Lab 2

Angle of Insolation

Purpose:

1. The purpose of this lab is to have you determine the changes of angle of insolation that occur throughout the year at different latitudes on the Earth. You will then use this information to identify the relationship between temperature and the angle of insolation, and how this affects the seasons.

Materials:

Pencil
Protractor

Procedure:

Complete the following steps

1. Using a protractor, determine the angle at which the incoming solar radiation (insolation) is striking the earth's surface at noon at three different latitudes shown in diagram A. Record the angle to the nearest whole degree for each location on Table 2-2.
2. Use the above procedure to figure all the angles of insolation for all of the latitude locations for diagrams B and C. Record your data for each location on Table 2-2
3. Answer the conclusion questions.
4. Finally, using the data on the average monthly temperature for 42° north latitude provided in Table 2-3, create a line graph that shows the relationship between the average temperature and month during the year.
    a. The X-axis should be labeled_____.
    b. The Y-axis should be labeled_____.

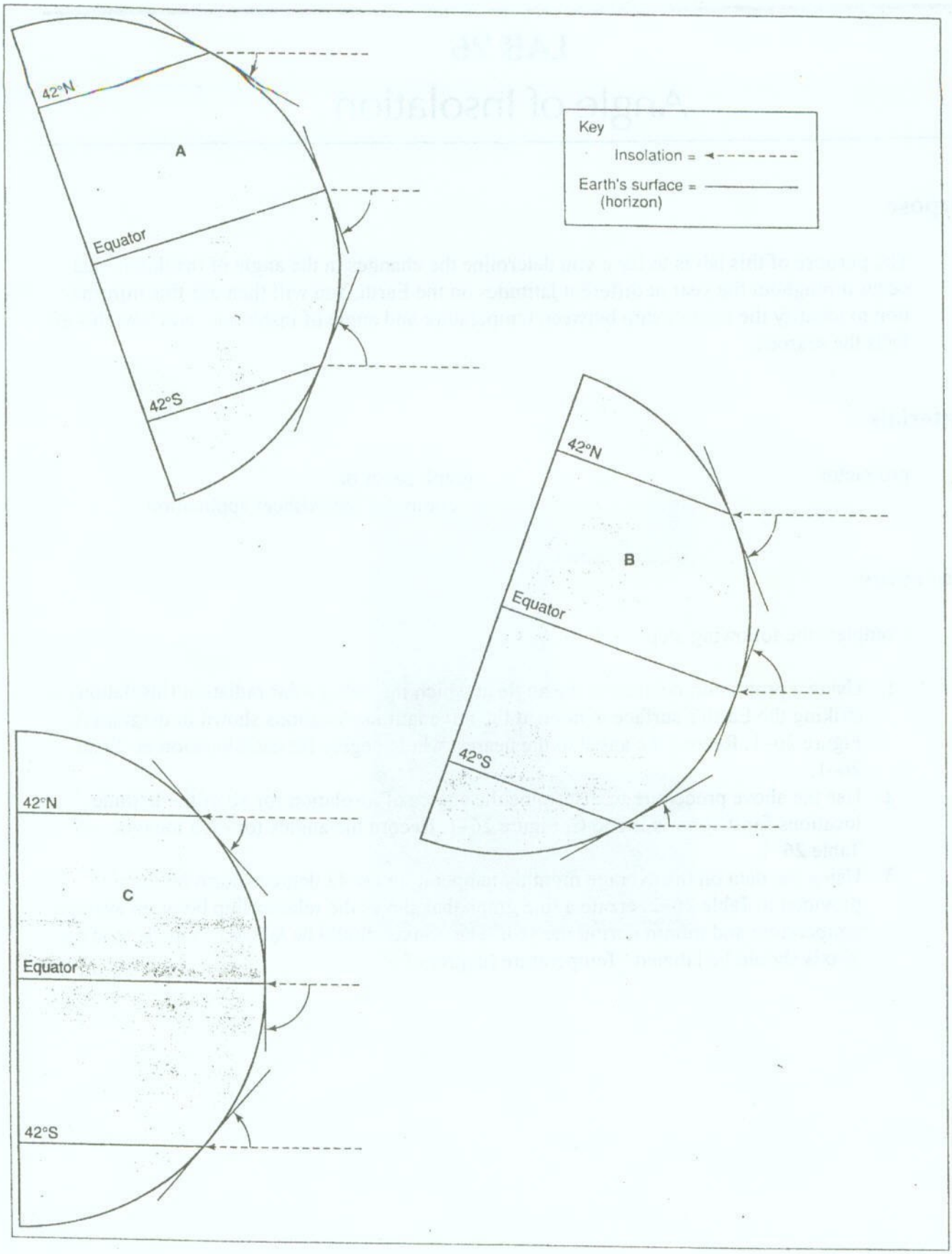

FIGURE 26–1 Insolation Angles

Table 2-2	
Diagram A	
Latitude	Angle of Insolation
42° North	
Equator	
42° South	
Diagram B	
Latitude	Angle of Insolation
42° North	
Equator	
42° South	
Diagram C	
Latitude	Angle of Insolation
42° North	
Equator	
42° South	

Conclusions:

1. Using your data on the angle of insolation for Diagram A, what season(s) of the year do you believe this diagram represents?

2. What season(s) of the year does diagram B represent?

3. What season(s) of the year does diagram C represent?

4. What is the lowest (smallest) angle of insolation that the equator receives throughout the year? What season does it occur?

5. What is the lowest angle of insolation that 42° North latitude received through out the year? What season did it occur?

6. What is the highest angle of insolation that 42° North latitude received through out the year? What season did it occur?

7. Using your data on the angle of insolation during the spring and fall at different latitudes, what is the general relationship between the angle of insolation and the latitude location on the earth?

8. What is the relationship between the season of the year in the Northern hemisphere and the angle of insolation?

9. Using your line graph showing average monthly temperature, describe the relationship between the angle of insolation and the average temperature on earth.

Use the following information to make a line graph. Be sure to label everything!!

Table 2-3 Average Temperature Table	
Month	**Average Temperature at 42° North (F°)**
January	20.7
February	27.6
March	40.1
April	45.3
May	59.3
June	65.8
July	67.6
August	68.5
September	59.3
October	50.0
November	38.0
December	22.1