(2) The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to:

(G) analyze, evaluate, make inferences, and predict trends from data.

(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

**Question 1.** If the amount of bacteria in a bowl of fruit can be represented by the equation $B = 2^t$ where $B$ represents the bacteria count in thousands and $t$ represents the hours since refrigeration, how much bacteria can be expected three hours since refrigeration?

a. 2,000  
b. 6,000  
c. 8,000  
d. 10,000
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

Question 2. An over-the-counter heartburn drug advertises 8 hours of heartburn relief. If the dosage in your system decreases 50% every 2 hours, what percentage of the original dosage is left in your system after 8 hours?

a. 6.25%
b. 12.5%
c. 25%
d. 50%

(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

(5) The student applies the principles of food safety and microbiology. The student is expected to:

(A) investigate the properties of microorganisms that cause food spoilage.

Question 3. A meat dish needs to remain at 185°F in order to stay safe to eat. If the dish comes out of the oven at 375°F and decreases 10°F every five minutes, how long is it safe to eat?

a. 19 minutes
b. 38 minutes
c. 95 minutes
d. 185 minutes
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

**Question 4.** Analyze the graph below.

![Temperature vs Time graph](image)

Which of the following is a possible scenario that would match the graph?

a. As time increased, food temperature decreased at a constant rate.
b. The highest temperature of the food was 450°.
c. The lowest temperature of the food was 150°.
d. The food decreased in temperature, but was then reheated.
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

**Question 5.** The perfect glass of sweet tea is 15% sugar. Elena is making a one-gallon container of sweet tea. How many cups of sugar are in the gallon of sweet tea?

a. 2 cups  
b. 2.4 cups  
c. 3.4 cups  
d. 4 cups
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

**Question 6.** Analyze the chart below.

![BMI vs. Caloric Intake Chart](chart.png)

According to the graph, what would be the expected BMI of someone with a 3,250 average daily caloric intake?

a. 25  
b. 28  
c. 30  
d. 32.5
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

Question 7. Using the chart in problem #6, which of the following statements is NOT a reasonable conclusion?

a. As calorie intake increases, BMI also increases.
b. A person with a 2,000 calorie diet has a BMI of about 23.
c. BMI is caused only by calorie intake.
d. A person with a BMI of 30 on average eats about 3500 calories per day.

Question 8. Mona’s famous creamy asparagus soup is made in the family’s 3-gallon pot. If she adds 5 cups of heavy cream to the soup, what percentage of the soup is cream if the soup fills all 3 gallons?

a. 5.3%
b. 9.2%
c. 10.4%
d. 18.8%
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

(5) The student applies the principles of food safety and microbiology. The student is expected to:

(A) investigate the properties of microorganisms that cause food spoilage.

Question 9. Frank uses this formula to analyze bacteria growth in contaminated chicken: \( A = b(1 + rt) \). If Frank wants to make the formula more usable and solve it for \( t \), which equation is correctly solved for \( t \)?

\[
\begin{align*}
\text{a. } & t = \frac{A}{b} - r \\
\text{b. } & t = A - br \\
\text{c. } & t = \frac{A-b}{r} \\
\text{d. } & t = \frac{A-b}{br}
\end{align*}
\]
(3) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.

(15) The student describes the basic nutrients and their specific properties as related to food science. The student is expected to:

(A) identify the recommended daily allowances of the basic nutrients.

**Question 10.** Gina is trying to follow the recommended daily allowance for sugar. She wants to eat a cupcake that contains 28 grams of sugar, and the recommended daily allowance for sugar is 40 grams. What percentage of her daily allowance for sugar will she consume if she eats the cupcake?

a. 28%  
b. 43%  
c. 60%  
d. 70%
**Answer Key**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>C</td>
</tr>
<tr>
<td>2)</td>
<td>A</td>
</tr>
<tr>
<td>3)</td>
<td>C</td>
</tr>
<tr>
<td>4)</td>
<td>D</td>
</tr>
<tr>
<td>5)</td>
<td>B</td>
</tr>
<tr>
<td>6)</td>
<td>B</td>
</tr>
<tr>
<td>7)</td>
<td>C</td>
</tr>
<tr>
<td>8)</td>
<td>C</td>
</tr>
<tr>
<td>9)</td>
<td>D</td>
</tr>
<tr>
<td>10)</td>
<td>B</td>
</tr>
</tbody>
</table>