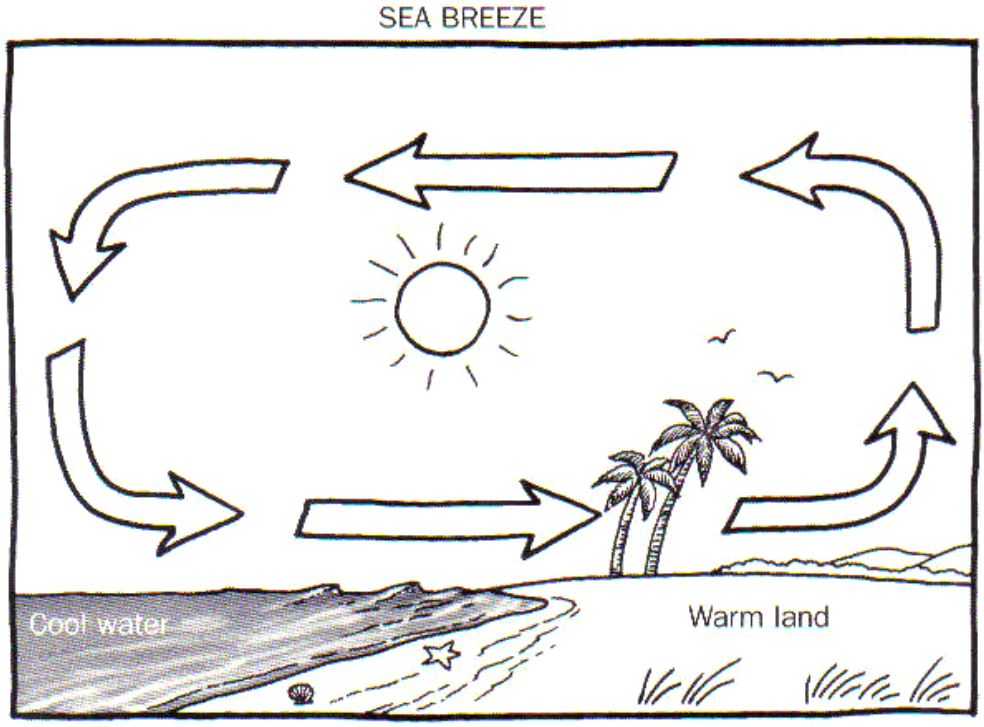
MiSP Weather — Wind Speed and Direction Assessment L3

Name _____ Date _____

1. On the lines below the diagram, explain what a sea breeze is and what makes it happen. You may label and refer to the diagram. You should use the following words and phrases in your explanation (some may be used more than once!):

   temperature high pressure low pressure warm (or hot) cool (or cold)



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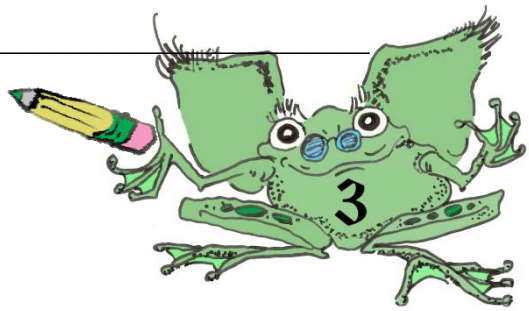


2-5 True or false statements about wind, hurricanes, and tornadoes:

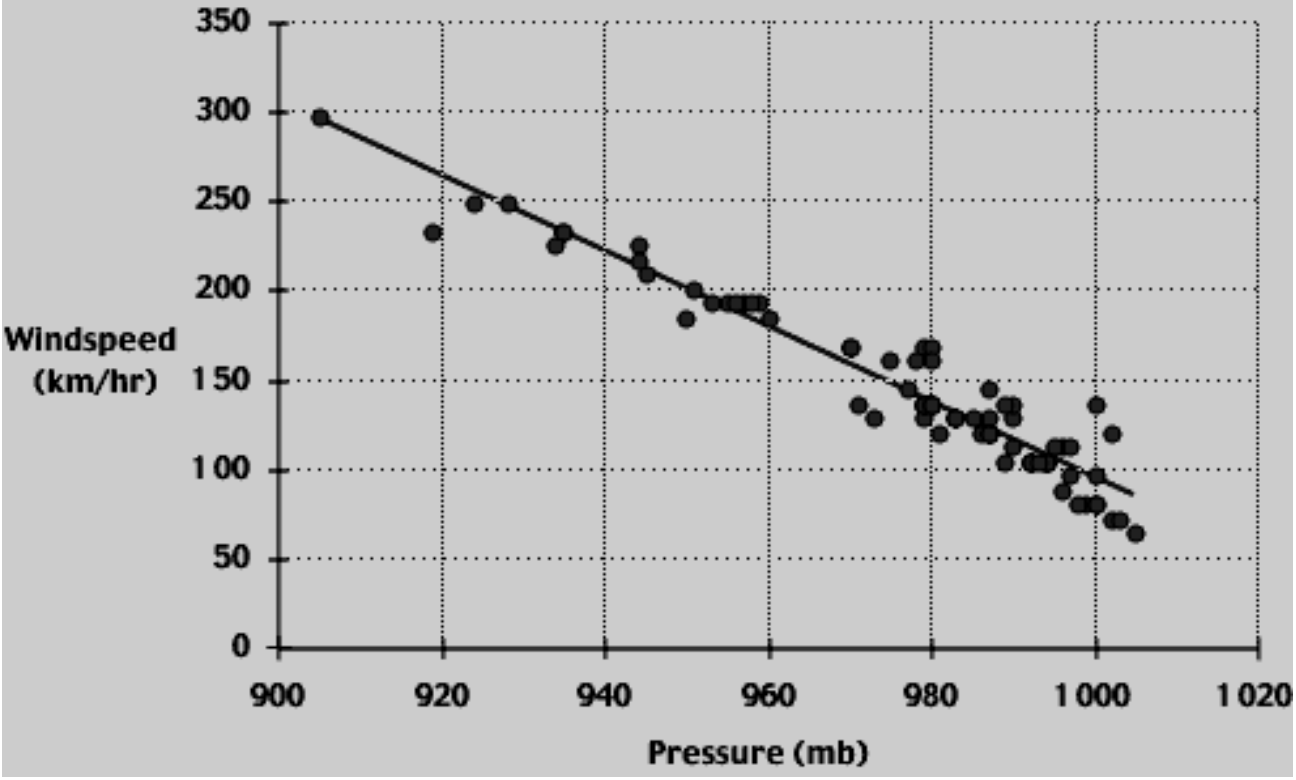
2. _____ Hurricanes form over COOL water and get weaker over WARM water.

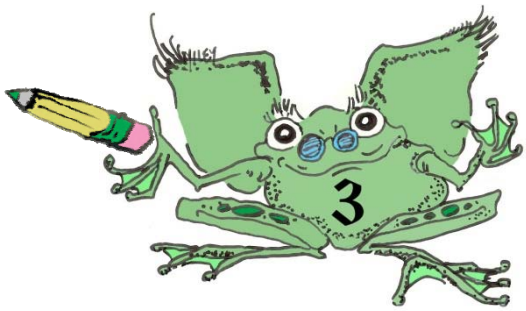
3. _____ The LOWER the central pressure of a hurricane, the GREATER the hurricane's wind speed.

4. _____ Wind blows from HIGH pressure places to LOW pressure places.

5. _____ The GREATER the difference between the air pressure inside a tornado and the air pressure outside the tornado, the GREATER the wind speed.

Refer to the graph below to answer questions 6–7 (L1), 6–9 (L2), and 6–11 (L3). The graph shows the relationship between central pressure and sustained wind speed for a number of tropical low pressure systems.





6. According to the best-fit line on the graph above, what would the wind speed be if the pressure was 910 mb?

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7. The minimum wind speed that must exist in order for a tropical storm to be called a hurricane is 119 km/hr. Using the best-fit line, answer the question, What central pressure would be needed to produce hurricane winds of119 km/hr?

_____

8. _____Which of the following values is the closest to the unit rate of change (slope) for the best-fit line on the graph?

   a. -2.2 $\frac{\text{km/hr}}{\text{mb}}$

   b. 2.2 $\frac{\text{km/hr}}{\text{mb}}$

   c. -4.2 $\frac{\text{km/hr}}{\text{mb}}$

   d. 4.2 $\frac{\text{km/hr}}{\text{mb}}$

9. Using the unit rate of change (slope) you determined and picked in #8, what would be the change in a tropical storm's / hurricane's wind speed if the pressure INCREASED BY 10 mb?

_____

10. We know that a pressure of 0 mb is not possible, but if we extended the best-fit line in the graph above, the *y*-intercept would be approximately 2,300 km/hr. Using 2,300 as the *y*-intercept and the slope you calculated/picked in #8, what would be the formula for the best-fit line in the graph?

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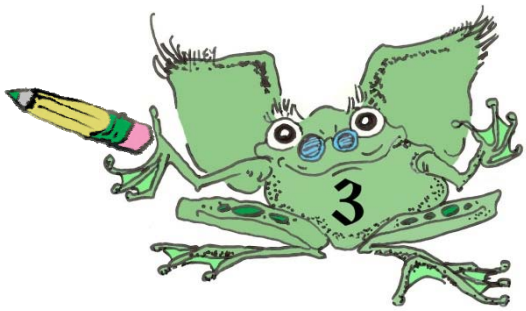

11. Using the formula in #10, what would be the wind speed if the pressure is 1010 mb? Show your work.