Name _____ Homeroom _____

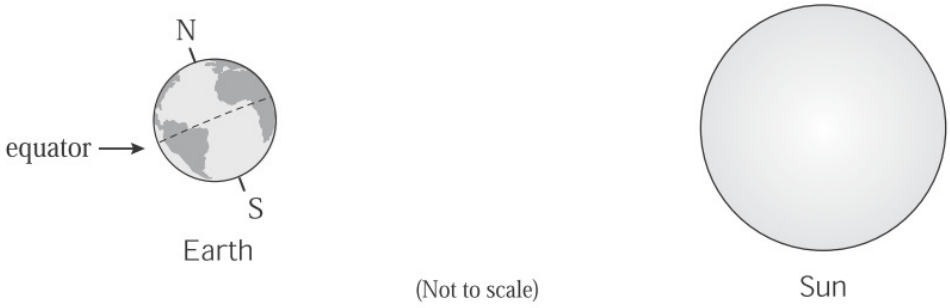
Science Quiz

Day/Night, Sun's Energy, Seasons

September 24, 2012

1. The winter solstice occurs on either December 21 or 22, depending on the year. Which of the following statements **best** explains why the time of the year the winter solstice occurs has the least amount of daylight in Massachusetts?
    a. Earth is farthest away from the Sun on the winter solstice.
    b. Earth's rotational speed on its axis is greatest on the winter solstice.
    c. Earth is traveling around the Sun with the greatest speed on the winter solstice.
    d. Earth's Northern Hemisphere is tilted away from the Sun on the winter solstice.

2. The diagram below shows the relative positions of Earth and the Sun at a certain time of the year.



Based on the diagram, which season is occurring in the Southern Hemisphere of Earth?

3. Which of the following statements **best** explains why it is warmer at the equator than at the North Pole?
    a. The equator has a larger area than the North Pole.
    b. The equator is closer to the Sun than the North Pole.
    c. The equator receives more direct sunlight than the North Pole.
    d. The equator has more hours of daylight per year than the North Pole.

4. Which of the following statements **best** explains why the tilt of Earth on its axis causes summer to be warmer than winter in the Northern Hemisphere?
    a. The warm ocean currents flow from the tropics to the Northern Hemisphere in the summer.
    b. The rays of the Sun strike the Northern Hemisphere more directly.
    c. The greenhouse effect increase in the Northern Hemisphere in the summer.
    d. The Northern Hemisphere is closer to the Sun in the summer.

5. When the Sun is directly overhead at the equator, both hemispheres receive the same amount of the Sun's energy. Tell the name we give to this day.

6. Tell how solstices are related to the seasons.

7. Fact: Earth moves through space in two major ways.
   In the boxes below, create a drawing that illustrates <u>each</u> of the <u>two ways</u> Earth moves through space. Be sure to label the pictures.

Drawing:	Drawing:
Label:	Label:

8. When a hemisphere experiences winter, tell what happens to the Sun's energy hitting the surface of the hemisphere.

9. When a hemisphere experiences winter, tell about the Sun's position in the sky, particularly at local noon (local noon is the time when the Sun stops rising and begins to set; it is NOT 12:00pm)

10. When a hemisphere experiences winter, which way is that hemisphere's pole pointing – towards the Sun, away from the Sun, or neither towards nor away from the Sun?

11. Tell how equinoxes are related to the seasons.

12. Facts: Mars rotates on its axis.
Mars's axis is currently tilted at about 25°, very close to Earth's 23.5° tilt.
Mars revolves around the Sun.
Mars takes twice as long as Earth to orbit the Sun.
Mars is further away from the Sun than the Earth is.

Question: Based on these facts, does Mars have seasons? Support your answer with reasons.

Name _____ September 21, 2010

Science Quiz – Day/Night, Seasons, Solstice, Equinox

Fact: Earth moves through space in two major ways.

1. Identify the two ways in the boxes below.

2. Make a drawing that illustrates each of the two ways Earth moves through space.

Identify Here ⇒		
Draw Here ⇒		

3. Explain what it means for a hemisphere to experience “winter”.

4. In which direction was the Earth's axis pointed at the time of this photograph in Lowell, MA (a lot of snow had just fallen):

For numbers 5 – 10, use the word bank to fill in the blanks

Word Bank

axis	rotation	revolution	orbit	day	night

5. The path that the Earth (and other planets) take when moving around the sun is called a/an _____.

6. _____ is the spinning of the Earth on its axis.

7. _____ is when your part of the Earth faces away from the Sun.

8. The imaginary line that passes through the Earth's center and the North & South Poles is the Earth's _____.

9. _____ is the movement of one object around another.

10. _____ is what you call the period of time when your part of the Earth faces the Sun.

11. Which direction does the Earth rotate? Circle one:

East to West West to East

12. How are solstices and equinoxes related to the seasons?

13. How would the seasons be different if Earth were not tilted on its axis?

14. Which of the following statements best explains why it is warmer at the equator than at the North Pole?

A. The equator has a larger area than the North Pole.

B. The equator is closer to the Sun than the North Pole.

C. The equator receives more direct sunlight than the North Pole.

D. The equator has more hours of daylight per year than the North Pole.

A tall man and a short man sat next to a woman at the subway. One man was heading to the town of Liars and the other to Truthsayers. The woman asked them "Where are you from?" The short man mumbled something she couldn't understand. The tall man said: "He is not from Liars. I am also not from Liars."

Who is from Liars?

REMEMBER: Anyone from Liars always tells a lie, and anyone from Truthsayers always tells the truth.

SCORING RUBRIC FOR WRITTTEN RESPONSES

4	The response demonstrates a thorough understanding of the topic. The response provides accurate and specific evidence that supports the answer to the question.
3	The response demonstrates a general understanding of the topic. The response provides accurate and specific evidence that supports the answer to the question.
2	The response demonstrates a limited understanding of the topic. The response does not provide accurate or specific evidence that supports the answer to the question.
1	The response demonstrates a minimal understanding of the topic. The response provides inaccurate and non-specific evidence that supports the answer to the question.