Problem-Solving Activity

NAME:_____

What is Science?

Does temperature affect the rate of bacterial reproduction?

Some bacteria make you sick. Other bacteria, however, are used to produce foods like cheese and yogurt. Understanding how quickly bacteria reproduce can help you avoid harmful bacteria and use helpful bacteria. It's important to know things that affect how quickly bacteria reproduce. How do you think temperature will affect the rate of bacterial reproduction? A student makes the hypothesis that bacteria will reproduce more quickly as the temperature increases.



Identifying the Problem

The table below lists the reproduction-doubling rates at specific temperatures for one type of bacteria. A rate of 2.0 means that the number of bacteria doubled two times that hour (e.g., 100 to 200 to 400). Look at the table. What conclusions can you draw from the data?

Bacterial Reproductive Rates

Temperature (°C)	Doubling Rate per Hour
20.5	2.0
30.5	3.0
36.0	2.5
39.2	1.2

Conclusions:

Student answers will vary, but must relate to data.

Solving the Problem

Answer the following questions about the data in the table on page 1.

1. Do the data in the table support the student's hypothesis?

   Student answers will vary, but should include that the data does not fully support the hypothesis.

2. How would you write a hypothesis about the relationship between bacterial reproduction and temperature?

Student answers will vary, but must relate to data.

3. Make a list of other factors that might have influenced the results in the table.

   Student lists will vary, but must relate to factors in bacterial growth.

4. Are you satisfied with these data? List other things that you wish you knew.

   Student answers will vary, but must relate to data.

5. Describe an experiment that would help you test these other ideas.

Student ideas will vary, but must relate to ways to test bacterial growth.