Practice Test 1

Directions: Solve each problem, choose the correct answer, and then fill in the corresponding oval on your answer document.

1. Simplify: $18 + 3^3 - 20 ÷ 5$
   A. 59
   B. 41
   C. 23
   D. 5

2. What is the mode(s) for the data?
   4, 7, 6, 4, 3, 7, 4, 2
   E. 4
   F. 5
   G. 7
   H. There is no mode for this data.

3. Simplify: $11x - 13x + \frac{9x - 15x}{3}$
   A. $-14x$
   B. $-5x$
   C. $-4x$
   D. $2x$

4. A spinner is divided into 12 equal sections. The 12 sections are labeled: A, A, C, E, B, E, D, B, B, A, D, and A. What is the probability of spinning an A?
   E. $\frac{1}{4}$
   F. $\frac{1}{3}$
   G. $\frac{1}{2}$
   H. $\frac{3}{4}$

5. Simplify: $4(3x^2 + 8x) + 3(-2x^2 + 5)$
   A. $5x^2 + 8x + 5$
   B. $6x^2 + 8x + 5$
   C. $5x^2 + 32x + 15$
   D. $6x^2 + 32x + 15$

6. What is the median of the set of data?
   18, 35, 26, 16, 13, 42
   E. 18
   F. 22
   G. 24
   H. 35

7. What inequality is graphed below?
   ![Inequality Graph]
   A. $x < -3$
   B. $x > -3$
   C. $x \geq -3$
   D. $x \leq -3$

8. Simplify: $\frac{6x + y}{2} - \frac{-4x - 6y}{4}$
   E. $2x + 2y$
   F. $-x + 7y$
   G. $2x + 8y$
   H. $8x + 7y$
Simplify: \(3.8x - 4.2x^2 + 5.7x + 6.1x^2\)
A \(-1.9x^2 + 9.5x\)
B \(1.9x^2 + 9.5x\)
C \(10.8x^2 + 9.5x\)
D \(10.8x^2 - 1.9x\)

Simplify: \((3x - 4)(5x + 2)\)
E \(15x^2 - 26x - 2\)
F \(15x^2 + 5x - 8\)
G \(15x^2 - 14x - 8\)
H \(15x^2 - 3x - 8\)

Which of the following does NOT equal 3?
A \(3\% \times 10 + 2.7\)
B \(|\sqrt{9} + 1| + 1^4\)
C \(2(12 + 27 + 3^2) + 10\)
D All of the above equal 3

Simplify: \((-2x^3)(4x^2)^3\)
E \(-128x^9\)
F \(-24x^9\)
G \(-128x^8\)
H \(-24x^8\)

Which is equivalent to \((x - 3)^2\)?
A \(x^2 - 6x - 9\)
B \(x^2 - 6x + 9\)
C \(x^2 - 9\)
D \(x^2 + 9\)

Factor: \(b^2 + b - 42\)
E \((b + 7)(b + 6)\)
F \((b - 7)(b + 6)\)
G \((b - 7)(b - 6)\)
H \((b + 7)(b - 6)\)

Factor: \(125x^3 - 45x\)
A \(5x(5x + 3)(5x - 3)\)
B \(5(25x + 3)(5x - 3x)\)
C \(5x(5x - 3)(5x - 3)\)
D \(5x(5x + 3)(5x + 3)\)

What is the greatest common factor of \(15x^3y\) and \(20x^2y^2\)?
E \(xy\)
F \(5x^2\)
G \(5x^2y\)
H \(5xy\)

Solve: \(-7x + 2 = 16\)
A \(\frac{18}{7}\)
B \(2\)
C \(-2\)
D \(-\frac{18}{7}\)

A group of 10 people split into 3 groups. Group A had 5 people, Group B had 3 people, and Group C had 2 people. If a person is selected at random, what is the probability they are in group A?
E \(\frac{1}{10}\)
F \(\frac{1}{5}\)
G \(\frac{1}{3}\)
H \(\frac{1}{2}\)

Solve: \(8(2c + 5) \leq 8\)
A \(c \leq -2\)
B \(c \geq -2\)
C \(c \geq 3\)
D \(c \leq 3\)
20. Solve: \(-\frac{3}{5}x = 3x + 1\)
   
   E  -1
   F  \(-\frac{15}{18}\)
   G  \(-\frac{5}{18}\)
   H  \(-\frac{1}{18}\)

21. Solve: \(3x + 8 = x - 2\)
   
   A  -5
   B  -3
   C  \(-\frac{5}{2}\)
   D  -2

22. A bag contains 4 red marbles and 6 blue marbles. Two marbles are drawn at random with replacement. What is the probability that the first marble is red and the second marble is blue?
   
   E  \(\frac{1}{2}\)
   F  \(\frac{2}{5}\)
   G  \(\frac{6}{25}\)
   H  \(\frac{4}{25}\)

23. What inequality is graphed below?

   ![Graph](image)
   
   A  \(2 < x < -1\)
   B  \(-2 < x < 1\)
   C  \(2 \leq x \leq -1\)
   D  \(-2 \leq x \leq 1\)

24. Solve: \(3x^2 = 12\)
   
   E  -2, 2
   F  -1, 1
   H  0
   H  -2

25. Solve: \(\frac{4}{5}x - 2 \leq -6\)
   
   A  \(x \geq -5\)
   B  \(x \leq -5\)
   C  \(x \geq -10\)
   D  \(x \leq -10\)

26. Solve: \(3x^2 - x + 2(x - 1) = 0\)
   
   E  \(\frac{3}{2}, 1\)
   F  \(\frac{3}{2}, -1\)
   G  \(\frac{2}{3}, -1\)
   H  \(\frac{2}{3}, 1\)

27. Solve: \(2x^2 + 7x - 4 = 0\)
   
   A  2, 4
   B  2, -4
   C  \(\frac{1}{2}, 4\)
   D  \(\frac{1}{2}, -4\)
What is the solution of the following system of linear equations?

\[ 2x + 3y = 4 \]
\[ x - y = -3 \]

E \((-1, -2)\)
F \((-1, 2)\)
G \((1, -2)\)
H \((1, 2)\)

Which of these tables represents the function \(y = 2x - 3\)?

A

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-1</td>
</tr>
<tr>
<td>3</td>
<td>-4</td>
</tr>
<tr>
<td>-1</td>
<td>8</td>
</tr>
</tbody>
</table>

B

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-8</td>
</tr>
<tr>
<td>3</td>
<td>-11</td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
</tr>
</tbody>
</table>

C

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>-1</td>
<td>-5</td>
</tr>
</tbody>
</table>

D

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>-1</td>
<td>2</td>
</tr>
</tbody>
</table>

Which of these graphs could be used to find the solution for the following system of equations?

\[ y = x + 2 \]
\[ x + y = 4 \]

E
31. What is the solution of the following system of linear equations?
\[\begin{align*}
y &= 2x + 1 \\
3x + y &= 21
\end{align*}\]
A \( \left(\frac{23}{5}, \frac{49}{5}\right) \)
B \( (4, 9) \)
C \( (2, 5) \)
D \( (0, 1) \)

32. Which is NOT the graph of a function?
E
\[\text{Graph E}\]
F
\[\text{Graph F}\]
G
\[\text{Graph G}\]
H
\[\text{Graph H}\]

33. Solve: \(-11x - 9 > 3x + 5\)
A \( x > 1 \)
B \( x < 1 \)
C \( x > -1 \)
D \( x < -1 \)

34. What inequality has the solution shown on the graph?
\[\text{Graph with solution on the number line}\]
E \( 3x + 2 \leq -1 \) or \( 2x + 4 \geq 12 \)
F \( 3x + 2 < -1 \) or \( 2x + 4 > 12 \)
G \( -1 \leq 3x + 2 \leq 14 \)
H \( -1 < 3x + 2 < 14 \)

35. What is the range of this function?
\([-2, 1), (-1, -3), (3, 4), (6, -2)\]
A \([-2, -1, 3, 6]\)
B \([-3, -2, 1, 4]\)
C \([-3, 3]\)
D \([-3, -1, 2, 8]\)

36. If \(f(x) = -x^2 + 6x - 5\), what is \(f(2)\)?
E \(53\)
F \(11\)
G \(3\)
H \(1\)

37. What is the length of segment \(CD\) shown in the graph below?
Distance formula:
\[D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}\]
\[\text{Graph with coordinate points}\]
A \(\sqrt{58}\)
B \(5\sqrt{2}\)
C \(\sqrt{10}\)
D \(2\sqrt{2}\)
What is the range of the function shown on the graph?

E 1 ≤ y ≤ 2
F −2 ≤ y ≤ 3
G 1 ≤ y ≤ 3
H −2 ≤ y ≤ 2

Which of the equations represent the graph below?

A y = −\frac{1}{2}x + 1
B y = 2x + 1
C y = −2x − 1
D y = −2x + 1

What is the area of this figure?

Use \( A = \frac{1}{2} b_1 + b_2 \).

7 cm
11 cm

E 33 centimeters squared
F 43 centimeters squared
G 45 centimeters squared
H 54 centimeters squared

If a circular tank has a diameter of 14 feet, what is the area of the bottom of the tank to the nearest square foot?

Use \( A = \pi r^2 \) and \( \pi = 3.14 \).

A 615 square feet
B 154 square feet
C 88 square feet
D 44 square feet

Which relation is NOT a function?

E \{ (2, −2), (3, −1), (4, 0), (5, 1), (6, 2), (7, 3) \}
F \{ (−5, 4), (−3, 4), (−1, 4), (1, 4), (3, 4), (5, 4) \}
G \{ (6, 2), (5, 8), (4, 13), (11, 9), (2, 8), (13, 4) \}
H \{ (9, 7), (9, 5), (9, 3), (9, 1), (9, −1), (9, −3) \}

The dimensions of a box are 2 feet by 3 feet by 18 inches. What is the volume of the box?

Use \( V = lwh \).

A 108 cubic feet
B 90 cubic feet
C 10.8 cubic feet
D 9 cubic feet