Unit 1 Lesson 2 Function Notation Worksheet Day 2

1. While shopping online, you decide to buy your friend a present. The website charges a fee of $4.50 plus an extra 65 cents per ounce that the order weighs.

   a) Write a function where \( x \) = the number of ounces and \( f(x) \) = the total cost of the order.
      
      \[
      f(x) = 4.50 + 0.65x
      \]

   b) What is \( f(5) \) and what does it mean in the context of the problem?
      
      \$7.75, it costs \$7.75 to ship a 5 ounce order.

   c) If \( f(x) = \frac{11}{2} \), then what is \( x \)? and what does it mean in the context of the problem?
      
      10 ounces, 10 ounces costs \$11 to ship.

2. The graph of \( S(t) \) below can be used to model the score that a student generally receives on a test, based on the number of hours that they study. The test being described is out of 20 points (meaning that 20 would be a perfect score).

   a) What is \( S(0) \) and what does it mean in the context of the problem?

   5, if you spend 0 hours studying,
you will score 5 out of 20.

   b) What is \( S(2) \) and what does it mean in the context of the problem?

   8, if you spend 2 hours studying,
you will score 8 out of 20.

   c) What is \( S(3) \) and what does it mean in the context of the problem?

   12, if you spend 3 hours studying,
you will score 12 out of 20.

   d) How many hours of studying are generally necessary to achieve a perfect score?

   4 hours.

3. \( h(x) = 4x - 7 \)

   Evaluate \( h(x + 2) \).

4. \( f(x) = \frac{1}{2}x + 6 \) and \( g(x) = x^3 + 100 \)

   Evaluate \( f(2) + g(1) \).
5. The fee for the airport parking is shown. Evaluate.
   a. Evaluate \( c(0.5) = \frac{4}{3} \).
   
   What does \( c(0.5) \) mean in terms of parking and fee?
   
   It will cost $4 to park for 30 minutes.

   b. Evaluate \( c(8) = \frac{80}{3} \).

   c. Find the missing input for \( c(\_\_\_\_\_) = 12 \).

   d. What does \( c(24) = 20 \) mean in terms of parking and fee?
   
   To park for 24 hours (1 day) it is a maximum of $20.

6. An old cell phone plan used to charge $30 for the first 500 minutes and $0.02 for each additional minute.

   Function Rule: \( C(M) = 0.02(M - 500) + 30 \)

<table>
<thead>
<tr>
<th>input</th>
<th>output</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td>500</td>
<td>30</td>
</tr>
<tr>
<td>750</td>
<td>$35</td>
</tr>
<tr>
<td>1000</td>
<td>40</td>
</tr>
<tr>
<td>4000</td>
<td>100</td>
</tr>
</tbody>
</table>

   a. What is the input in context?
   
   Number of minutes

   b. What does \( C(m) \) stand for?
   
   The cost per month of the cell phone plan.

   c. How is the \((m - 500)\) related to the scenario?
   
   The number of minutes after 500

   d. What is \( C(750) \)?
   
   $35

   e. Draw a star on the graph that shows how \( C(500) \) is related to the table.

   f. Find \( m \) if \( C(m) = 100 \). Draw a dot on the graph to show how \( C(m) = 100 \) is shown graphically.

   4000 minutes

7. The chart shows the number of pieces of candy in a bowl over a few days. The function for the number of pieces of candy in terms of the day is shown below. What does each component mean in context?

<table>
<thead>
<tr>
<th>day</th>
<th>pieces of candy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2000</td>
</tr>
<tr>
<td>1</td>
<td>1000</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>3</td>
<td>250</td>
</tr>
<tr>
<td>4</td>
<td>125</td>
</tr>
</tbody>
</table>

\[ C(d) = 2000 \left( \frac{1}{2} \right)^d \]