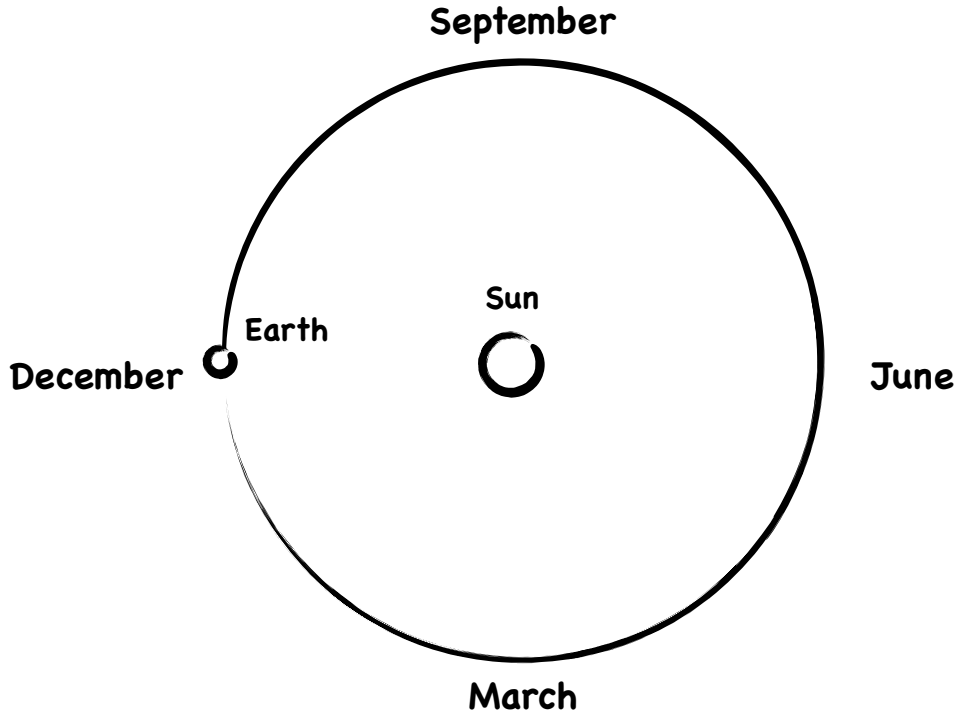


SEASONS

Session 8: Earth's Orbit

I. What shape is Earth's orbit?

- A. Draw a diagram of Earth's orbit around the Sun from an **overhead** perspective.
- B. Label all the key parts of your diagram.
- C. Label where you think Earth is when it's September, December, March, and June.



2. Distance from Earth to the Sun

Predict: In what month (if ever) do you think Earth is closest to the Sun? December

Date (and season in Boston)	Collect Data distance from Earth to the Sun (in kilometers)
December 21 Boston winter	147 million kilometers
March 21 Boston spring	149 million kilometers
June 21 Boston summer	151 million kilometers
September 21 Boston fall	149 million kilometers

3. Compare and analyze

Use the data in your table on the previous page to answer these questions:

Earth is closest to the Sun when it is winter in the Northern Hemisphere.
< fall / winter / spring / summer >

Earth is farthest from the Sun when it is summer in the Northern Hemisphere.
< fall / winter / spring / summer >

4. Reflect

A common belief for why we experience Seasons is that Earth is closer to the Sun in the summer, and farther away in the winter.

Do you agree or disagree with this? disagree
< agree / disagree >

Explain your reasoning. If you disagree, please explain **why** you think we have seasons.

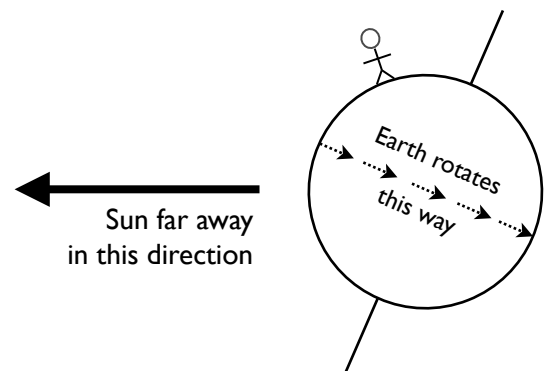
Earth is further away from the Sun when it is summer in the Northern Hemisphere, so this doesn't make sense. We have seasons because the fixed tilt of the Earth results in more intense sunlight and longer days during certain periods of the orbit around the Sun.

5. Recap

i. What season is it for the person in the diagram to the right? summer
< fall / winter / spring / summer >

ii. The person in this diagram will experience (circle one):

- a. A longer day and shorter night
- b. Roughly an equal day and night
- c. A longer night and shorter day



iii. Sketch a side-view of Earth and the Sun when the Southern Hemisphere is experiencing winter.

