

Note: Read ch.16 text Figure 16.28, Figure 16.32 and p. 509 for explanations

**Activity 3:** Temperature Relationships to Land-Water and Cloudy-Clear  
**Figure 6** (top of next page) presents the annual temperature data for two cities, City A and City B, located in North America at approximately 37°-north latitude. On any given date, both cities receive the same intensity and duration of solar radiation. One city is in the center of the continent, while the other is on the west coast (say San Francisco, CA and Wichita, KS). You may want to refer to [Fig. 16.18, p. 498-499, \*Earth Science, 14<sup>th</sup> ed.\*, by Tarbuck, et al.](#) to help you understand these questions

Circle the answer for following questions using Figure 6.

1. City (A / B) has the highest average monthly temperature.
2. City (A /B) has the lowest average monthly temperature.
3. The greatest annual temperature range (difference between highest and lowest monthly temperatures) occurs at City (A / B).
4. City (A / B) reaches its maximum average monthly temperature at an earlier date.
5. City (A / B) maintains a more uniform temperature throughout the year.
6. Of the two cities, City A is the most likely to be located (along a coast / in the center of a continent).
7. The most likely location for City B is (coastal / mid-continent).
8. Describe the effect that the location of each city has on the temperature variations of that city throughout the year.

**Figure 6**  
Mean monthly temperatures for two North American cities located at approximately 37°N latitude.

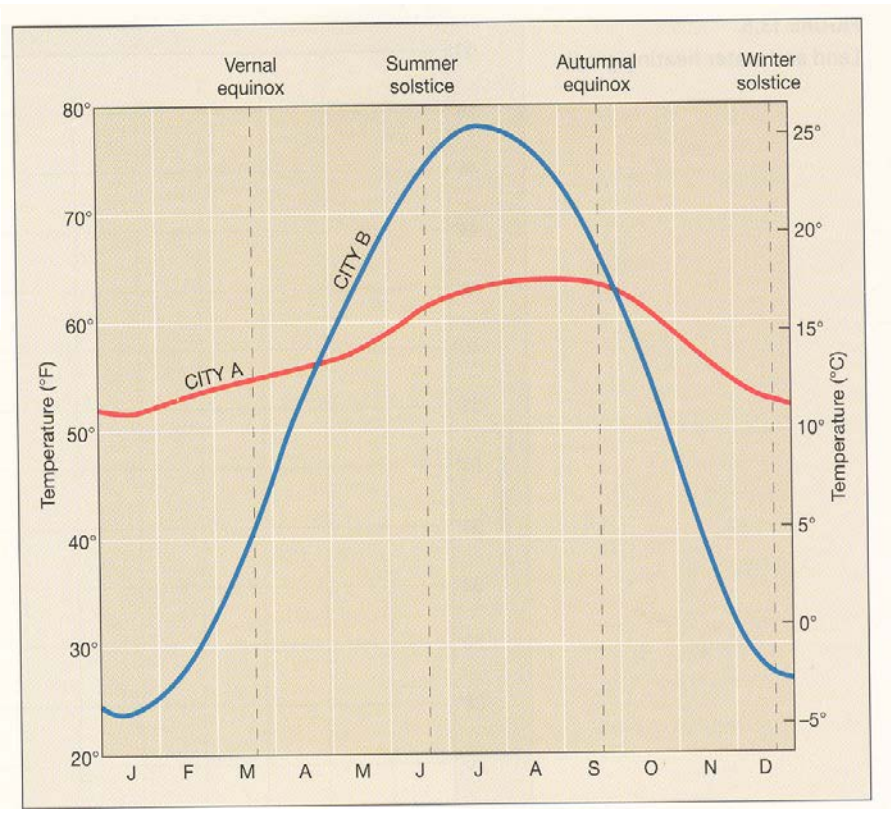
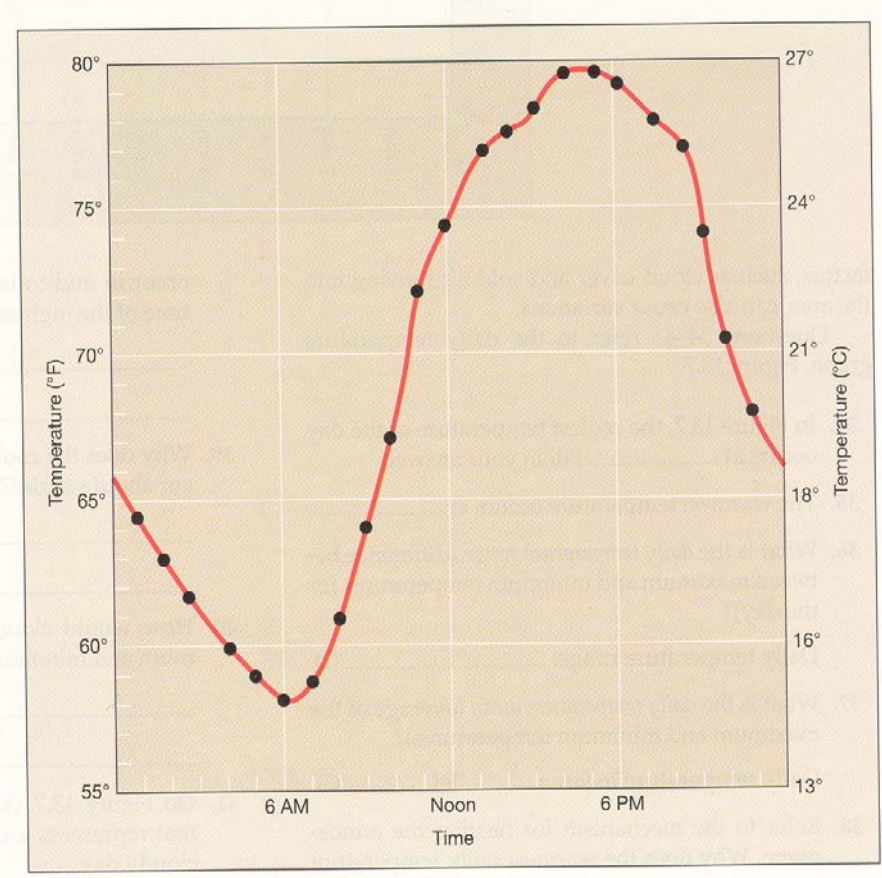


Figure 7 shows how daily temperature varies for a typical mid-latitude city. In general, the daily temperatures that occur at any particular place are the result of long-wave radiation being released at Earth's surface. However, secondary factors, such as cloud cover and cold air moving into the area, can also cause variations.

**Figure 7**  
Typical daily temperature graph for a mid-latitude city during the summer.



Use Figure 7 to answer these questions:

3. The coolest temperature of the day occurs at \_\_\_\_\_,  
and the warmest temperature occurs at \_\_\_\_\_.  
(time of day)
4. What is the daily temperature range (difference between maximum and minimum temperatures for the day), in degrees Celsius?
5. What is the daily mean temperature (average of maximum and minimum temperatures) in degrees Celsius?
6. Considering how the atmosphere is heated, why does the warmest daily temperature not occur at the time of the highest sun angle, but rather in mid to late afternoon?
7. Why does the coolest temperature of the day occur about sunrise?
8. How would cloud cover influence daily maximum and minimum temperatures?
9. **On Figure 7**, sketch and label a line that would represent a daily temperature graph for a cloudy 24 hour period.