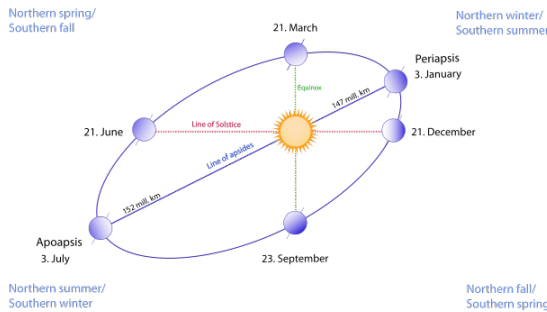


**Earth-Sun-Moon System and Stars**

1) Explain the motion of the Earth around the sun and it's position within the solar system.

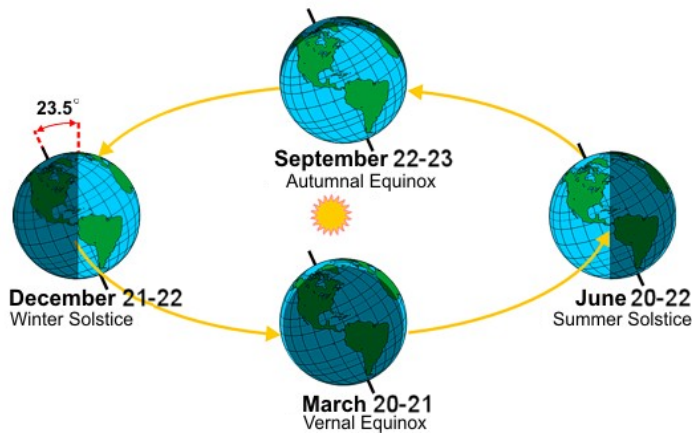
Earth traces an elliptical orbit around the sun. It is the third planet from the sun in our solar system. Note that Earth is actually closer to the sun in January!!



2) What is caused by Earth's revolution? It's rotation?

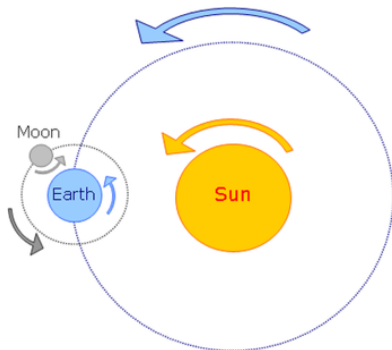
Earth's Revolution causes the seasons (due to the tilt of the axis of the Earth) 365 day revolution  
Rotation on axis causes day/night cycle. This is 24 hour period of rotation

3) Based on the tilt of Earth's axis, describe the seasons in various locations on Earth.



Winter solstice means it is cold in the northern hemisphere and warm in the southern hemisphere for example

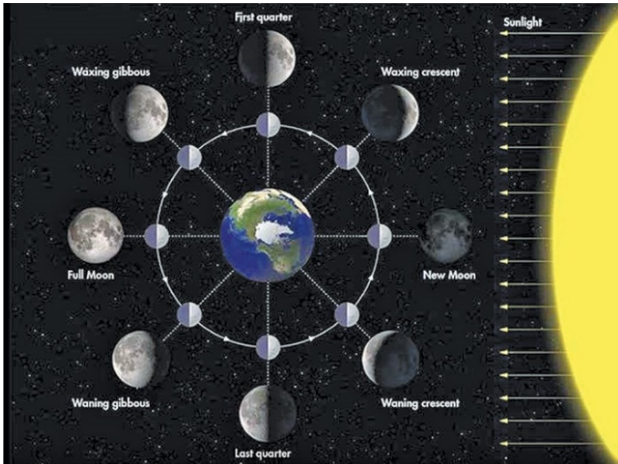
4) Describe the moon's rotation and revolution relative to Earth



The moon's period of revolution around earth is the same as it's period of rotation on it's axis (27 days). That is why we are always looking at the same side of the moon!

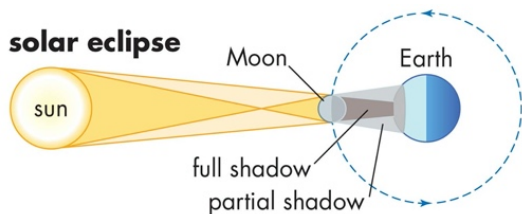
5) What causes distinct phases of the moon?

The sun illuminated the moon is what we observe as phases of the moon. Where the moon is in its revolution around earth, relative to the sun causes the different phases.



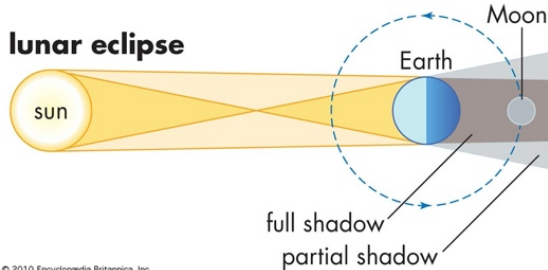
You don't need to remember the names of the phases

**solar eclipse**



6) Describe the positions of Earth, Sun and Moon during lunar and solar eclipses  
During a solar eclipse the moon blocks out the sun on some parts of earth (the sun gets covered to some observers)

**lunar eclipse**



Lunar eclipse, the earth blocks sunlight from illuminating the moon

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7) What causes tides?

The gravitational pull of the moon (and sun) on the earth cause tides

8) List and Describe the inner and outer planets in the solar system. Compare and contrast their sizes, presence of moons, density

Inner planets are: Mercury, Venus, Earth and Mars. They are relatively small, dense and have few moons

Outer planets: Jupiter, Saturn, Uranus, Neptune. They are much larger, not dense (gaseous) and have more moons

9) Explain how stars form

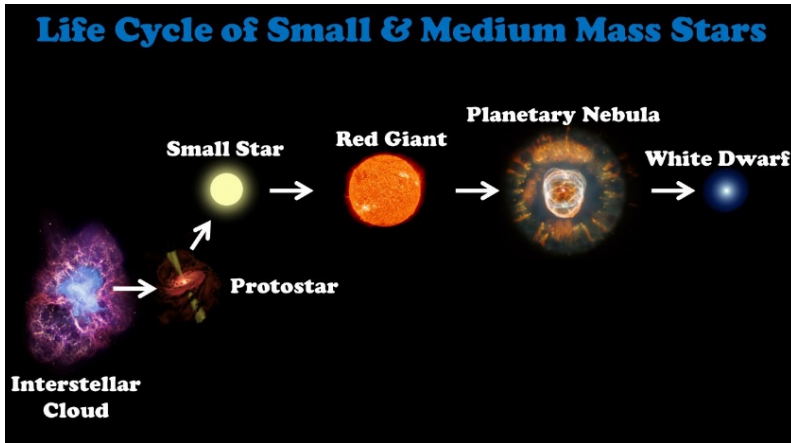
Dust and gas are condensed due gravitational pull. Once it is hot enough, it will start to fuse atoms this nuclear fusion produces light

10) How is the distance to stars measured? What is a light-year?

A light year is the distance light travels in a year. Approximately 9.46 trillion km (don't need to remember that!)

11) Explain how temperature of a star is related to colour. Stars can be red, orange, yellow, white or blue (with red being the coolest and blue the hottest)

12) List and explain the 6 stages of an average mass star



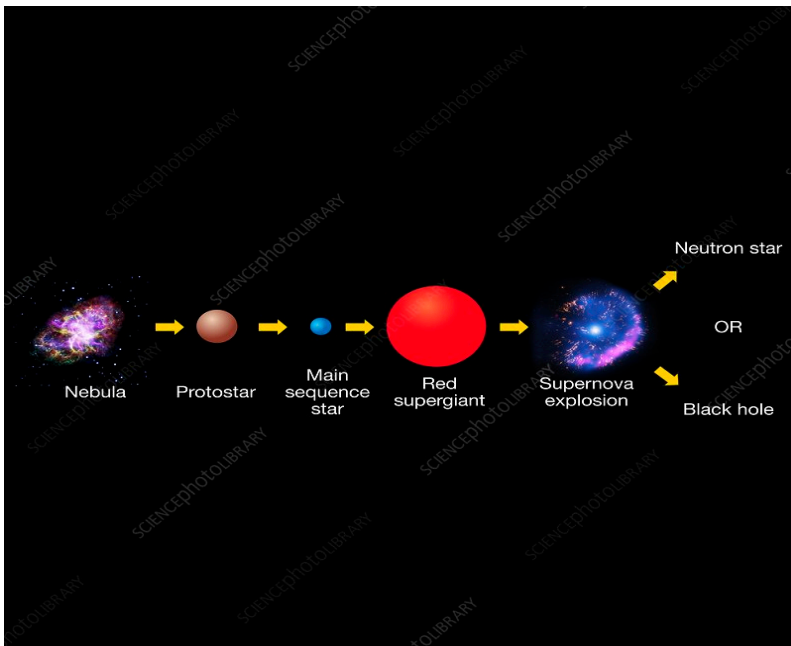
Interstellar cloud is pulled together by gravity, Protostar is after star has “turned” on due to nuclear fusion. Red giant forms then explodes due to nuclear force being greater than gravitational pull planetary nebula explodes and then collapses into white dwarf

13) List and explain the 5 stages of a high mass star

14) Explain the Big Bang theory of the universe

The universe started as a single point and began stretching out and expanding in all directions from that point.

We know that galaxies further away from us are moving faster due to “red shift” of the electromagnetic spectra



### Plate Tectonics and Continental Drift

1) List and describe the three main layers of Earth

Crust, mantle and core

2) Describe the two main types of plates

Oceanic- Thin, but dense plates  
Continental- Thicker, but less dense

3) Explain where the heat below Earth’s crust comes from

Leftover from the formation of Earth and from radioactive decay

4) Explain how convection currents below the Earth’s crust are the source of Continental Drift. Be able to explain the science behind convection currents

Heat from within the Earth’s mantle rises pushing the plates apart

5) Explain how each of these pieces of evidence supports the idea of Continental drift: fossil evidence, matching mountains, ancient glacial evidence, sea floor spreading, radioactive dating, magnetic evidence

Ancient fossils of the same species of extinct plants and animals are found in rocks of the same age but are on continents that are now widely separated. Wegener proposed that the organisms had lived side by side, but

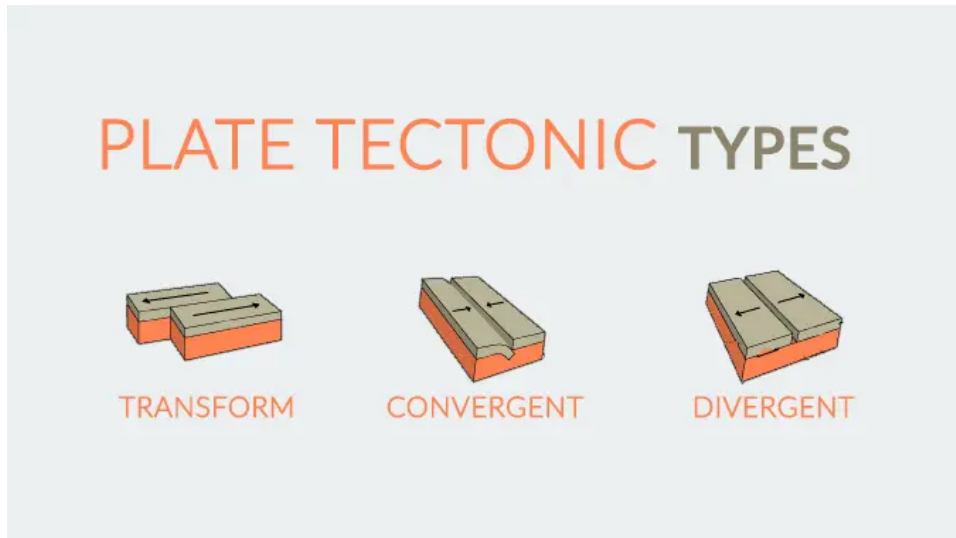
that the lands had moved apart after they were dead and fossilized. He suggested that the organisms would not have been able to travel across the oceans.

6) What is slab pull and ridge push?

Slab Pull: The subducting plate sinks back into the mantle and pulls the rest with it due to gravity.

Ridge Push: When magma rises between the splitting plates, it cools and pushes the plates apart.

7) There are three main types of faults: Divergent, Convergent and Transform. Explain how each of these work



8) Explain how Earthquakes and volcanoes form

Both volcanoes and earthquakes occur due to movement of the Earth's tectonic plates. They are both caused by the heat and energy releasing from the Earth's core. Earthquakes can trigger volcanic eruptions through severe movement of tectonic plates. Similarly, volcanoes can trigger earthquakes through the movement of magma within a volcano.

### Rocks and Minerals

1) What is the definition of a mineral?

A naturally occurring inorganic solid that has a definite chemical composition, and an ordered internal structure.

2) List 5 criteria that must be met for a substance to be considered a mineral

- Minerals are naturally occurring. They are not made by humans.
- Minerals are inorganic. They have never been alive and are not made up from plants or animals.
- Minerals are solids. ...
- Minerals have a definite chemical composition. ...
- Minerals have an ordered atomic arrangement.

3) Is colour a reliable characteristic to use for mineral identification?

It is not reliable, as one mineral can have different colours

4) What is mineral streak and how is it tested?

Streak is the colour left by rubbing a mineral on a ceramic plate

5) What are the two types of mineral luster? How can you tell them apart?

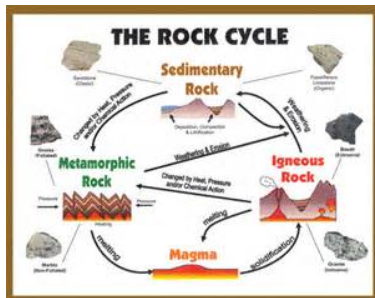
Metallic, glassy, waxy, dull are all types of luster

6) What are the two types of mineral breakage and how do you tell them apart?

Minerals exhibit cleavage or fracture

7) Using the rock cycle diagram be able to explain how sedimentary, igneous, and metamorphic rocks are formed.

Rock cycle will be given to you: Be able to explain what is happening at each step

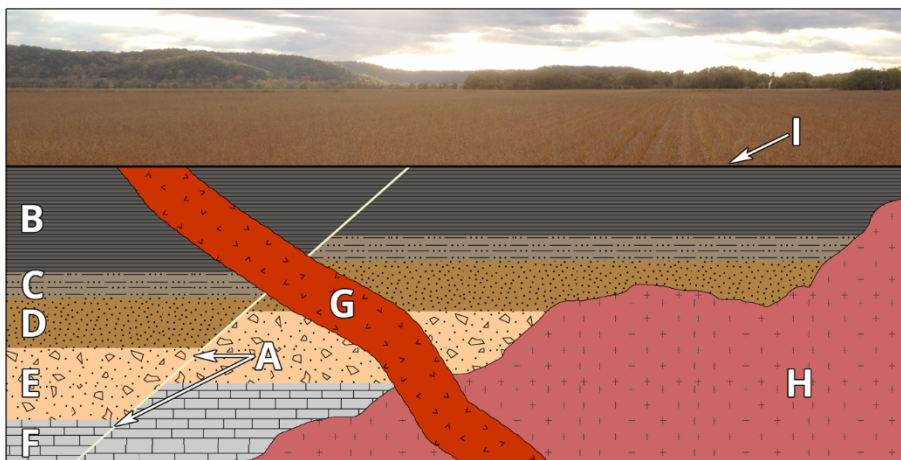


8) Explain the difference between intrusive and extrusive igneous rocks in terms of their crystal size. **Intrusive rock cools slowly underground and has large crystals (granite). Extrusive cools quickly above ground and has small crystals (like basalt)**

9) Using relative dating techniques, put rock layers in order from youngest to oldest

10) Give examples of igneous, metamorphic, and sedimentary rocks.

11) How are layers of rock aged? Describe the Law of Uniformitarianism, Law of Superposition and Law of Cross-Cutting. **Oldest F, E, D, C, B, (H or A), G, I Youngest**



12) Using an identification key, be able to identify a mineral given results of different tests

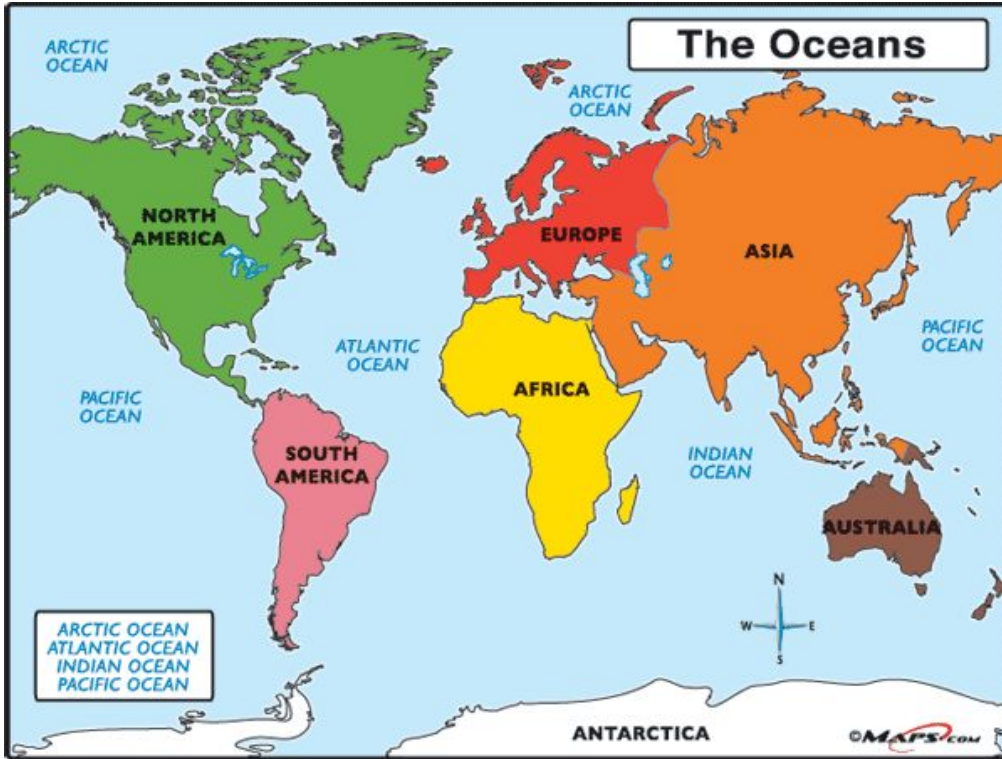
color, streak, luster, hardness, cleavage, density, transparency, and magnetism.

### Hydrolytic Cycle/Rivers and Oceans

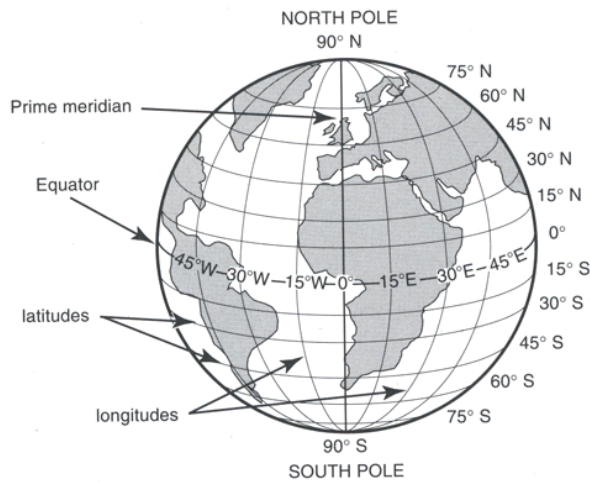
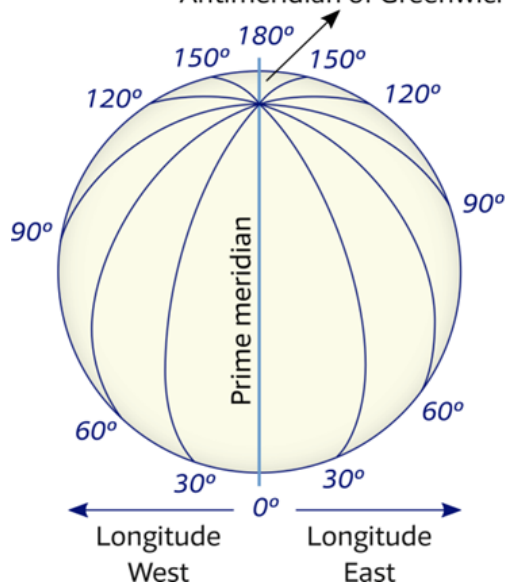
1) Be able to identify local rivers, mountains and other bodies of water on a map

Review the worksheet with Revelstoke and be able to find the Columbia, Illecillewaet, Jordan, Tum, Tum, Rivers. Greely creek etc. Lake Revelstoke, Shuswap Lake, Mara Lake

2) On a map of the world, identify oceans

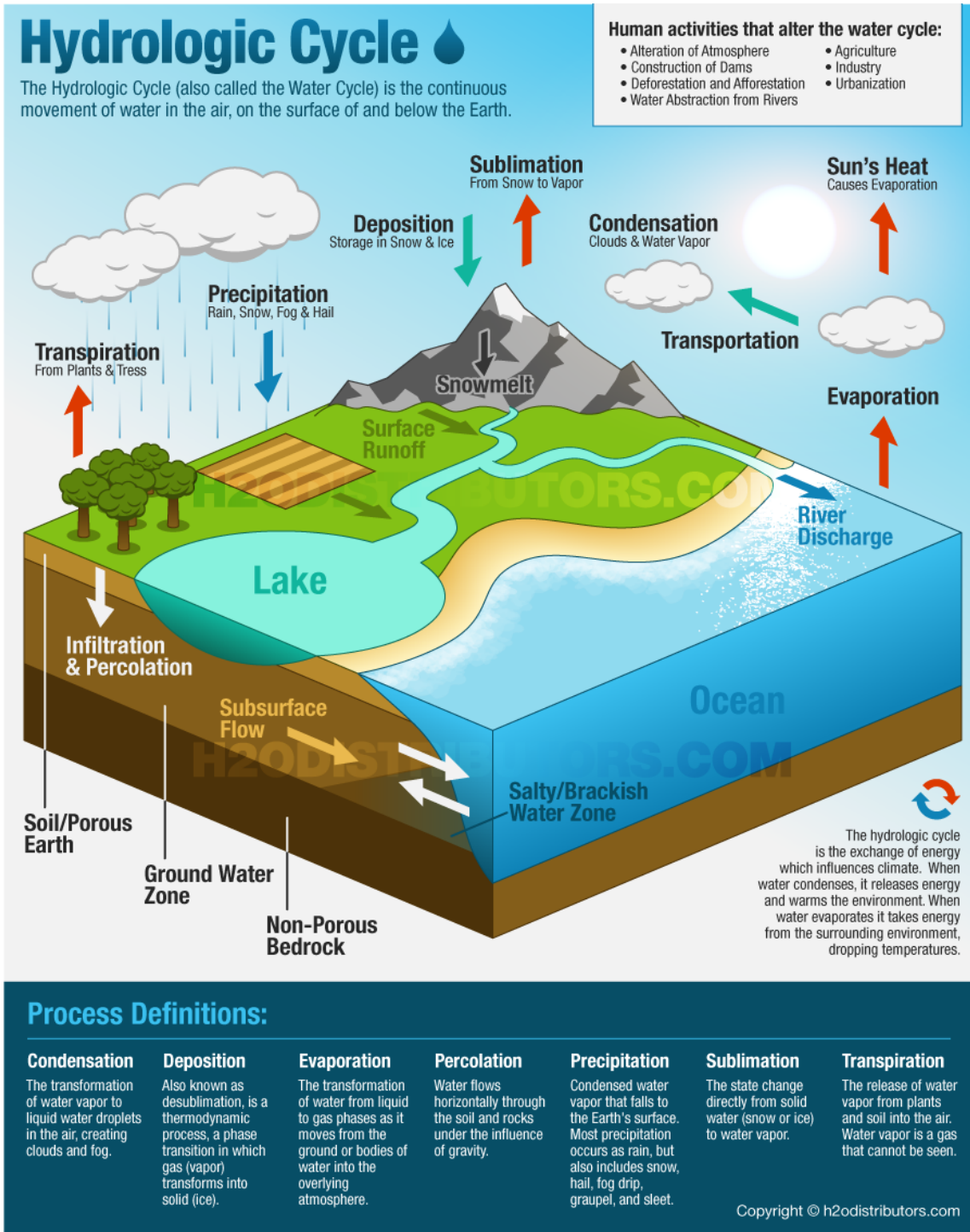


3) Using latitude and longitude, plot points on a world map **Make sure to check whether N or S and E or W**



**Remember that longitude also has N and S plotted. Latitude has E and W plotted.**

- 4) Explain all the steps of the hydrolytic cycle including: evaporation, precipitation, evapotranspiration, condensation, snow, rain, melting etc.



- 5) Explain what a watershed is. What watershed provides Revelstoke with its water?

the area of land that drains surface water and groundwater to a common water body, such as a creek, stream, lake or the ocean. We all live in a watershed, regardless of how far we are from a body of water.

Greely Creek supplies Revelstoke with its drinking water

- 6) Describe some of the physical and chemical tests done to water sources -turbidity, pH, temperature, dissolved oxygen, hardness (mineral) tests

All of these have impacts on what organisms can live in river or lake. In general rivers have higher dissolved oxygen since they are flowing and get aeration.

- 7) Explain why this area of B.C. has many hot springs

Hot springs are heated by geothermal heat—heat from the Earth's interior. In volcanic areas, water may come into contact with very hot rock heated by magma. Hot springs in active volcanic zones may produce superheated water, so hot that immersion can result in injury or death. In non-volcanic areas, the temperature of rocks within the Earth also increases with depth—this temperature increase is known as the Geothermal Gradient. If water percolates deeply enough into the crust, it comes into contact with hot rocks and can circulate to the surface to form hot springs.

- 8) List and explain some of the pros and cons of dams

Pros include controlling flooding downstream and low cost, less carbon dioxide producing energy.

Cons include flooding agricultural land, destroying specific ecosystems

- 9) What are some different types of dams?

Important ones in this area include run of the river dams and reservoir dams for hydroelectricity

## **Weather and Atmosphere**

- 1) Explain the meanings of latitude and altitude

Lines of latitude go away from the equator going North/South on the Earth. Altitude is moving higher into the atmosphere. Altitude is measured in meters above sea level.

- 2) Explain how molecules of air and water behave when they are heated or cooled

As air or water is heated up- molecules get further apart and the same # of molecules takes up more space (greater volume). It also becomes less dense- hot air rises with convection currents. Hot water or magma also rises with these convection currents.

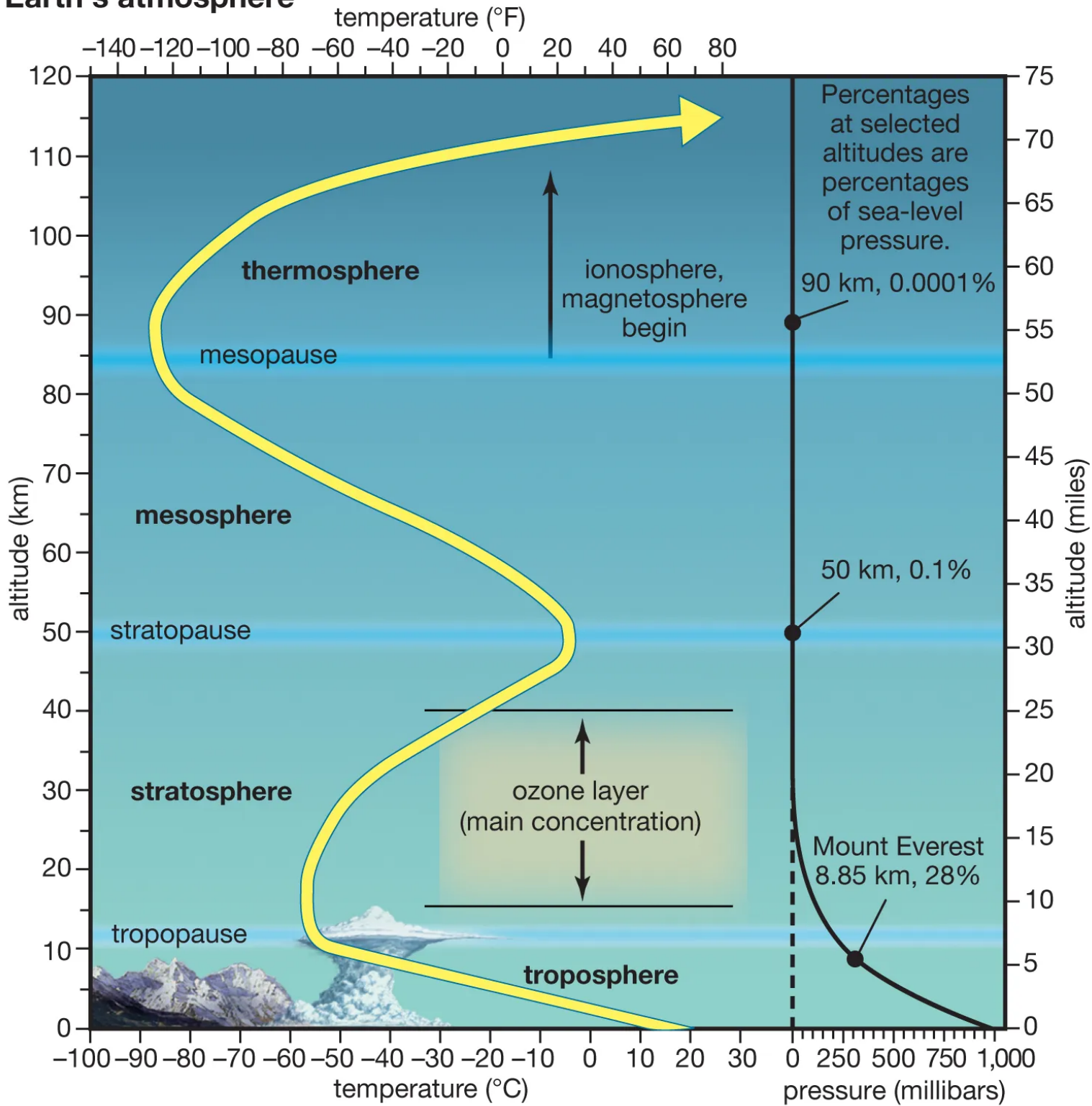
- 3) Explain how convection currents work

See answer #2



4) List the layers of the atmosphere in order from closest to the Earth to furthest away

## Earth's atmosphere

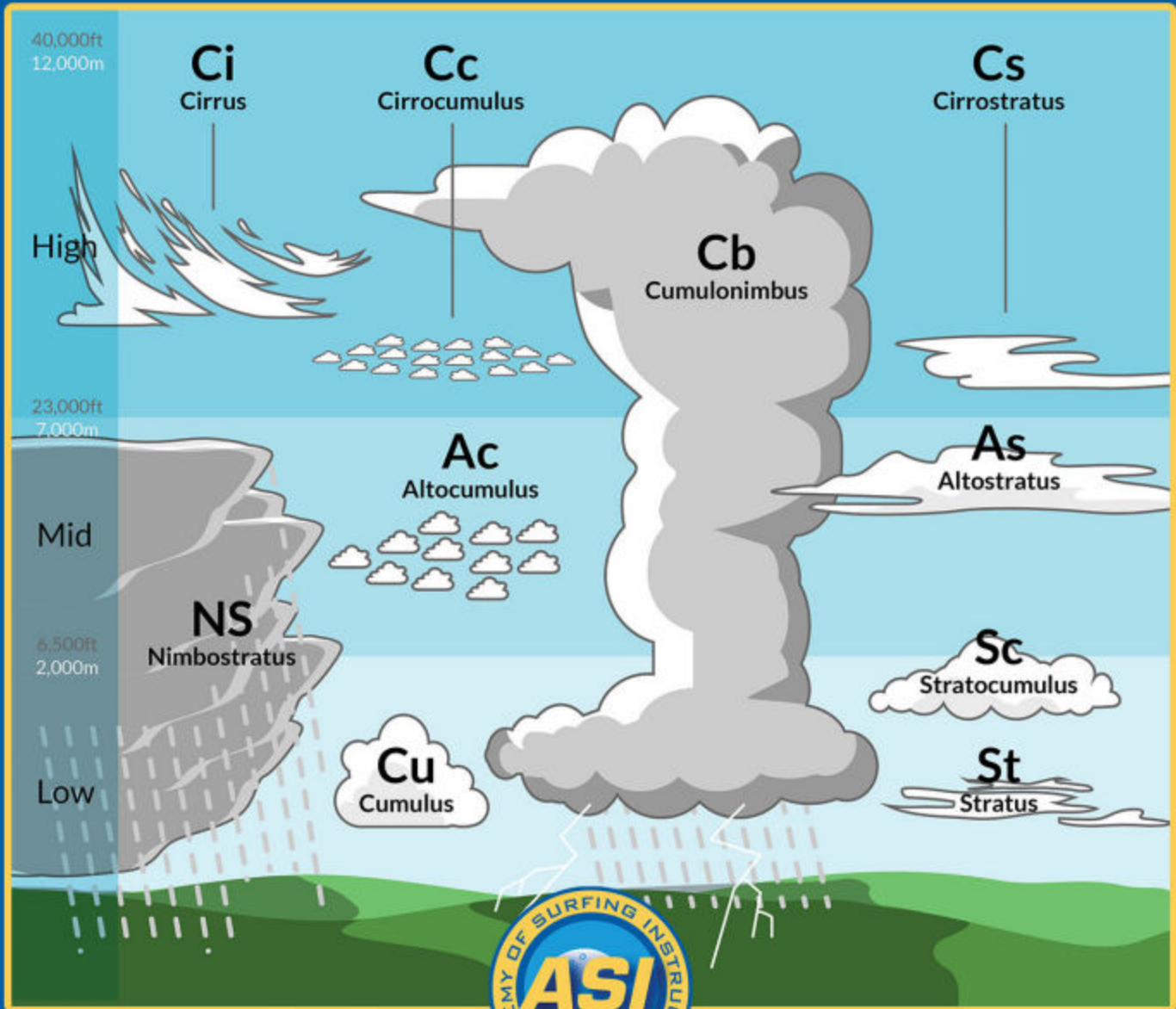


5) Explain what happens to the temperature as you increase in altitude

See the graph for #4. Explain that the stratosphere temp is increasing due to heat being produced by the formation of ozone

6) Describe and name different types of clouds. Which are most likely to cause rain? Nimbostratus causes steady rain.....Think low rainy Revelstoke Days! Cumulonimbus causes thunderstorms.

# CLOUD TYPES AND WHERE THEY ARE FOUND



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- 7) Describe the difference between high and low pressure systems in terms of the types of air masses and what type of weather they bring with them.

Areas of high and low pressure are caused by rising or falling. As warm air rises it leads to low pressure at the surface. This usually leads to rainy, unsettled weather.

As cool air falls, it leads to high pressure at the surface. This usually leads to sunny, fair weather.

- 8) What type of instrument is used to measure air pressure?

A barometer measures air pressure. (The force exerted by air)

9) What is dew point? How is it measured?

Dew point is the temperature to which air must be cooled for water vapor in it to condense into dew or frost. At any temperature there is a maximum amount of water vapor that the air can hold. This maximum amount is called water vapor saturation pressure. Addition of more water vapor results in condensation