1. Simplify.
\[ \sqrt{90} + \sqrt{250} \]
A) \(8\sqrt{10}\)  
B) \(2\sqrt{85}\)  
C) \(34\sqrt{10}\)  
D) \(10\sqrt{3} + 10\sqrt{5}\)

2. Simplify completely.
\[ \frac{\sqrt{7}\sqrt{42}}{\sqrt{3}} \]
A) \(7\sqrt{14}\)  
B) \(2\sqrt{7}\)  
C) \(49\sqrt{2}\)  
D) \(7\sqrt{2}\)

3. Divide. Give the answer in scientific notation.
\[ \frac{6 \times 10^3}{8 \times 10^6} \]
A) \(0.75 \times 10^{-3}\)  
B) \(7.5 \times 10^{-4}\)  
C) \(7.5 \times 10^{-3}\)  
D) \(7.5 \times 10^{-2}\)

4. Simplify.
\[ \frac{w^3x^6}{w^3x^{-4}} \]
A) \(x^{10}\)  
B) \(wx^{10}\)  
C) \(wx^2\)  
D) \(x^2\)
5. Simplify completely.
   \[(6x^2 + 7x - 3) - (-2x^2 + 4x - 5)\]
   A) \(4x^2 + 3x + 2\)
   B) \(8x^2 + 3x + 2\)
   C) \(8x^2 + 11x + 2\)
   D) \(8x^2 + 3x - 8\)

   \((3x - 5)(x^2 - 6x + 4)\)
   A) \(3x^3 - 23x^2 + 42x - 20\)
   B) \(3x^3 - 18x^2 + 12x - 20\)
   C) \(3x^3 - 23x^2 + 12x - 20\)
   D) \(3x^3 - 18x^2 + 42x - 20\)

7. Simplify completely.
   \[\frac{30x^9 + 8x^7 - 2x^5}{-2x^5}\]
   A) \(-15x^4 - 4x^2\)
   B) \(15x^4 + 4x^2 - 1\)
   C) \(30x^9 + 8x^7\)
   D) \(-15x^4 - 4x^2 + 1\)

8. Factor completely.
   \(18x^3 - 200xy^2\)
   A) \(2(9x^3 - 100xy^2)\)
   B) \(2x(9x^2 - 100y^2)\)
   C) \(2x(3x - 10y)(3x + 10y)\)
   D) \(2x(3x - 10y)^2\)

9. Which of the following is a factor of the polynomial?
   \(2x^2 + 11x - 21\)
   A) \(x + 7\)
   B) \(x - 7\)
   C) \(2x + 3\)
   D) \(2x - 7\)
10. Which of the following is a factor of the polynomial?

\[ 45cw + 63cz - 20dw - 28dz \]

A) \( 9c - 7d \)
B) \( 9c + 4d \)
C) \( 5w + 7z \)
D) \( 5w - 7z \)

11. If \( y \) represents a number, which equation is a correct translation of the sentence?

30 subtracted from 7 times a number is 4.

A) \( 30 - 7y = 4 \)
B) \( 7(y - 30) = 4 \)
C) \( 7y - 30 = 4 \)
D) \( 7(30 - y) = 4 \)

12. Solve for \( x \).

\[ 18 - 5x = -3(x - 2) \]

A) \( x = 10 \)
B) \( x = 6 \)
C) \( x = -12 \)
D) \( x = 12 \)

13. What is the value of the \( x \)-coordinate of the solution to the system of equations?

\[
\begin{align*}
2x + y &= 3 \\
-5x - 2y &= 4
\end{align*}
\]

A) \( x = 2 \)
B) \( x = -10 \)
C) \( x = 10 \)
D) \( x = -7 \)
14. Solve for $x$.

$$z = 5x - 7y$$

A) $x = \frac{z+7y}{5}$

B) $x = \frac{z-7y}{5}$

C) $x = \frac{z}{5} + 7y$

D) $x = 5(z + 7y)$

15. Find all solutions to the equation.

$$x^2 + 2x = 15$$

A) $x = 3$ or $x = -5$

B) $x = -3$ or $x = 5$

C) $x = 3$ or $x = 5$

D) $x = -3$ or $x = -5$

16. Find all solutions to the equation.

$$6x^2 = 150$$

A) Only $x = 5$

B) $x = 0$ or $x = 25$

C) $x = 5$ or $x = -5$

D) $x = 5$ or $x = 25$

17. What is the value of $x$ in the right triangle?

A) $13\sqrt{2}$

B) $2\sqrt{13}$

C) $4\sqrt{13}$

D) $2\sqrt{5}$
18. Find the graph of the solution to the inequality.

\[ 2x - 3 \geq 5x + 6 \]

A)  

B)  

C)  

D)  

19. Evaluate \( f(2) \) for the function \( f(x) \).

\[ f(x) = 5x^2 - 8x + 2 \]

A) 86  
B) 2  
C) 6  
D) 82
20. Which of the following is the graph of the equation?

\[ 5x + 3y = -15 \]

A) 

B) 

C) 

D) 

21. Find the equation of the line passing through the points \((-1, 7)\) and \((2, -8)\). Write the equation in slope-intercept form.

A) \( y = -5x + 2 \)
B) \( y = -5x + 7 \)
C) \( y = 5x + 12 \)
D) \( y = -15x - 8 \)
22. Find the equation of the horizontal line passing through the point \((-5, 3)\).
   A) \(x = -5\)
   B) \(y = -\frac{3}{5}x\)
   C) \(y = 3\)
   D) \(y = x + 3\)

23. Find the slope and \(y\)-intercept for the graph of the equation.
   \(6x - 7y = 35\)
   A) Slope = \(\frac{6}{7}\) and \(y\)-intercept = \((0, -5)\)
   B) Slope = \(-\frac{6}{7}\) and \(y\)-intercept = \((0, -5)\)
   C) Slope = \(\frac{7}{6}\) and \(y\)-intercept = \((0, 35)\)
   D) Slope = \(-\frac{7}{6}\) and \(y\)-intercept = \((0, 35)\)

24. If 6 beads weigh 48 grams, how many beads weigh 72 grams?
   A) 4 beads
   B) 9 beads
   C) 12 beads
   D) 30 beads

25. In 2010, there were 50 fish in a pond. One year later, the number of fish decreased by 20\%. How many fish were in the pond in 2011?
   A) 48 fish
   B) 30 fish
   C) 49 fish
   D) 40 fish
Answer Key

CUNY Elementary Algebra Final Exam
Sample B

<table>
<thead>
<tr>
<th>Test Item Number</th>
<th>Correct Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>A</td>
</tr>
<tr>
<td>2.</td>
<td>D</td>
</tr>
<tr>
<td>3.</td>
<td>B</td>
</tr>
<tr>
<td>4.</td>
<td>A</td>
</tr>
<tr>
<td>5.</td>
<td>B</td>
</tr>
<tr>
<td>6.</td>
<td>A</td>
</tr>
<tr>
<td>7.</td>
<td>D</td>
</tr>
<tr>
<td>8.</td>
<td>C</td>
</tr>
<tr>
<td>9.</td>
<td>A</td>
</tr>
<tr>
<td>10.</td>
<td>C</td>
</tr>
<tr>
<td>11.</td>
<td>C</td>
</tr>
<tr>
<td>12.</td>
<td>B</td>
</tr>
<tr>
<td>13.</td>
<td>B</td>
</tr>
<tr>
<td>14.</td>
<td>A</td>
</tr>
<tr>
<td>15.</td>
<td>A</td>
</tr>
<tr>
<td>16.</td>
<td>C</td>
</tr>
<tr>
<td>17.</td>
<td>B</td>
</tr>
<tr>
<td>18.</td>
<td>C</td>
</tr>
<tr>
<td>19.</td>
<td>C</td>
</tr>
<tr>
<td>20.</td>
<td>D</td>
</tr>
<tr>
<td>21.</td>
<td>A</td>
</tr>
<tr>
<td>22.</td>
<td>C</td>
</tr>
<tr>
<td>23.</td>
<td>A</td>
</tr>
<tr>
<td>24.</td>
<td>B</td>
</tr>
<tr>
<td>25.</td>
<td>D</td>
</tr>
</tbody>
</table>