UNIT 1
Quantities and Modeling
Unit 1 Review

1. What is the solution to \(4\left(\frac{1}{2}x + 7\right) = 12\)?
   \[x = 8\]

2. Is each measurement more precise than 87 cm?
   - A 0.9 m  ○ Yes  ○ No
   - B 0.873 m  ○ Yes  ○ No
   - C 87.3 cm  ○ Yes  ○ No
   - D 90 cm  ○ Yes  ○ No

3. Which measurement has three significant digits?
   - A 340 in.
   - B 232.0 in.
   - C 3.42 in.
   - D 0.04 in.

4. Clinton's garden is 32.55 m long and 12.50 m wide. Write the perimeter of Clinton's garden with the correct number of significant digits.
   \[90.10\ m\]

5. A water bottle contains 1.5 liters of water. Approximately how many gallons of water does the bottle contain? 1 gal = 3.78 liters
   - A 0.39 gal
   - B 1.2 gal
   - C 1.8 gal
   - D 5.8 gal

6. Find the solution for \(-2.5x + 5 < -2.5\)
   and graph it on the number line.
   \[x > 3\]
   \[-2.5x + 5 < -2.5\]
   \[-5x < -7.5\]
   \[x > 3\]

7. Solve \(4(t - 7) = 12 - t\). What is the solution?
   \[t = 8\]

8. Joe sold 15 T-shirts for a total of $82.50. What is the unit price? \$5.50 per shirt
   \[t = 8\]

9. The scale on a map of Texas shows that 1 inch represents 20 miles. The actual distance from Austin to Dallas is 195 miles. On the map, how many inches apart are the two cities?
   \[9.75 \text{ inches}\]

10. Which of the following is equivalent to \(y^2 - 2(x + 7y^2)\)?
    - A \(-2x - 13y^2\)
    - B \(y^2 - 16x^2\)
    - C \(-6y^2 - 2x\)
    - D \(-14y^2 - 2x\)

11. What best describes the solutions of \(-2 > 5x - 37\)?
    - A Numbers greater than 7
    - B Numbers greater than 6
    - C Numbers less than 7
    - D Numbers less than 6

12. Write and simplify an expression to model the following phrase: "15% off the original price of a purchase."
    \[p \rightarrow \text{original price} \quad p - 0.15p\]
Quantities and Modeling

Unit One Review

13. Solve $1 \frac{1}{3} = \frac{y}{3} - 9$.
   \[ \frac{4}{3} = \frac{y}{3} - 9 \]
   \[ 3 \cdot \frac{4}{3} = y - 9 \]
   \[ 4 + 9 = y \]
   \[ y = 13 \]

14. Solve $9 (x + 5) \geq 81$.
   \[ 9x + 45 \geq 81 \]
   \[ 9x \geq 36 \]
   \[ x \geq 4 \]

18. Solve $-2 (x + y) = 7$ for $y$.
   \[ y = \frac{7 - 2x}{-2} \]

19. What are the terms of the expression $-10z + 2y - 6z$?
   \[ y = \frac{-7 - 2x}{2} \]

For 20–21, use the table.

<table>
<thead>
<tr>
<th>Pearlie's Produce</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Onions</td>
<td>$0.96 \text{ per lb}$</td>
</tr>
<tr>
<td>Squash</td>
<td>$0.79 \text{ per lb}$</td>
</tr>
<tr>
<td>Potatoes</td>
<td>$0.45 \text{ per lb}$</td>
</tr>
<tr>
<td>Corn</td>
<td>$0.75 \text{ each}$</td>
</tr>
</tbody>
</table>

20. Allie bought 5 pounds of onions, $x$ pounds of squash, and $y$ ears of corn. Write an expression that represents the amount Allie spent on produce.
   \[ 5(0.96) + x(0.79) + y(0.75) \]

21. Serena bought $z$ pounds of squash and twice that weight of potatoes. Write an expression that represents the amount Serena spent on produce.
   \[ 2z(0.79) + 2z(0.45) = 0.79z + 0.9z \]

22. Solve the compound inequality $-2 < x + 3 \leq 4$ and graph the solution.
   \[ -5 \leq x \leq -1 \]

\[ x > \frac{5}{3} \text{ and } x \leq 1 \]

The diagram shows an aerial view of a store. What is the area of Allen's store in square meters?
\[ A = l \cdot w = 64.5 \cdot 13.5 \approx 870.75 \text{ m}^2 \]