Movements of the Earth & Sun: Study Guide for Test

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Test on THURSDAY OCTOBER 9th

Turn in your completed study guide on the day of test to receive extra credit points on your test.

Monday 9/29 – Movements of the Earth

1. The Earth ____________________ (spins) on its ______. The axis has a tilt of _______ degrees.

2. The rotation of the Earth creates an ____________________ bulge.

3. The Earth has four hemispheres: ____________________, ____________________, and ____________________. We live in the ____________________ hemisphere.

4. The Earth completes one full rotation in _____ hours and _____ minutes. We calculate a 24 hour day by taking into account the Earth’s motion around the Sun as the Earth rotates.

5. The Earth revolves around the Sun. The period of one revolution is ______ . ___ days.

6. Match the motion of the Earth with the proper diagram (not drawn to scale).

   Rotation _________       (A)          (B) Revolution _________

7. The Day’s Main Idea:
   Earth _______________ (spin) is a day and its ______________________ (orbit) is a ________.

Tuesday 9/30 – Explore the Seasons Lab

8. Match the positions of the Earth with its Northern Hemisphere seasons.

   #1 _____ a) March 21 – Vernal Equinox (start of spring)

   #2 _____ b) September 22 – Autumnal Equinox (start of fall/autumn)

   #3 _____ c) December 21 – Winter Solstice (start of winter)

   #4 _____ d) June 21 – Summer Solstice (start of summer)
9. Why is there little change in climate at the equator?

10. Looking at the student data at the right. Which substance heated faster, sand or water?

<table>
<thead>
<tr>
<th>Time (seconds)</th>
<th>Temperature of Sand (Celsius)</th>
<th>Temperature of Water (Celsius)</th>
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</thead>
<tbody>
<tr>
<td>30</td>
<td>24</td>
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<td>60</td>
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<td>90</td>
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<td>25</td>
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<tr>
<td>120</td>
<td>26</td>
<td>25</td>
</tr>
</tbody>
</table>

11. The Day’s Main Idea:
Heat Energy received on the Earth is dependent on the _______________ in which the sunlight ______________ the Earth.

12. On the diagram of the Earth to the right, the dotted line (- - -) represents the _______________ and the diagonal line ( / ) represents the _______________.

Label the Northern Hemisphere and Southern Hemisphere on the two lines provided on the diagram to the right of the Earth.

13. In the Northern Hemisphere the Earth is closest in distance to the Sun during the _________________ season. (Refer to question 8 for help).

14. The Summer Solstice happens when the Sun reaches its __low / highest (circle one)__ point in the sky and provides the __least/greatest (circle one)__ amount of daylight.

The Winter Solstice happens when the Sun reaches its __low / highest (circle one)__ point in the sky and provides the __least/greatest (circle one)__ amount of daylight.
15. The Vernal Equinox and the Autumnal Equinox have _____ hours of daylight and _____ hours of night. (Excluding the north and south poles.)

16. Low angle of incoming sunlight strikes the Earth at the ___________ and ___________ poles. With the most direct angle of incoming sunlight strikes at the ___________

17. The Winter Season has the ___________ amount of direct angle of sunlight, while the Summer Season has the ___________ amount of direct angle sunlight.

18. Northern and Southern Hemispheres experience _______________ climates/seasons.

19. Day’s Main Idea:
The Earth’s seasons are related to Earth’s _______ on its axis and its __________________ around the Sun.

   Thursday 10/2 – Articles on Time

20. The Earth travels around the Sun every _________ days, or what we call a _________ year.

21. Most of our calendar years last 365 days, but every four years we add one day to the month of _____________. The years in which one day is added to our calendar year is referred to as ______________ year.

22. Time changes as you move ___________ to ___________, so we divided the Earth into twenty-four time ___________.

23. The Time along the Prime _____________ is called Greenwich Mean Time or GMT.

24. The time zones in the continental United States are _________________, _________________, _________________, and _________________ time zones.

25. The idea of Daylight Saving Time was suggested to take advantage of the additional _______________ in the summer months.

26. Most of the United States move the clock ahead one ____________ from the second Sunday in the month of _____________ to the first Sunday in the month of _____________.

27. Using the map, if it is 7 pm in North Carolina (Eastern Time Zone) what time is it in California (Pacific Time Zone)?
28. The shape of the Earth is called __________________ Spheroid.

29. The Earth bulges due to __________________ force created by the Earth ______________ at speed of about 1,000 miles per hour.

30. Water (oceans) is drawn away from the __________ creating the __________________ bulge.

31. Like a spinning top, as the Earth rotates its axis traces out a small circle.

The wobbling of the axis along the circle path is called __________________.

32. Precession is caused by the __________________ bulge of the Earth.

33. It takes ______________ years to make one complete Precession circle. SO SLOW!!

34. During Precession:
   - The direction of the Earth’s axis Does / Does Not (circle one) change.
   - The 23.5 degree tilt of the Earth axis Does / Does Not (circle one) change.
   - The Earth’s seasons Are or Are Not (circle one) affected.
   - The north star that we see at the north pole Does or Does Not (circle one) change.

35. A nodding motion on the Precession circle is called ___________________.

R = Rotation

P = Precession

N = ________________

36. Nutation is caused by the gravitational pull from the _______________ and _______________.

37. During Nutation:
   - There is a change in the Earth’s axis by a _____ degree
   - 18 year “nod” period due to the moon’s ______
   - Very slight increases or ___________ seasonal effects

Monday 10/6 - Differential Heating & Barycenter

Different substances absorb and retain heat at different rates.

38. Land (soil, rock, sand) heats _slow / fast (circle one)___ and cools _slow / fast (circle one)___.

39. Water (lakes, oceans) heats _slow / fast (circle one)___ and cools _slow / fast (circle one)_.

Both the Earth and the Sun are moving in our Solar System.

40. The Sun has two main motions. The first motion is the Sun & Solar System’s orbit around our _______ Galaxy. The second motion is our Sun’s orbit around the solar system’s _______ center.

41. The time it takes for our Solar System to orbit once around the center of the Milky Way galaxy is called a __________________ Year. (225 – 250 million Earth years.)

42. The Sun moves as ____________________ tug on it. This causes the Sun to orbit our Solar Systems’ ____________________.

43. Day’s Main Idea
The ____________________ is the point in space around which two objects orbit and can vary slightly in its location.

44. The barycenter (represented above as a triangle) will be located more towards the object with smaller/greater (circle one) mass.

*Tuesday 10/7: Lunar and Solar Eclipses will not be included on this test*