3. Calculate the change in the amount of bacteria for each 5°C increase in temperature:

0°C to 5°C = _____   5°C to 10°C = _____   10°C to 15°C = _____

15°C to 20°C = _____   20°C to 25°C = _____   25°C to 30°C = _____

30°C to 35°C = _____   35°C to 40°C = _____   40°C to 45°C = _____

45°C to 50°C = _____   50°C to 55°C = _____   55°C to 60°C = _____

60°C to 65°C = _____

4. What 5°C interval has the greatest *increase* in the amount of bacteria?
5. What 5°C interval has the greatest *decrease* in the amount of bacteria?
6. According to your graph, what would be the ideal 5°C temperature range for the process of bioremediation to happen at the fastest rate?
7. (a) What happens to the amount of bacteria after it reaches its peak?
   (b) Why do you think this happens?
8. (a) Analyze the graph to determine how the temperature of the water affects the amount of bacteria during the bioremediation of an oil spill.
   (b) What seems to happen to the amount of bacteria, going from 15°C to 45°C, at each 10-degree rise in temperature?
9. If you were a scientist working at the site of an oil spill, how might you use the information in this graph to help you in your bioremediation clean-up effort?

Going Further

1. As in most experiments conducted by scientists, the temperatures given in this example are given in degrees Celsius. To determine what the temperatures given in degrees Celsius (°C) would be in degrees Fahrenheit (°F), you would use the formula shown below. Use this formula to convert all °C temperature measurements given in this experiment into readings in degrees Fahrenheit.

$$°F = (9/5 \times °C) + 32$$

2. Research one or two other factors that can increase the number of oil-eating bacteria during bioremediation. Create a data table and graph that represents how those factors might affect the amount of bacteria available.

3. Research a few oil spills that have happened throughout the world as well as the average water temperature in the area where the spill occurred. For each oil spill, evaluate how well you think bioremediation would have worked in that area. Base your conclusion on the information you learned from your graph and the average water temperature of the area.