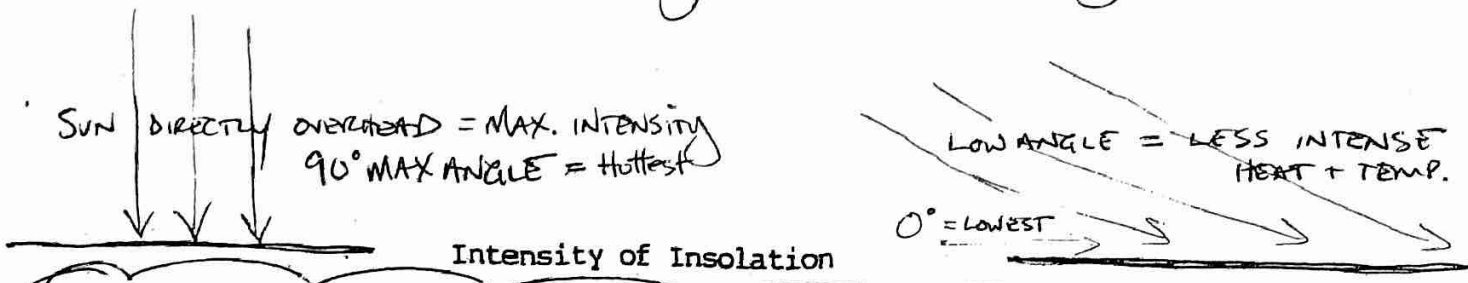
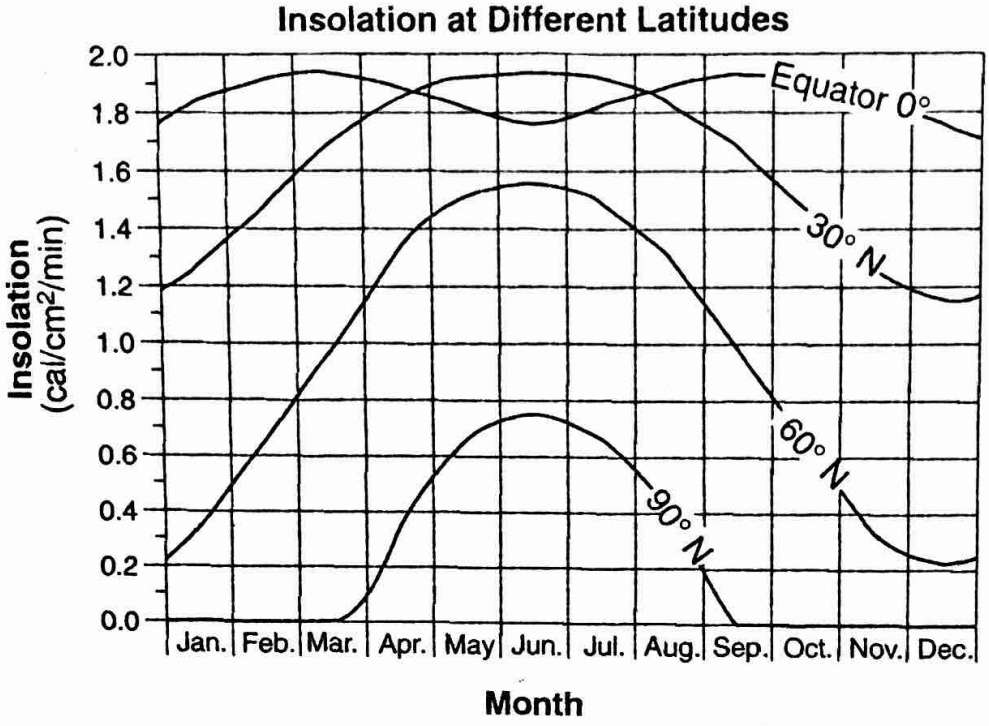
INSOLATION = Incoming Solar Radiation (a fancy name for sunlight)



Intensity of Insolation

The purpose of this exercise is to understand the effect of angle of insolation vs. latitude.

1. Which angle gave the max. intensity of insolation?
2. Which angle gave the min. intensity of insolation?
3. Make a statement regarding the intensity of insolation vs, the resulting temp for a given location.
4. As lat inc., how does the intensity of insolation change?
5. Why is it always hot at or near the equator?
6. Why is it always cold at or near the poles?
7. How are intensity of insolation and angle of insolation related?
8. When does 42° N experience the max angle of insolation?
9. When does 42°N experience the max intensity of insolation?
10. Which lat has the max angle of insolation?
11. Which lat experience the max increase in temp?
12. Which lat has the min angle of insolation?
13. Which lat has the min increase in temp?
14. Make a statement regarding the angle of insolation of an area vs. the resulting temperature.
15. Make a statement regarding the angle of insolation vs. lat.
16. What is the date of max. intensity of insolation at 42°N?
17. How about the date of min. intensity of insolation at 42°N?



18 This graph shows that insolation varies with

(1) latitude and time of day
(2) latitude and time of year
(3) longitude and time of day
(4) longitude and time of year

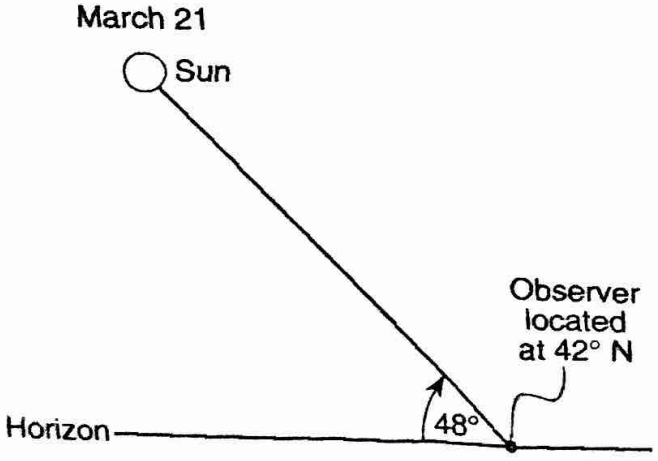
19 Why is less insolation received at the equator in June than in March or September?

(1) The daylight period is longest at the equator in June.
(2) Winds blow insolation away from the equator in June.
(3) The Sun's vertical rays are north of the equator in June.
(4) Thick clouds block the Sun's vertical rays at the equator in June.

20 Why is insolation 0 cal/cm²/min from October through February at 90° N?

(1) Snowfields reflect sunlight during that time.
(2) Dust in the atmosphere blocks sunlight during that time.
(3) The Sun is continually below the horizon during that time.
(4) Intense cold prevents insolation from being absorbed during that time.

The diagram below shows the altitude of the Sun at solar noon on March 21, as seen by an observer at 42° N latitude.



21 Compared to the altitude of the Sun observed at solar noon on March 21, the altitude of the Sun observed at solar noon on June 21 will be

(1) 15° higher in the sky
(2) 23.5° higher in the sky
(3) 42° higher in the sky
(4) 48° higher in the sky