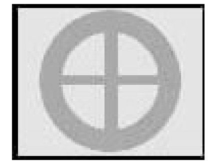

Station # 3 Earth

Number of steps from the Venus sign to the Earth sign: _________

The scale for the Anchorage Light Speed Planet Walk was chosen so that each step you take equals the distance light travels in one second (300,000 km or 186,000 miles).

If light travels 300,000 km per second can you mathematically determine out how long it takes light from the sun to arrive at the Earth – or in other words, how far you are from the Sun?

To calculate the distance from the Earth to the Sun using your own data:

1. Total up the number of steps you took from the Sun sign to the Mercury sign, the Mercury sign to the Venus sign and the Venus sign to the Earth sign. _________ steps

2. Take the total number of steps and multiply by 300,000 km (Hint: remove all zeros, multiply the other numbers, then put all the removed zeros to the right of the product.) ___________________ km

3. This number should be equal to the known distance from the Sun to Earth, which is 150,000,000 kilometers.

4. Compare your answer with the known distance from the Sun to Earth of 150 million kilometers. Are the values similar?
   If so, congratulations! If not, what might be some reasons for the difference?

How far does light travel in one year? To calculate this number (called a light-year), plug the missing numbers into the following ratio table:

300, 000 km	x	_____seconds	x	_____minutes	x	_____hours	x	______days	=	____________ km/yr
1 second		1 minute		1 hour		1 day		1 year		

Your answer is the value of a light-year, or the distance that light travels in one year. Because of the great distances between objects in space, the units that we use here on Earth, such as meters and kilometers, are too small to be practical. Astronomers use the light-year unit to measure the vast distances between suns, planets and other bodies in space.

With a partner: Calculate how many steps it should take you to travel to the Mars sign, which is 78 million kilometers away from this Earth sign. (Hint: Take the total distance to Mars from Earth and divide by the number of kilometers that each step covers.) Check your work by counting the steps to the next sign at Mars – share the counting with your partner.

Earth

Station #3

Earth: The Right Stuff

The Right…

- ✔ **Distance -** Earth stays within the "ecosphere" where temperatures never get too high nor too low to support life.
- ✔ **Orbit** – Earth's orbit is nearly a perfect circle, so our distance from the Sun remains almost constant. If our orbit were slightly closer to the Sun our water would evaporate; if farther, it would freeze.
- ✔ **Tilt -** Earth's tilt causes our seasons. When the northern hemisphere leans toward the Sun, it has summer. When it tilts away from the Sun, it has winter.
- ✔ **Atmosphere** - Extending 600 miles out into space, it acts as a shield by day to filter out the harmful effects of solar radiation and as a blanket by night to prevent our heat from escaping. Most importantly, it has the oxygen necessary for life.
- ✔ **Temperature** - Earth is the only planet where water exists in its three states: solid, liquid, and gas.
- ✔ **Spin -** Earth spins on its axis in 24 hours, creating our day and the wind system that drives our climate.
- ✔ **Amount of Water -** Earth is the only planet in our solar system whose surface has liquid water. It is the essential substance for life, as we know it. Water covers 71% of Earth's surface, 97% is seawater, and 3% is fresh water

Magnetic Field - *Earth's strong magnetic field protects us from harmful solar radiation.*

Earth's Interior

Earth's core is extremely hot, over 10,000° F. This intense heat causes convection currents in the outer core and mantle. The currents in turn cause plate tectonics, the slow movement of continents over Earth's surface**.**

Labels for Earth's interior picture:
1) The inner core: solid nickel and iron
2) The outer core: liquid nickel and iron
3) The mantle: dense solid and liquid silicate rock
4) The crust: thin silicate rock material

Formation of the Moon: The impact theory

A Mars sized object may have crashed into primitive Earth, ripping it apart and sending pulverized crust material into orbit around the Earth. These particles eventually coalesced to form the Moon. Meteor and volcanic activity on the Moon continued for nearly one billion years. Since then our Moon has remained relatively unchanged.