CUNY Elementary Algebra Final Exam

Sample B
August 2012

For the most up-to-date information on this exam, please visit
http://www.cuny.edu/testing
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?

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

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

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#### Sample B

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