The maximum possible score for this exam is 100 points. The point values for each problem are shown at the right in parenthesis. Show your work to receive full credit and give your answers in exact form unless specified. If you show no work, there is no partial credit.

1. Fill in the blank: The value of \( \frac{0}{-17} \) is \( \_\_\_\_\_\_\_\_\_\_) \) and the fraction \( \frac{-17}{0} \) is \( \_\_\_\_\_\_\_\_\_) \).

   The reciprocal of \( 33 \) is \( \_\_\_\_\_\_\_\_\_) \) and the opposite of \( \frac{1}{33} \) is \( \_\_\_\_\_\_\_\_\_) \).

2. Simplify and give your answer in exact form

   \[ y + \frac{3}{2} + \frac{y}{3} - 15 \]

3. Simplify: \( 3 + 2 \cdot 5^2 \)

4. Simplify: \( 10 - (2 + y) - (-10y) \)

5. Multiply and combine like terms: \( (4y - 20)(10 + y) \)

6. Multiply and combine like terms: \( (4 - y)^2 \)
7. Simplify: write the result using positive exponents \((3^3x^0)^{-1}\)

8. Simplify: write in exact form using positive exponents \(\frac{16m^6n^{-3}}{14m^{-3}n^5}\)

9. Factor completely: \(4x^2 - 16\)

10. Solve: \(5x = 10(3 + 2x)\)

11. Solve: \(12x - 36x^2 = 0\)

12. Solve: \(x^2 + x = 72\)

13. Evaluate \(b^2 - 4ac\) for \(a = 2, b = -3, c = -1\)

14. Simplify \(\frac{42x^4 - 6x^2}{6x^2}\)
15. You have travelled 15 miles of a 500-mile journey. What percent of the total distance remains?

15. ____________________ (3)

16. The amount of gold on reserve throughout the world amounts to 1,902,000,000 ounces. Express this amount of gold in scientific notation.

16. ____________________ (2)

17. A car’s airbags must deploy at exactly $70 \times 10^{-3}$ seconds after impact in order to effectively protect the passengers. Express this time in expanded form.

17. ____________________ (2)

18. The length of a rectangle is 12 feet less than 3 times the width. Write an expression for the length, $L$, in terms of the width, $W$.

18. $L =$__________________ (3)

19. Solve $26 = x - 2y$ for $y$.

19. ____________________ (3)

20. Find the slope of the line through the points $(-15, 6)$ and $(5, -2)$.

20. ____________________ (3)

Provide a reduced fraction
21. Graph the line passing through (2,4) with a slope of \( m = -3 \).

22. Consider the equation \( 7x - 2y = 28 \).

   a) Is (2, -7) a solution? Answer “Yes” or “No”  
      22 a) ____________ (2)

   b) Find the x-intercept  
      22 b) (____,____) (2)

   c) Find the y-intercept  
      22 c) (____,____) (2)

   d) Find the slope of the line.  
      22 d) \( m = \) ________ (3)

   e) Complete the table of values.  
      22 e)  
      \[ \begin{array}{cc}
      x & y \\
      6 & (2) \\
      \frac{7}{2} & (2) \\
      \end{array} \]
23. Calculate the area of the shape.

\[ \text{Area} = \frac{1}{2} \times (1 \text{ in} + 2.5 \text{ in}) \times 1.5 \text{ in} \]

24. A golfer is trying to hit a ball from the tee area to the hole. The golfer knows that the furthest she can hit a ball is 270 yards. Will she be able to hit the ball far enough to make it to the hole? Support your answer with a mathematical calculation.

\[ 165 \text{ yds} + 270 \text{ yds} = 435 \text{ yds} \]

\[ ? + 270 \text{ yds} \\ \text{Yes, the golfer can hit the ball far enough to make it to the hole.} \]
25. A household stocks up on wood to heat their home during the Winter.

![Graph showing pounds of wood left in storage over time.]

a) How many pounds of wood did the household store for the Winter? _____ (2)

b) How many pounds of wood was needed to heat the home during the first 25 days? _____ (2)

c) Calculate the slope of the line _____ (3)

d) What are the units for the slope? _____ (2)

e) Write a sentence to interpret the value and the units of the slope in the context of this problem. Be sure to include the number and the units of the slope in your interpretation.

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(3)