

Skills Worksheet

Science Skills

ANALYZING INFORMATION/INTERPRETING GRAPHICS

Dirt sticks to the body either by becoming trapped in microscopic wrinkles in the skin or, if the dirt is moist, by adhering to the body. Sometimes the natural oils on skin will give the dirt an oily coating. In such cases, water alone will not remove the dirt, but soap and water will. Use the information below and your understanding of polarity and chemical bonding to answer questions 1–3.

- A. A soap molecule is long, with one end attracted to oil molecules.
- B. One end of a soap molecule is polar, and the other end is nonpolar.
- C. Soap will dissolve, and the soap molecules will float freely in water.
- D. A sewing needle will rest upon the surface of water. If powdered soap is gently sprinkled near the needle, the needle will eventually sink.

Read each question, and write your answer in the space provided.

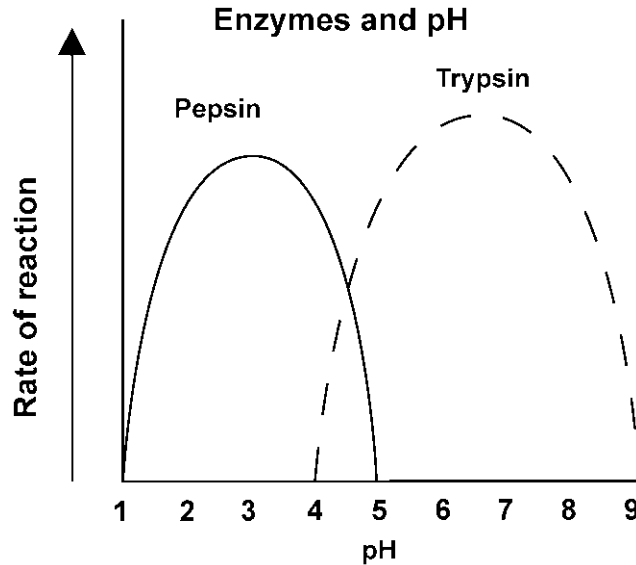
1. Explain why adding soap to water will help remove dirt and oil.

2. Why does the needle float on the water?

3. Why does the needle sink after soap is added to the water?

Science Skills *continued*

The graph below shows the rate of enzyme activity in relation to pH for two enzymes—pepsin and trypsin. Both enzymes break down molecules in food taken into the human body, but the enzymes act in series. Pepsin breaks some bonds in very large molecules. Trypsin acts on the fragments produced by the action of pepsin, breaking them into even smaller units. Use the graph to answer questions 4–8.



Read each question, and write your answer in the space provided.

4. The liquid in the stomach has a pH of about 2. Which of the two enzymes would be active in the stomach?

5. The liquid in the small intestine has a pH of about 8. Which of the two enzymes would be active in the small intestine?

6. What must happen to the liquid as it passes from the stomach to the small intestine for digestion to occur normally?

Science Skills *continued*

7. Consider the data on the relationship between pH and enzyme activity shown in the graph. Do enzymes typically function only at a specific pH, or can they function within a range of pH values?

8. Can pepsin and trypsin function in the same environment? Explain.
