

Name _____

Tilted Earth

Before you begin:

1. What is the shape of the Earth's orbit? _____
2. Does the Earth's distance from the sun change very much during the year? _____
3. If the Earth did move closer or farther from the Sun, it would be colder or hotter everywhere on Earth at the same time. Is this true? What evidence do you have to support your answer?

4. If it is not the distance from the Earth to the Sun that causes seasons, what are some other possible causes?

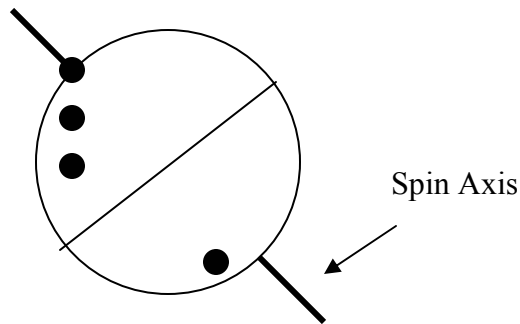
Materials:

Styrofoam Earth models

Lamp

Procedure:

1. Label the marks on your model:



2. Hold your model with the spin axis in a vertical (straight up and down) position. Slowly spin counterclockwise the models and watch the dots go from daylight to night and back to daylight. When the spin axis is vertical, do the dots stay in the light the same amount of time during a rotation?

3. Is this how the Sun-Earth system really works? Why or why not?

4. Tilt the Earth toward the sun, roughly halfway down. Spin the Earth model again and observe the dots. Compare what is happening at the red dot (mid latitude North) and the black dot (mid latitude South).

5. What is happening to the blue dot?

6. What is happening at the South Pole?

7. Compare what is happening in the two Northern Hemisphere cities.

8. What season is it in the red dot? _____

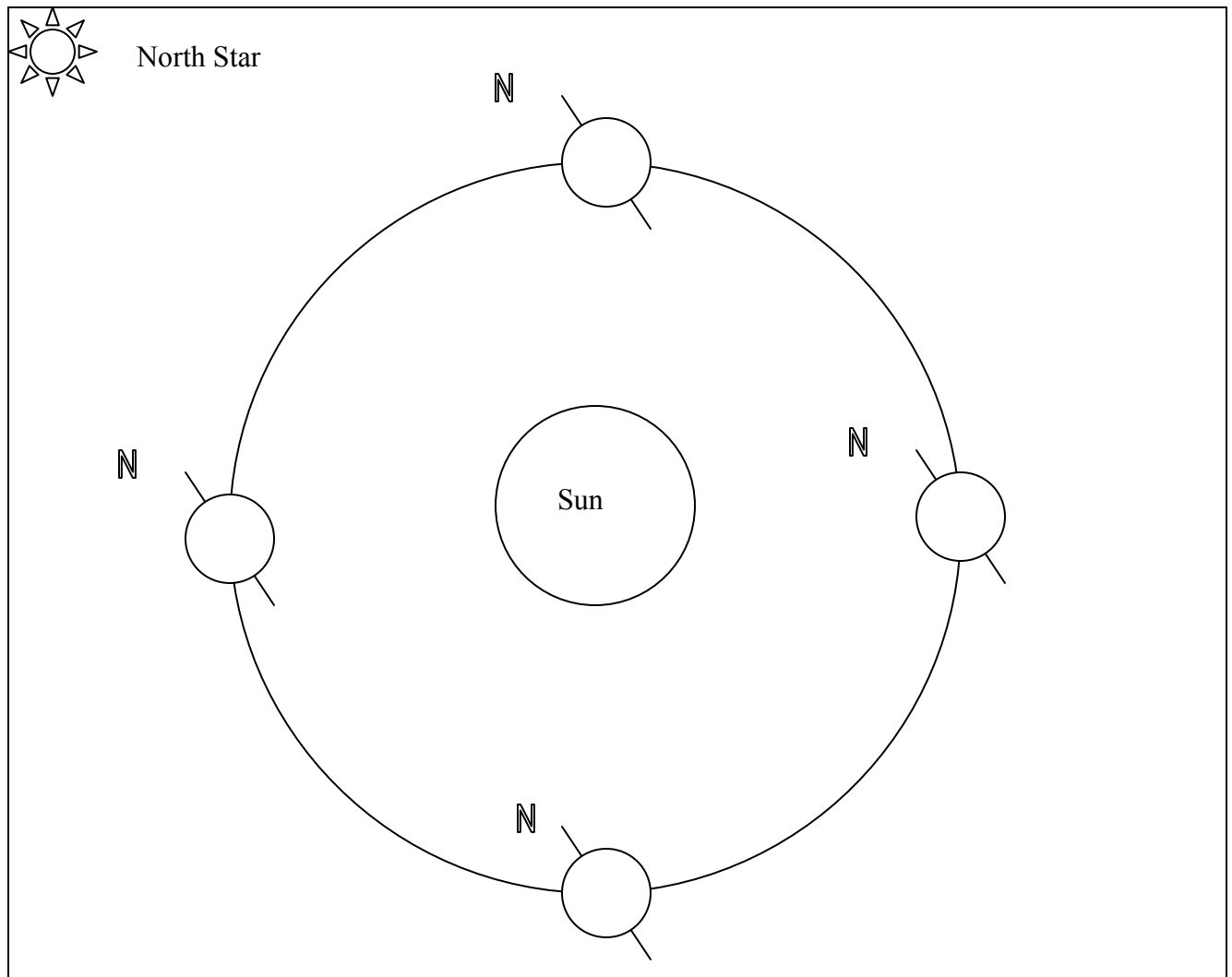
9. What season is it in the blue dot? _____

10. How are they different?

11. All of the Northern hemispheres in our models are tilted toward the Sun, and have summer. Is this how it always is?

12. How does the season change from summer to fall to winter to spring and back to summer during the year?

13. As the Earth moves around the Sun, the North Pole always points toward the North Star. Point your model toward the “North Star”.



Label each Northern Hemisphere with the appropriate season.

Conclusions:

1. Do you think a planet whose axis was NOT tilted would have seasons? Explain your answer.

2. Many people think that the tilt of the Earth causes seasons because it makes one part of the Earth much, much closer to the Sun. When the North Pole is tilted toward the Sun, is the Northern Hemisphere really much closer to the Sun than the Southern Hemisphere? Explain your answer.

3. Look at question # 3 on the Earth-Sun Survey. Which answers do the model you just made support? Explain your answer.

4. To think about: If the tilt of the Earth doesn't make much difference in our distance from the Sun, why does it get hotter in the summer?