

Name:

Class:

Date:

Activity 9.2A: Food Safety Lab

Materials Needed

- Three 10–14 oz containers per group (one each: shallow, medium, and deep; different shapes and sizes of plastic storage containers work well)
- Consistently hot water (water simmering on a stove works best)
- 1-cup measuring tool
- Thermometers (3 per group)
- Cold water (3 cups per group; allow to sit in refrigerator overnight for consistent temperature)
- Timer (1 per group)

Instructions

Think about what you know about the “danger zone” for food. You will have the opportunity to examine how the shape of a container could influence food storage. Read through the directions and questions before beginning the lab.

Pre-Lab Questions

1. What temperature range is considered the danger zone for storing food?

Answer:

2. Why should food be kept out of the danger zone?

Answer:

3. List three guidelines for storing food safely.

Answer:

Hot Food Storage

Safety Note

You will be heating and using hot water for this lab. Follow your teacher’s instructions for heating and pouring the hot water to prevent burns.

1. Once your hot water begins boiling, reduce the heat slightly to maintain a consistent simmer. Measure and record the water temperature in the “beginning temperature” column of the chart. If your timer has a preset, set it for five minutes.
2. Fill each of the three containers with exactly one cup of water from the hot-water source. Insert a thermometer in each container. Start the timer once the last container is filled.
3. Read the temperature at one-minute intervals over a five-minute period. Record the temperature readings on the chart.

4. **Shallow Container**

- A. Beginning temperature

Answer:

- B. After 1 minute

Answer:

- C. After 2 minutes

Answer:

- D. After 3 minutes

Answer:

- E. After 4 minutes

Answer:

- F. After 5 minutes

Answer:

5. **Medium Container**

- A. Beginning temperature

Answer:

B. After 1 minute

Answer:

C. After 2 minutes

Answer:

D. After 3 minutes

Answer:

E. After 4 minutes

Answer:

F. After 5 minutes

Answer:

6. Deep Container

A. Beginning temperature

Answer:

B. After 1 minute

Answer:

C. After 2 minutes

Answer:

D. After 3 minutes

Answer:

E. After 4 minutes

Answer:

F. After 5 minutes

Answer:

7. Graph the temperature readings to show the cooling curve for each of the containers.

8. In which container did the water cool the fastest?

Answer:

9. In which container did the water cool the slowest?

Answer:

10. Did the water decrease in temperature at different speeds? If so, why do you think this occurred?

Answer:

11. Based on the results of this test, which container type do you think should be used for storing food? Consider how you could use your findings to get food out of the danger zone the most quickly.

Answer:

Cold Food Storage

1. Measure the temperature of the refrigerated water. Record the water temperature in the “beginning temperature” column of the chart. If your timer has a preset, set it for five minutes.
2. Fill each of the three containers with exactly one cup of water from the cold-water source. Insert a thermometer in each container. Start the timer once the last container is filled.
3. Read the temperature at one-minute intervals over a five-minute period. Record the temperature readings on the chart.

4. Shallow Container

A. Beginning temperature

Answer:

B. After 1 minute

Answer:

C. After 2 minutes

Answer:

D. After 3 minutes

Answer:

E. After 4 minutes

Answer:

F. After 5 minutes

Answer:

5. Medium Container

A. Beginning temperature

Answer:

B. After 1 minute

Answer:

C. After 2 minutes

Answer:

D. After 3 minutes

Answer:

E. After 4 minutes

Answer:

F. After 5 minutes

Answer:

6. Deep Container

A. Beginning temperature

Answer:

B. After 1 minute

Answer:

C. After 2 minutes

Answer:

D. After 3 minutes

Answer:

E. After 4 minutes

Answer:

F. After 5 minutes

Answer:

7. Graph the temperature readings to show the warming curve for each of the containers.

8. In which container did the water warm the fastest?

Answer:

9. In which container did the water warm the slowest?

Answer:

10. Did the water increase in temperature at different speeds? If so, why do you think this occurred?

Answer:

11. Based on the results of this test, which container type do you think should be used for storing food? Consider how you could use your findings to get food out of the danger zone the most quickly.

Answer: