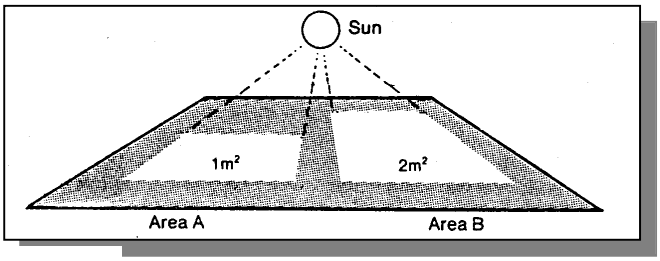
Name _____

How Angle of Insolation, Time of Day & Earth's Shape Affect INSOLATION

Directions: Give the best answer to the following questions.

1. In the diagram at right, the ***total*** quantity of insolation received by each area is the same (10,000 cal/sec). Since Area B has twice the surface area of Area A, each location within Area B receives a (greater / lesser) intensity of insolation.



2. Factors affecting the intensity of insolation include the _____ at which the Sun's rays strike the surface, the type of _____ it strikes, the _____ the insolation is received, and _____ conditions.
3. The angle at which the Sun's rays strike the surface is referred to as the _____.
4. The Sun's rays strike the Earth at angles ranging from ___ to ___, because the Earth's surface is _____.
5. When the Sun is directly overhead at 90^0, (see the Equator at right), it is said to be at _____. In this case, the Sun's rays are _____ to the surface, so these rays are called _____, or _____ rays.
6. _____ rays provide the greatest intensity of insolation, because _____.
7. In the diagram, the angle of insolation at the Equator is _____, and at the northernmost position is _____. Which receives the greatest intensity of insolation? _____
8. The angle of insolation affects the _____ of insolation, but also the _____.

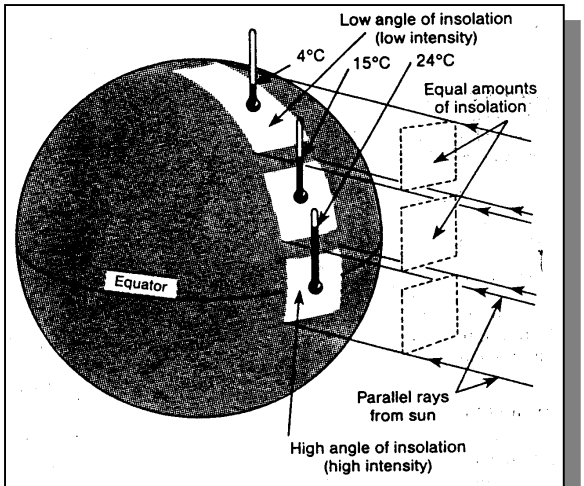


Figure 6-3. The greater the angle of insolation, the greater the intensity of insolation and the higher the temperature.

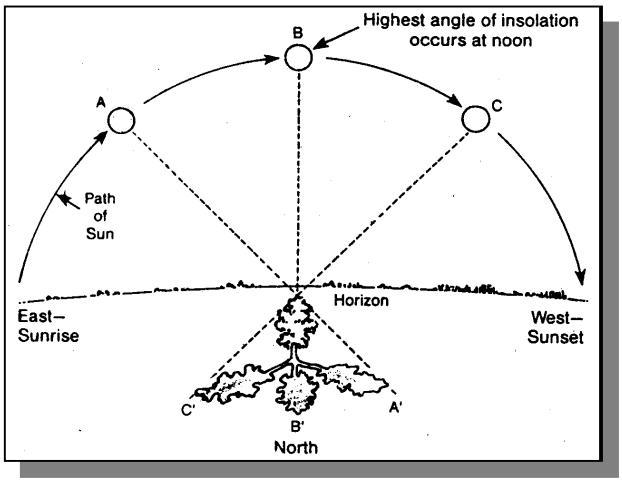
9. The diagram below shows the angle of insolation, and of a tree's shadow, as they vary through the day. When the Sun is at position B, the tree's shadow falls to the ____, and when the Sun is at position C, the shadow falls ____.

10. In which position, A, B or C, is the shadow the shortest? ___ Why? _____

11. The angle of insolation is lowest at _____ and _____, and is always greatest at _____ _____.

12. The intensity of insolation is always greatest at _____ _____.

13. At solar noon in N.Y.S., is the Sun at zenith (directly overhead)? ___



14. Is it possible for the Sun to ever be at zenith anywhere in the U.S. at any time? _____

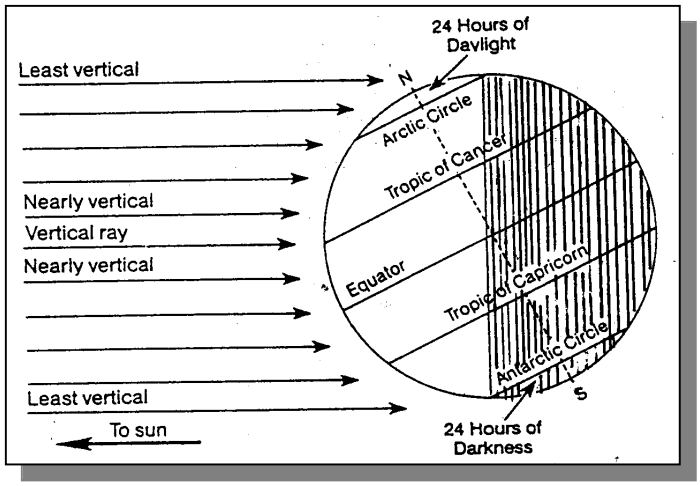
15. The Sun can only be at zenith at locations between _____ and _____.

16. From Ballston Spa, or anywhere in the U.S., you must face the ___ to see the Sun at solar noon.

17. The Sun is so far away, that by the time its rays reach Earth they are essentially _____.

18. At any given time, vertical, direct rays can strike the Earth at _____ location(s).

19. The diagram at right shows the Earth on June 21, when the North Pole leans toward the Sun. On this day, the most direct rays are received at _____.



20. Also on this day, the longest path of the Sun through the sky occurs at what latitude? _____

21. On June 21, north of the Arctic Circle, daylight lasts ___ hours, while south of the Antarctic Circle daylight lasts ___ hours.