

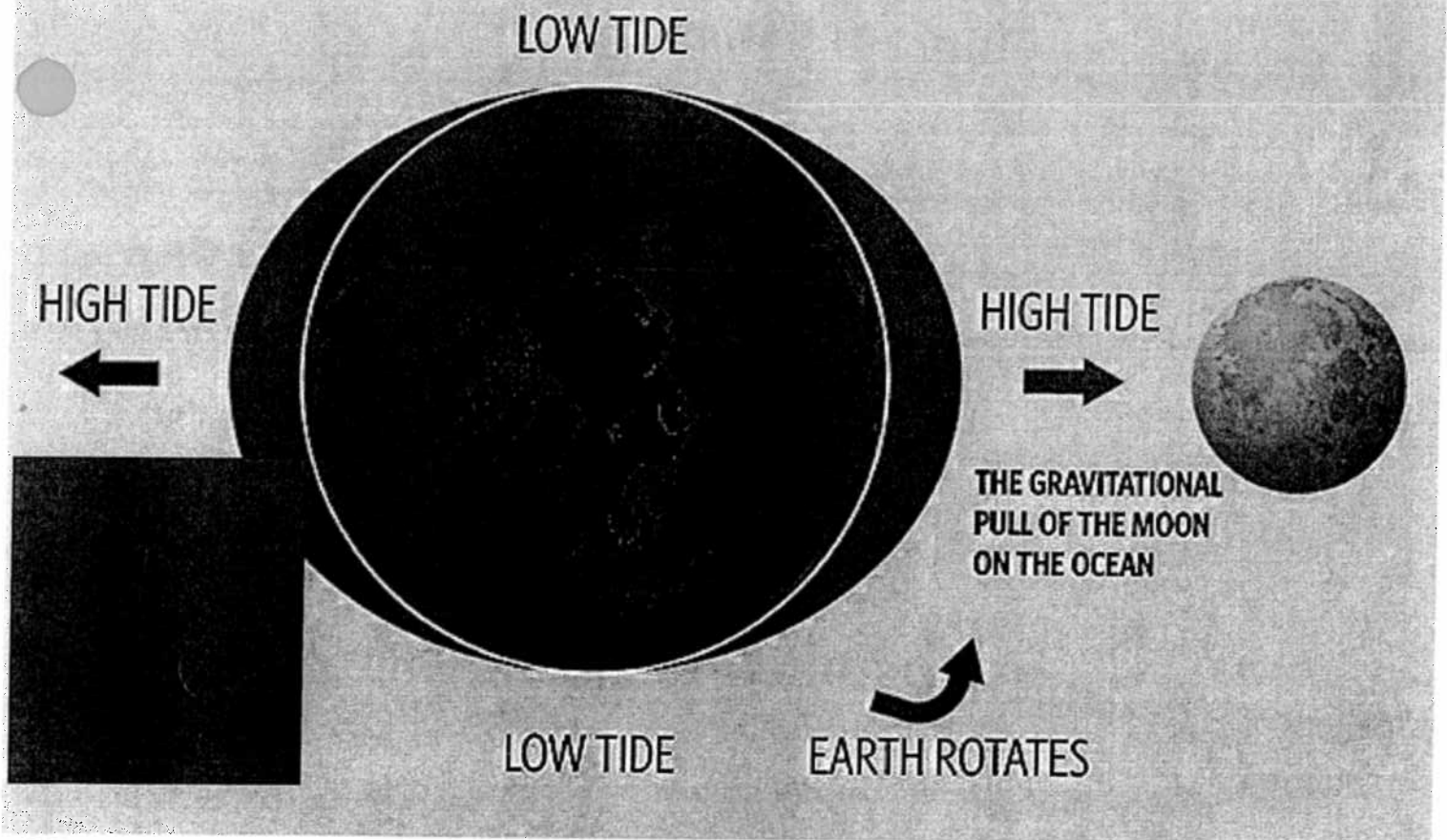
THE TIDES

- The rise + fall of the ocean water that happens every 12.5 hours.
- The water rises for about 6 hours, then falls for about 6 hours in a regular cycle.

What causes the tides?

- The force of Gravity pulls the moon + the Earth (including the water on earth's surface) toward each other.

FORCES THAT INFLUENCE THE TIDES



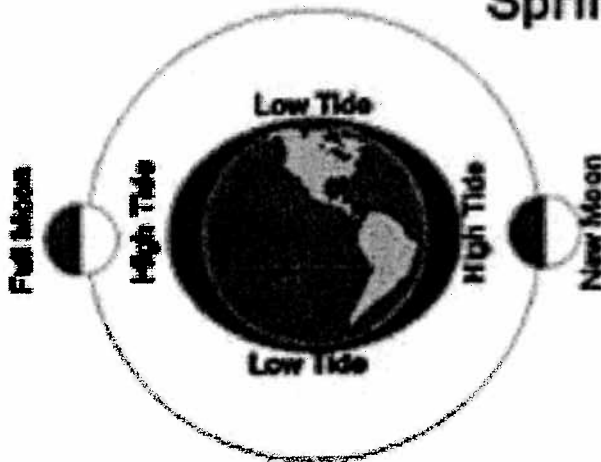
Spring Tide

When the combined gravitational pull of the sun & moon cause the high tides to be even higher and the low tides to be even lower. (Pull of gravity even higher due to direct alignment of Sun, Earth, & Moon)

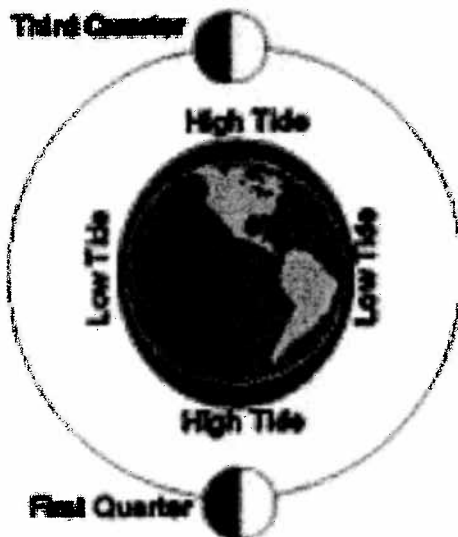
Neap Tide

When the pull of the moon on the Earth is counteracted by the pull of the sun on the Earth, causing the high tides to not be as high and the low tides not as low.

Spring Tides



Neap Tides



key

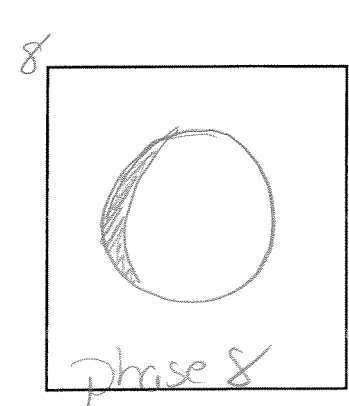
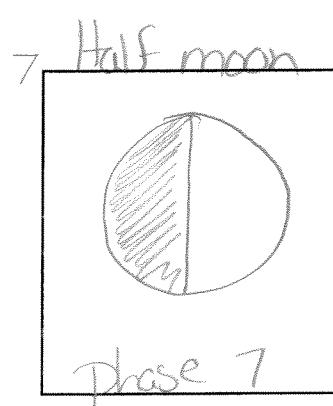
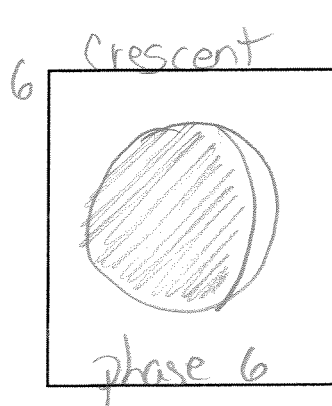
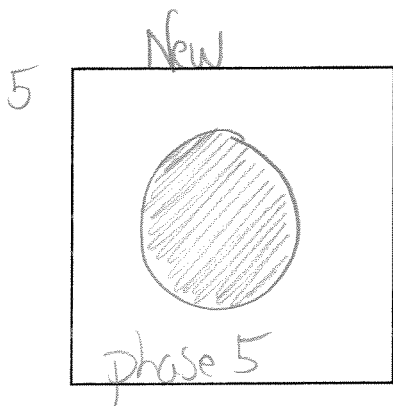
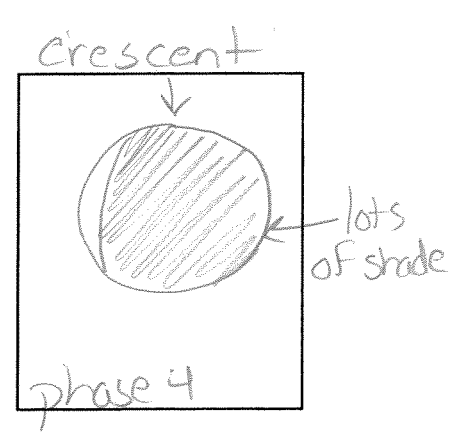
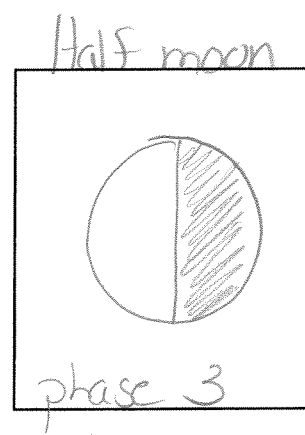
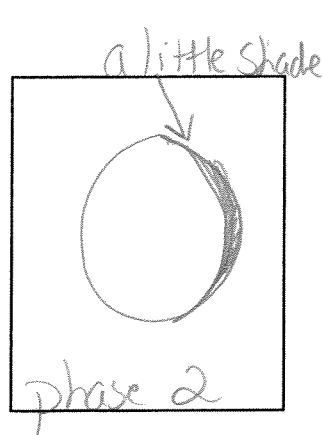
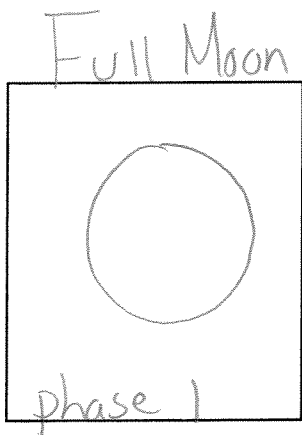
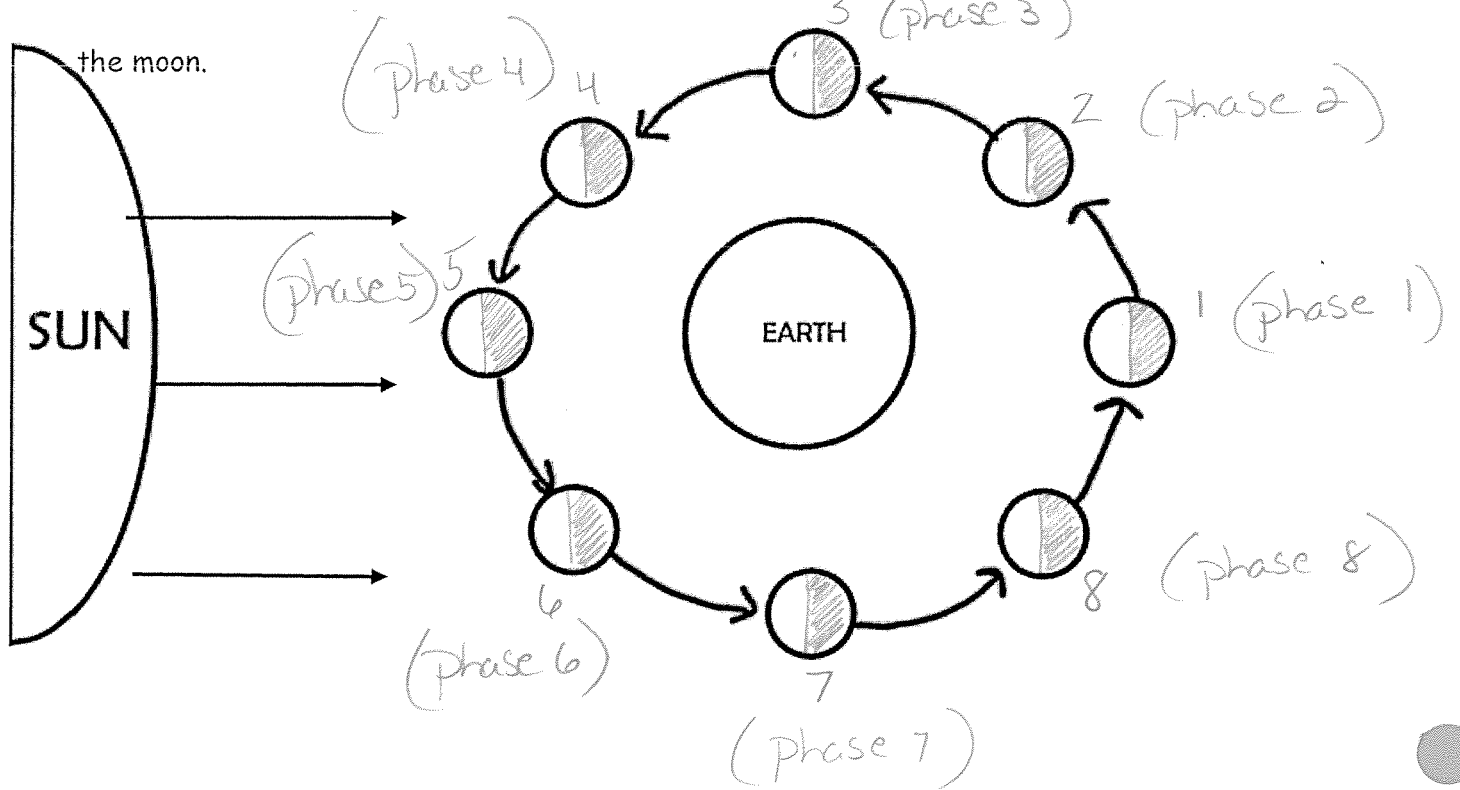
THE MOON

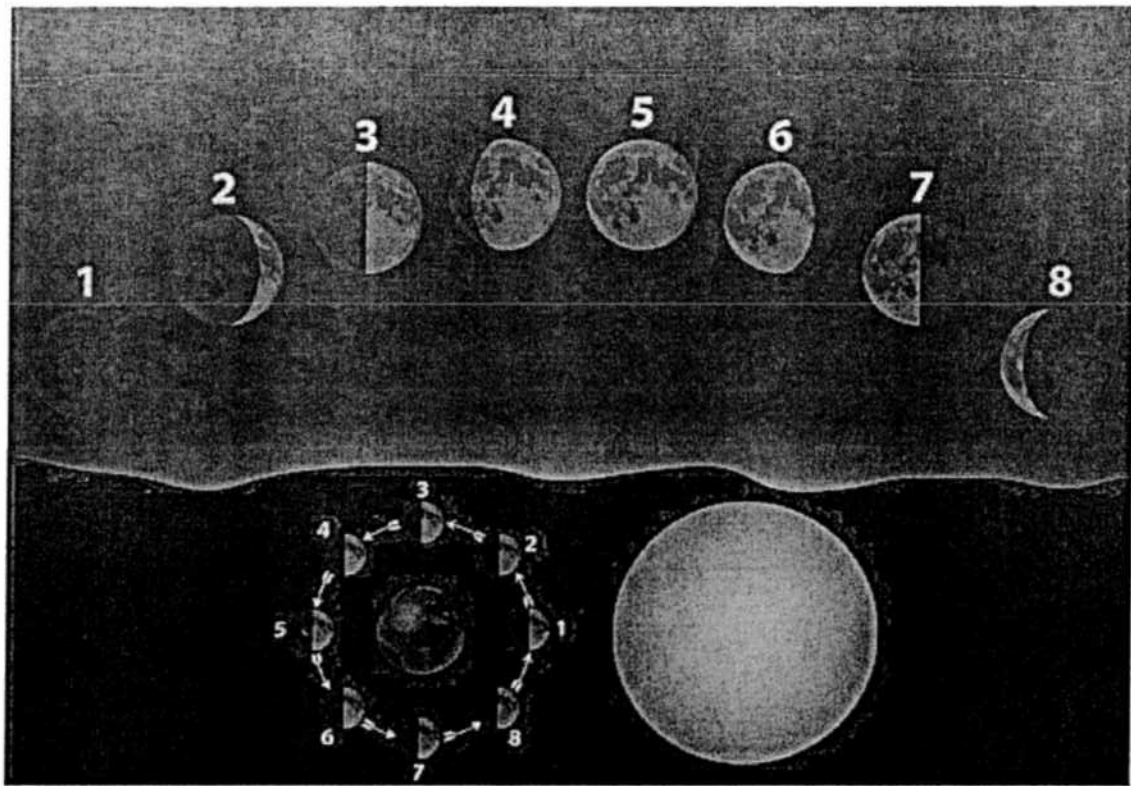
- • The moon does not produce light. It reflects it.
- • A natural satellite that revolves around the Earth
- • It rotates at the same rate it revolves
 - therefore we see the same side of the moon
- at all times.



THE MOON PHASES

When trying to figure out what phase the moon is in always position yourself on Earth looking at



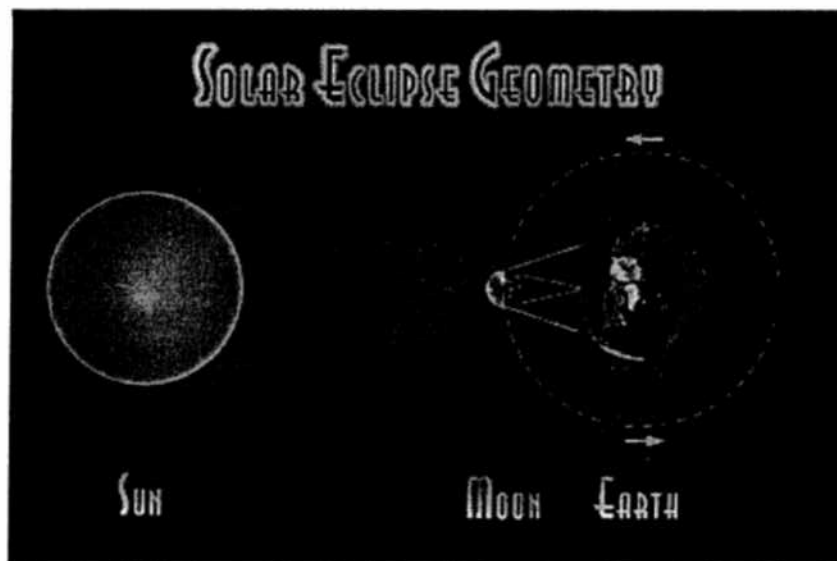


ECLIPSES

The blocking of one celestial body by
another.

Solar Eclipse -

When the moon gets between the sun and
the earth. (1)

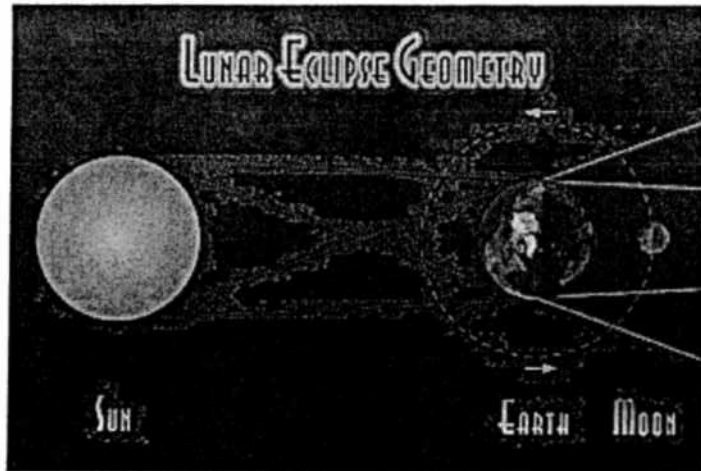


Moon phase - ☾

New moon
(only happens
during this
phase)

Lunar Eclipse -

① When the Earth gets between the sun and the moon.



① Moon phase -

Full Moon Phase

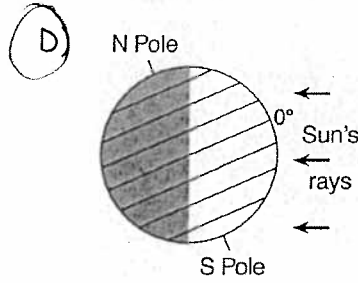
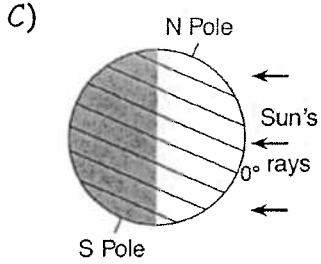
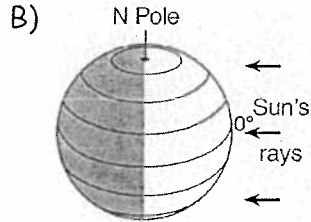
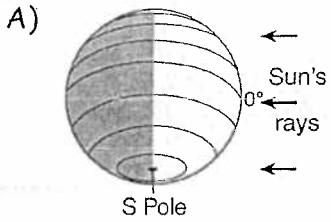
* Lunar can only happen during this phase *

A Lunar eclipse is more common because

① b/c the Earth is bigger than the moon.

1. Which diagram represents the tilt of Earth's axis relative to the Sun's rays on December

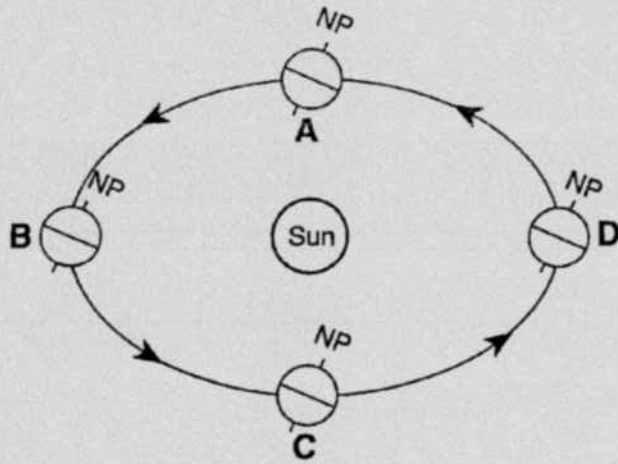
5?



Earth is tilted
AWAY from the
sun. Not receiving
direct sunlight.

Class Practice

Base your answers to questions 2 and 3 on the diagram below, which represents Earth revolving around the Sun. Letters A, B, C, and D represent Earth's location in its orbit on the first day of the four seasons. NP represents the North Pole.



(Not drawn to scale)

2. If the tilt of Earth's axis were decreased from 23.5° to 15° , New York State's winters would become

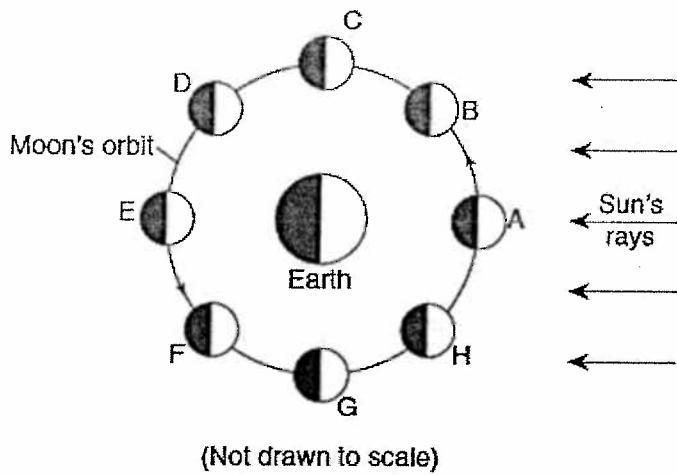
- A) warmer, and summers would become cooler
- B) warmer, and summers would become warmer
- C) cooler, and summers would become cooler
- D) cooler, and summers would become warmer

3. Which location in Earth's orbit represents the first day of summer in New York State?

- A) A
- ☒ B) B
- C) C
- D) D

Class Practice

4. Base your answer to the following question on the diagram below and on your knowledge of Earth science. The diagram represents the Moon in eight positions, A through H, in its orbit around Earth.

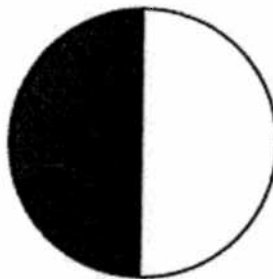


Which Moon phase is observed in New York State when the Moon is located at position F?

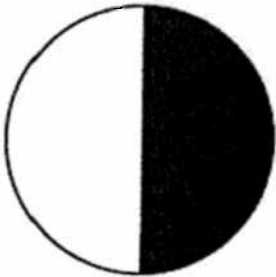
A)



B)



C)

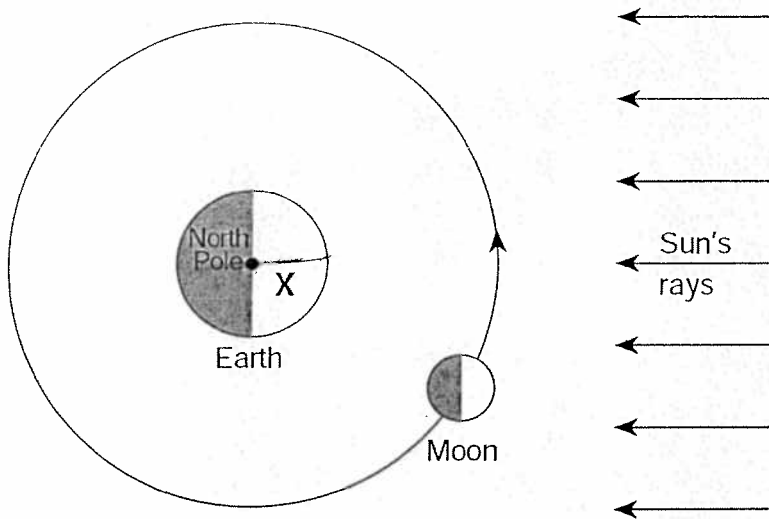


D)



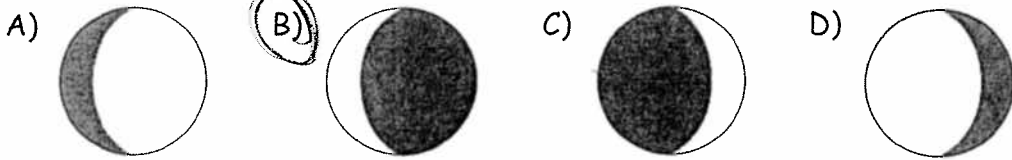
Class Practice

5. The diagram below shows the Moon at one position in its orbit around Earth. Letter X indicates the location of an observer in New York State.



(Not drawn to scale)

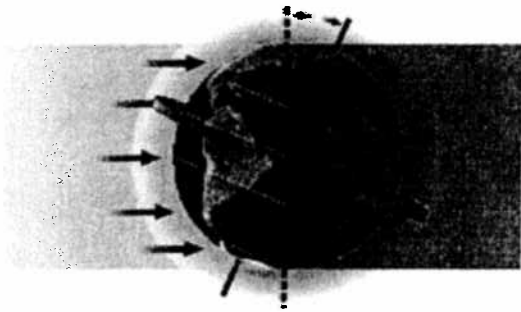
Which phase of the Moon will the observer see when the Moon is at the position shown in its orbit?



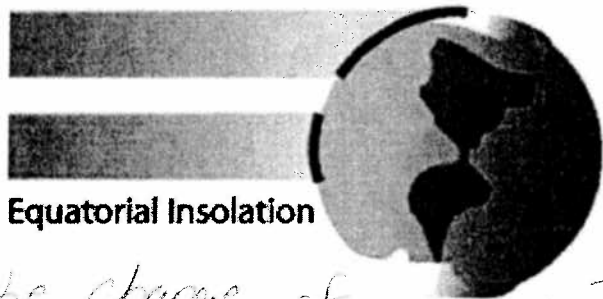
THE SEASONS

The reasons for the seasons

- 1) Earth rotates on its AXIS that is tilted at 23.5°
- a. Sun's rays hit the Earth at different angles, causing differences in the amount of heat absorbed by the land.



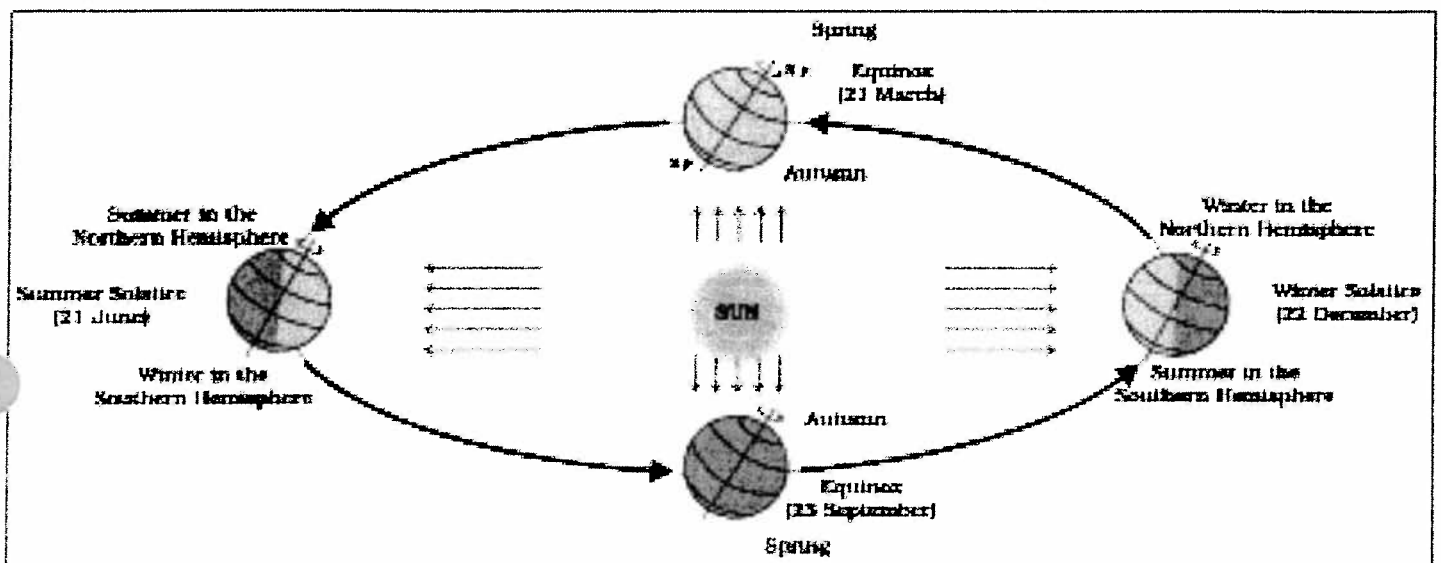
Polar Insolation

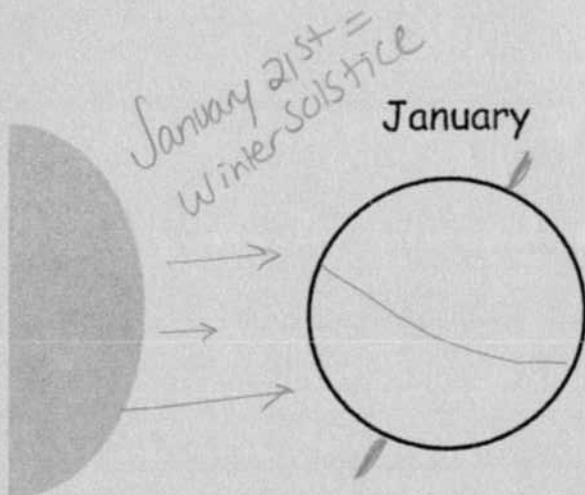


Equatorial Insolation

If No tilt - Would there be change of seasons?
No - Seasons would remain constant

- 2) The Earth revolves around the sun





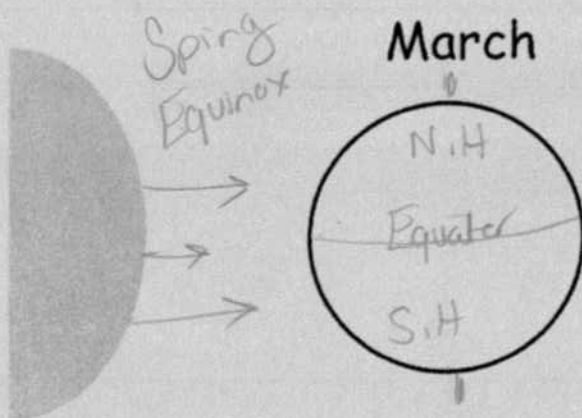
of hours of daylight

North Pole - 0
 NY - 8
 Equator - 12
 South Pole - 24

Season in:

Northern Hemisphere - Winter

Southern Hemisphere - Summer



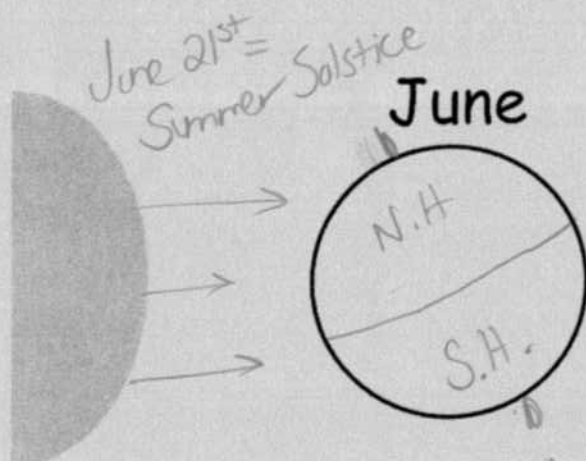
of hours of daylight

North Pole - 12
 NY - 12
 Equator - 12
 South Pole - 12

Season in:

Northern Hemisphere Spring

Southern Hemisphere Fall



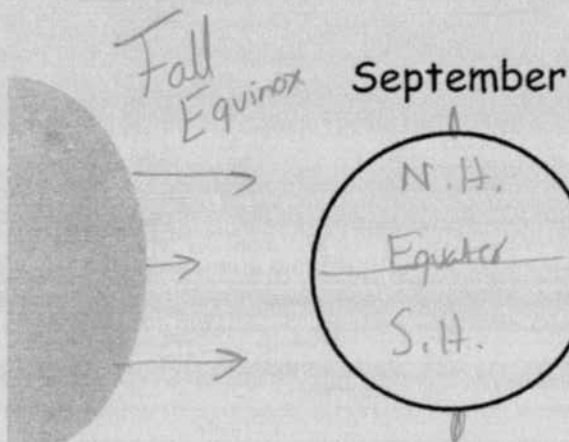
of hours of daylight

North Pole - 24
 NY - 16
 Equator - 12
 South Pole - 0

Season in:

Northern Hemisphere Summer

Southern Hemisphere Winter



of hours of daylight

North Pole - 12
 NY - 12
 Equator - 12
 South Pole - 12

Season in:

Northern Hemisphere Fall

Southern Hemisphere Spring

EARTH MOTIONS

The Earth is both rotating and revolving at the same time!!!!

ROTATION	REVOLUTION
The Earth spins at a rate of 1x in 24 hours ✓	The Earth revolves at a rate of 1x in 365 days.
Rotating = spinning ✓	Revolving = going around something
Rotation is from east to west	Path Earth follows is called its orbit (not quite circular — elliptical)
Rotational motion is responsible for daily changes. Example - sunrise/set, moon rise/set, the tides	Revolving motion responsible for yearly changes. Example - seasons, constellations in the night sky



Name

Mrs. Oshlan

10/14

Ms. Oshan

Earth Moon and Sun Notes

DO NOW: put in order

Universe, Galaxy, Solar System, Planet

Use the line below to write the correct sequence if you didn't get on the first try!!

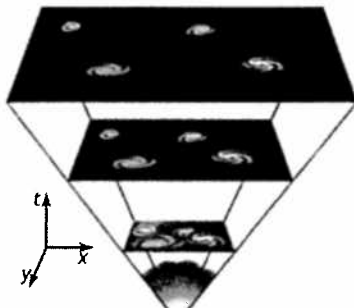
THE BIG BANG THEORY

When:

13.8 Billion Years ago

What do the scientist theorize?

- All matter was condensed into a space no bigger than a period at the end of a sentence.
- An explosion happened and this marked the beginning of what we now call the universe.
- Ever since, constantly expanding.



MODELS OF OUR SOLAR SYSTEM

GEOCENTRIC	HELIOCENTRIC
"Geo" - means <u>Earth</u>	"Helio" - means <u>Sun</u>
The Sun and planets orbit the Earth ①	The planets orbit the Sun and moons orbit the planets ①
<p>Why Geocentric?</p> <ul style="list-style-type: none"> - observations of sun rising and setting? - Moon rise and set - Stars moving across the night sky <p>APPARENT MOTION</p>	<p>What led to heliocentric? ①</p> <p>Geo couldn't explain moon phases or venus phases.</p>

