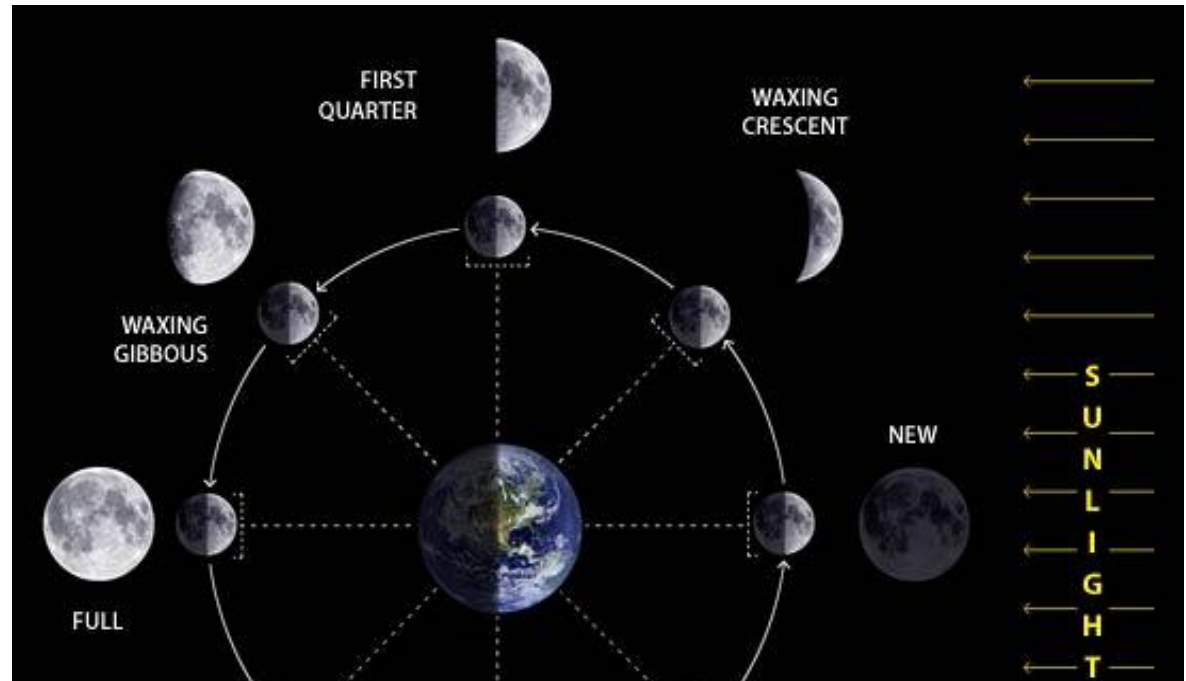
Moon Terminology about Phases

- New Moon – no illumination from the Sun on Near Side
- Crescent – Moon is less than half illuminated
- Quarter – Moon is quarter through cycle, but half illuminated
- Gibbous – Moon is more than half illuminated
- Full Moon – Moon is fully illuminated



What does Waxing mean?

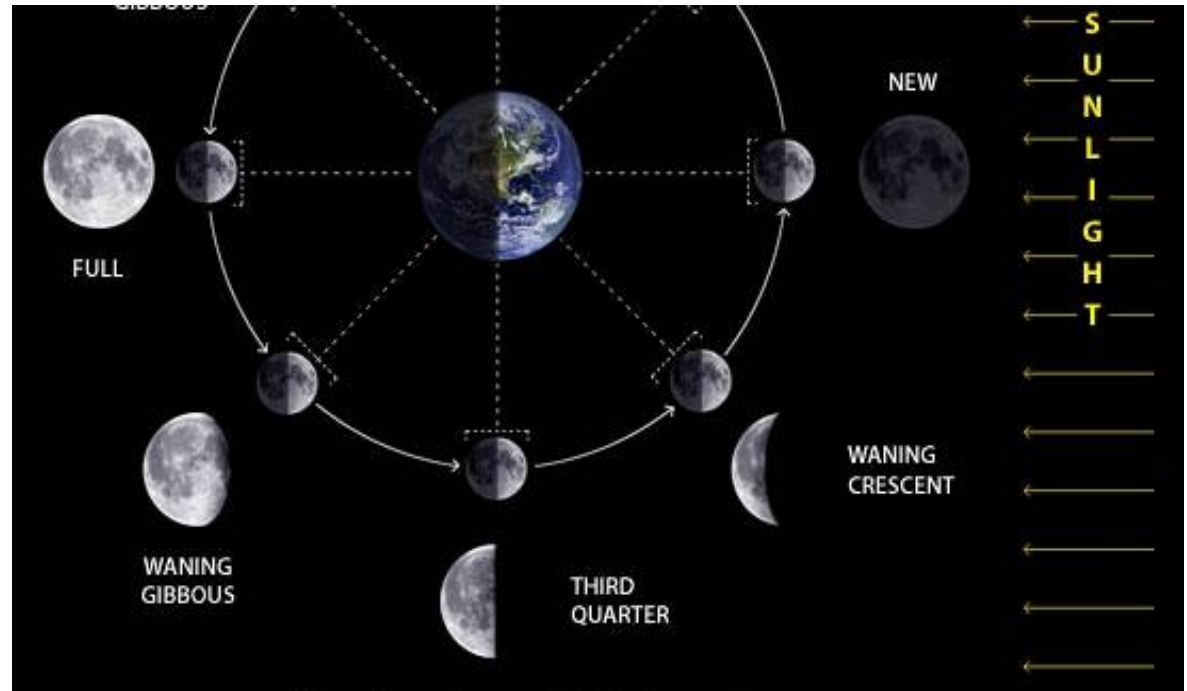
- Waxing means growing
- In terms of the Moon, it refers to getting more illumination from the Sun



* Mr. Miyagi's trick to remembering parts of phases of the Moon...Wax on...

What does Waning mean?

- Waning means shrinking
- In terms of the Moon, it refers to getting less illumination from the Sun

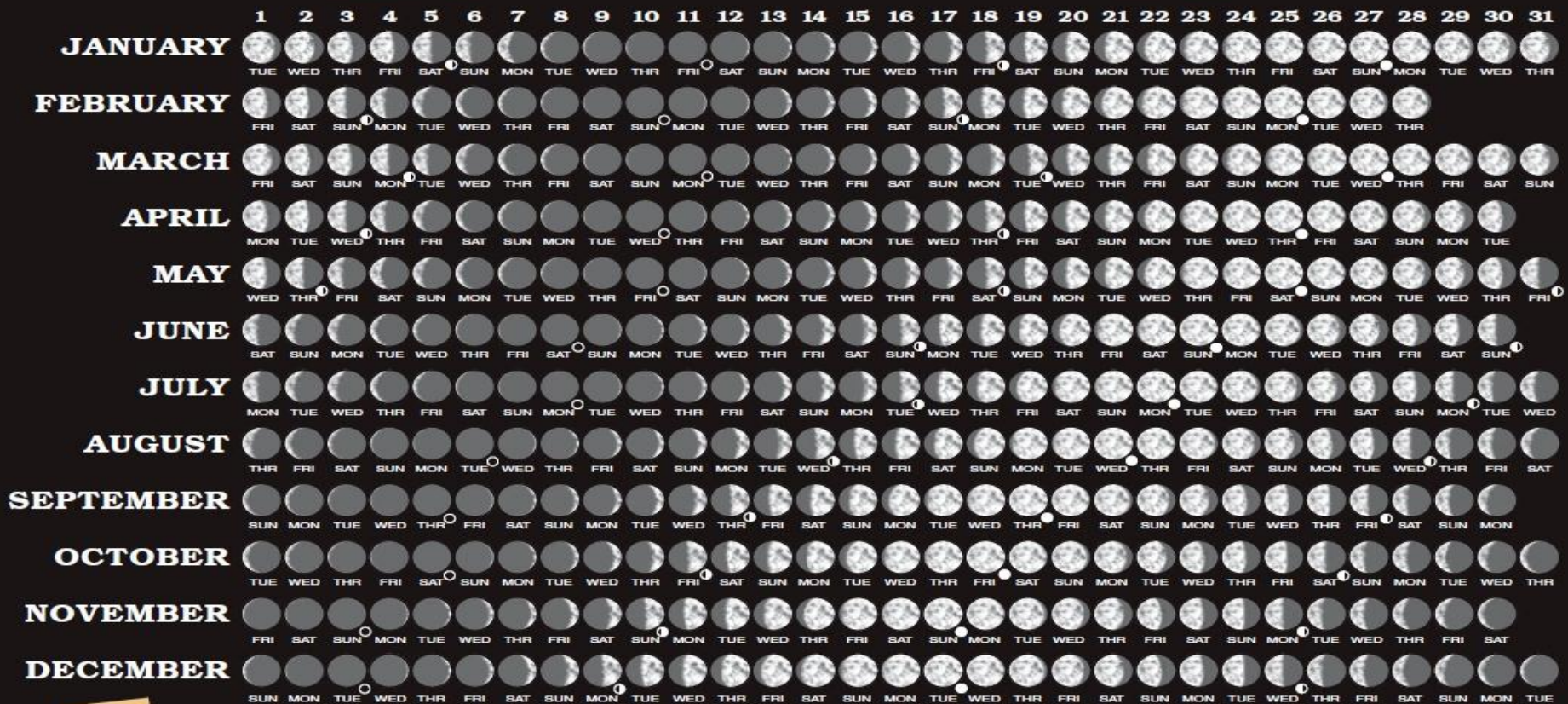


* Wax off? Well Mr. Miyagi ment wane off when talking about the Moon....oh well...

How many times a years does the Moon complete this cycle?

Moon complete this cycle?

- Remember...the Moon completes this cycle in 29.5 days
- Do the Math...12 to 13 times a year (Blue moon)



Do we see all sides of the Moon?

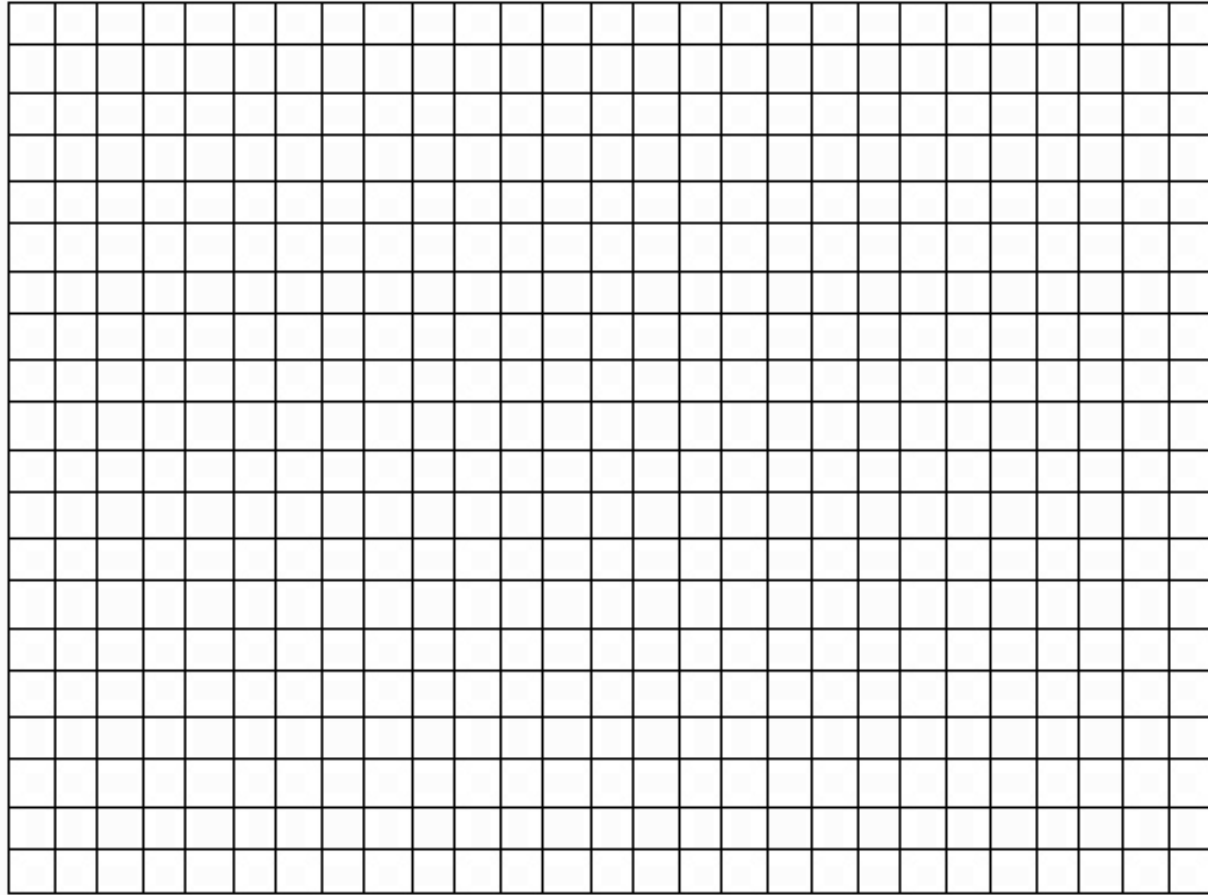
- Nope, we don't see the dark side of the Moon
- Lunar month 29.5 days
- The moon completes one revolution around Earth in 27.5 days
- The moon rotates as the Earth rotates so we only see one side of the moon



Impact Lab

- In the same groups as yesterday
- You will only perform tests on two objects not three, and you will only need to use one of the graphs
- We will have 50 minutes to work on this in class, so be productive
- Rules for lab:
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Graphing Data from Impact Lab



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Bell Work

- How many days does it take for the moon complete its phase cycle?
- What are the phases of the moon?

Announcements

- No Homework

Moon, Sun, Earth Relationships

The Solar System:

Is Pluto a planet or a dwarf planet?

Solar Eclipse vs. Lunar Eclipse

Solar Eclipse

- Moon casts a shadow on Earth
- Moon passes between Earth and the Sun
- Total Eclipse – within umbra
- Partial – within preumbra
- Happens during New Moons and Full Moons

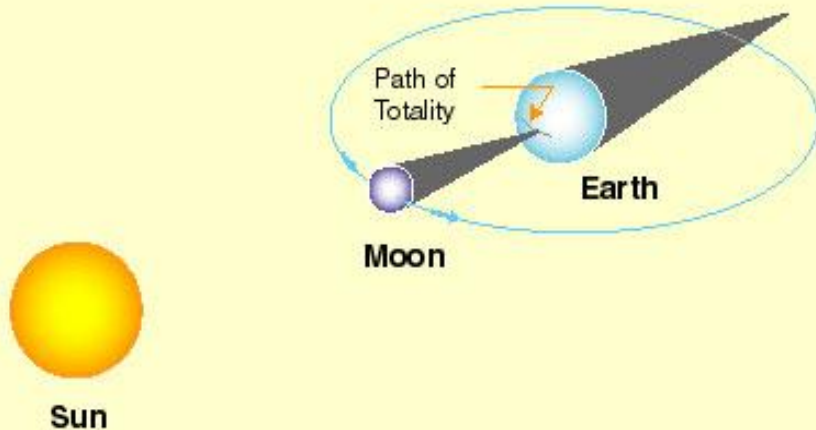


[http://www.youtube.com/watch?v= 2
01ttTSG30](http://www.youtube.com/watch?v=201ttTSG30)

Solar Eclipse vs. Lunar Eclipse

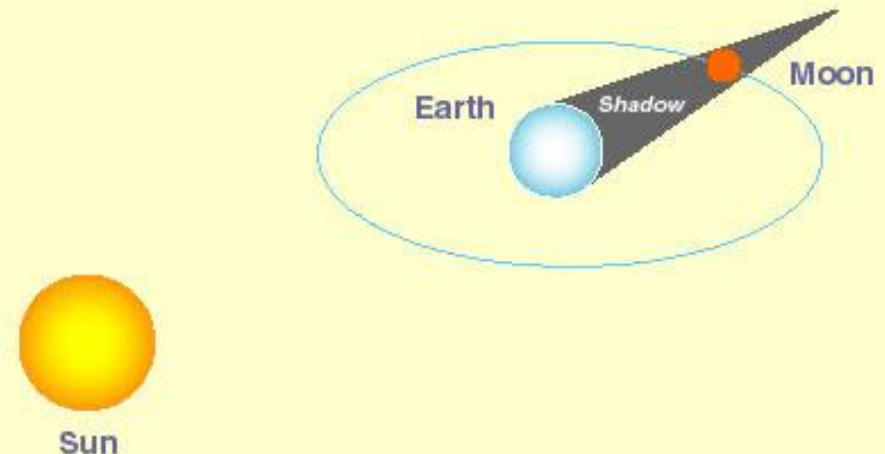
Solar Eclipse

- Moon casts a shadow on Earth
- Moon passes between Earth and the Sun
- Total Eclipse – within umbra
- Partial – within penumbra
- Happens during New Moons



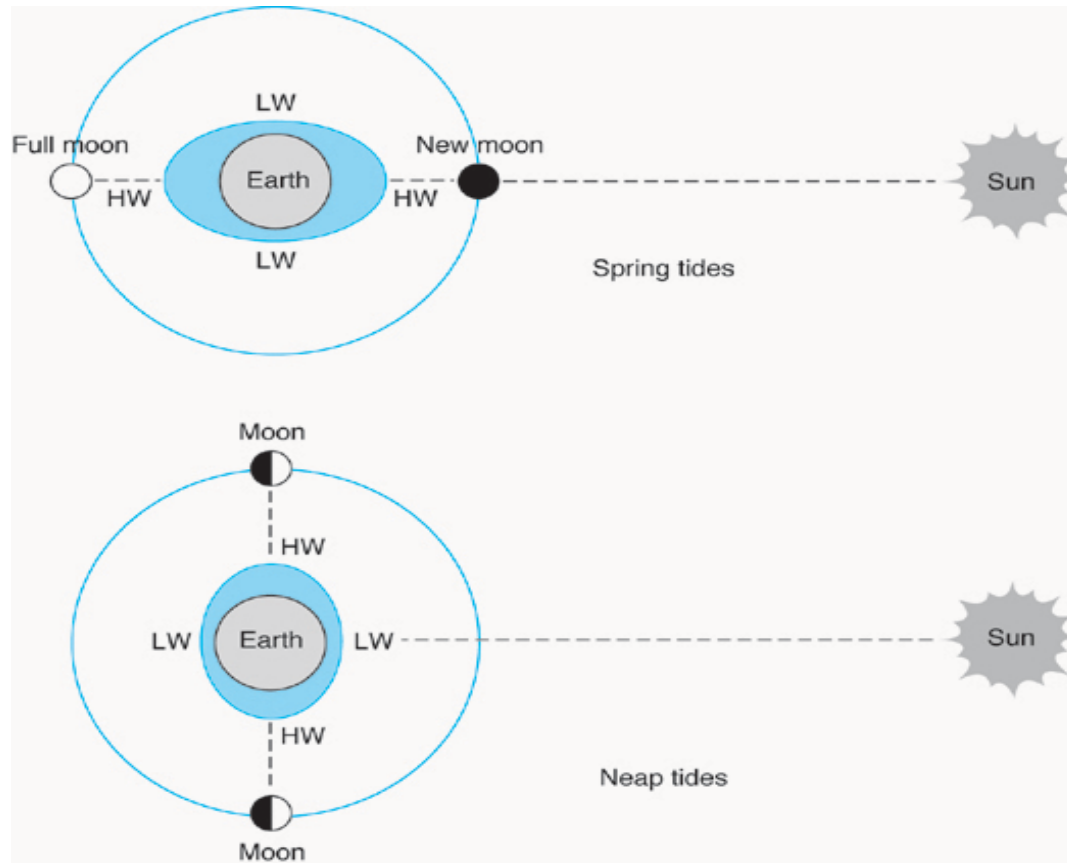
Lunar Eclipse

- Earth casts a shadow on the Moon
- Earth passes between Moon and Sun
- Happens during Full Moons



<http://www.youtube.com/watch?v=whNZejHeBg>

Moon's Effect on Tides



- Caused by Moon's gravitational pull
- Spring Tides: higher tides on Earth
- Neap Tides: Lower tides on Earth

<http://www.youtube.com/watch?v=nXseTWTZlks>

Layers of the Sun, Earth, and Moon

- Obtain a textbook
- Label the different layers of the Sun, Earth and Moon using the textbook
 - Earth on pg. 72
 - Moon on pg. 557
 - Sun on pg. 573
- Write a paragraph (6-8 sentences) comparing and contrasting the internal structure of the Sun, Earth, and Moon