Pre-Algebra Diagnostic Assessment

Student: Tilley

Date: _____

This assessment covers all 8 modules of pre-algebra.

Total Questions: 32

Score 100% on a module's questions to skip that module.

Instructions: Complete all questions to determine your starting point. Show your work where helpful.

Module 1: Integers and Operations

1. What is the absolute value of -8 and what is its opposite?

Answer: ~~8~~ Absolute Value = 8, opposite = 8

$$|-8| = 8$$

2. Calculate: (-7) + (-12)

Answer: -19

$$(-7 + (-12)) = -19$$

3. Calculate: 15 + (-23)

Answer: -8

$$15 + (-23)$$
$$15 + (-23)$$

$$15 + (23) = 15 + 23 = 8$$

$$\begin{array}{r} 8 \\ -15 \\ \hline 08 \end{array}$$

4. Rewrite as addition and solve: 6 - (-9)

Answer: 15

$$6 - (-9) = 6 + 9 = 15$$

Module 2: Fractions and Decimals

5. Simplify the fraction 24/36 to lowest terms.

Answer: _____ $\frac{2}{3}$

$$\frac{24}{36} = \frac{2}{3}$$

6. Find the LCD and add: 3/4 + 5/6

Answer: _____ $1\frac{7}{12}$

$$LCD = 12; \quad 4\times3=12; \quad 6\times2=12$$
$$\frac{9}{12} + \frac{10}{12} = \frac{19}{12} = 1\frac{7}{12}$$

7. Convert 2 3/5 to an improper fraction.

Answer: _____ $\frac{13}{5}$

$$2\frac{3}{5} = \frac{13}{5}$$

8. Calculate: 2/3 × 4/7

Answer: _____ $\frac{8}{21}$

$$\frac{2}{3} \times \frac{4}{7} = \frac{8}{21}$$

Module 3: Ratios, Proportions, and Percents

9. Write the ratio 15:20 in simplest form.

Answer: _____ $3:4$

$$15:20 \; \div 5$$
$$3:4 \; \div 5$$

10. If a car travels 240 miles in 4 hours, what is the unit rate in miles per hour?

Answer: _____ 60 miles per hour

$$\frac{240m}{4hrs} = \frac{60m}{1hr}$$

$$4\overline{)240} \quad 60$$

11. Solve the proportion: x/12 = 5/8

Answer: _____ $x = 7.5 ; \; 7.5/12 = 5/8$

$$21.5$$
$$\cdot \; 5$$
$$\overline{7.5}$$

$$x/12 = 5/8$$

$$5/8 = x/12$$

$$5/8 = 7.5/12$$
$$\times 1.5 \quad \times 1.5$$

$$40.5$$
$$\cdot \;\; 8$$
$$\overline{\$4.0}$$

12. If 3 apples cost $1.50, how much will 8 apples cost? Set up a proportion.

Answer: _____ $4 _____

$$\frac{0.5}{3\overline{)1.5}}$$

$$\frac{\$1.50}{3apples} = \frac{\$0.50}{1apple} = \frac{\$4}{8apples}$$

Module 4: Expressions and Equations

13. In the expression 5x - 3 + 2x, identify the coefficient of x in the first term and the constant.

Answer: _____ 5, 3 _____

$$5x - 3 + 2x =$$

14. Evaluate $3x^2 - 4x + 1$ when x = 2.

Answer: _____ 5 _____

$$3x^2 - 4x + 1$$

$$3x^2 - 4x + 1 = 3 \cdot 2^2 - 4 \cdot 2 + 1$$
$$3 \cdot 4 - 4 \cdot 2 + 1$$
$$12 - 8 + 1$$
$$4 + 1$$
$$5$$

15. Combine like terms: 7x - 3x + 5 - 2x + 8

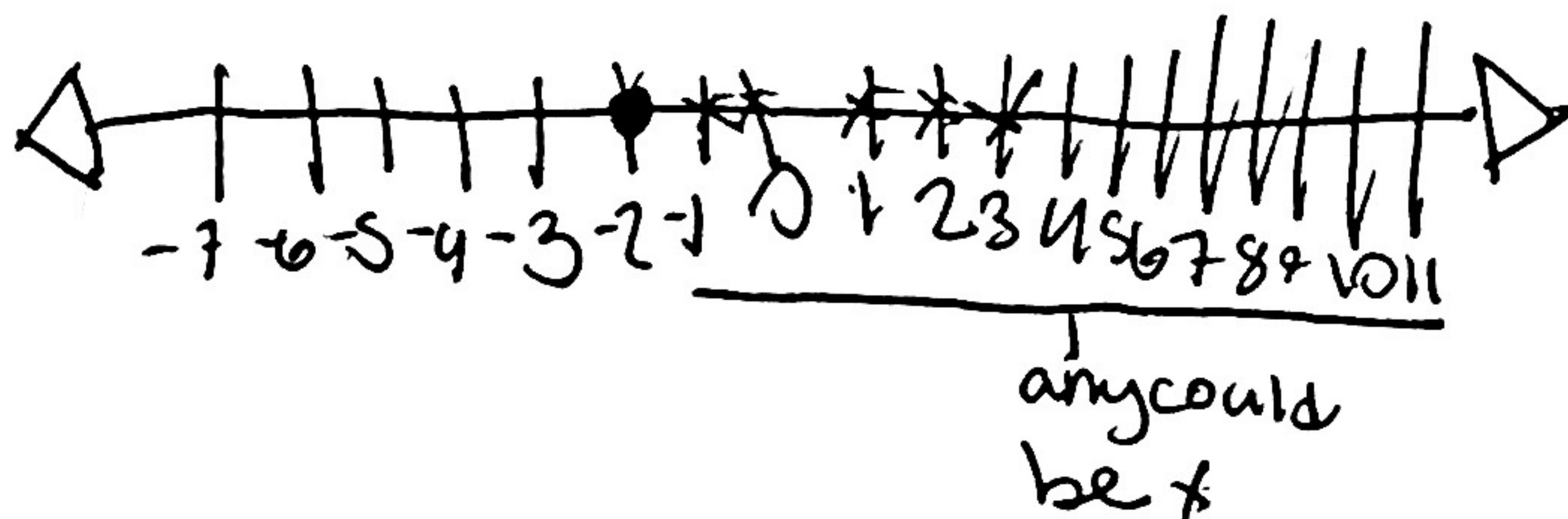Answer: _____ 15 _____

$$7 + 3 + 5$$

16. Use the distributive property to expand: -3(2x - 4)

Answer: _____

Module 5: Inequalities and Functions

17. Graph the inequality x ≥ -2 on a number line. Describe your graph.

Answer: _____ The variable x is to the right of

the integer -2.

$$\longleftarrow \;\; -7 \; -6 \; -5 \; -4 \; -3 \; -2 \; -1 \;\; 0 \;\; 1 \;\; 2 \; 3 \; 4 \; 5 \; 6 \; 7 \; 8 \; 9 \; 10 \; 11 \;\; \longrightarrow$$

any could be x

18. Solve: -2x + 5 > 11

Answer: $x = -5$

$-2x + 5 > 11$

$-2 + 5 = 3 < 11$

$-2 \cdot -5 + 5 = 8 + 5 = 13 \wedge 11$

19. If f(x) = 2x - 3, find f(4).

Answer: ?

20. Complete the function table for the rule y = 3x + 1: when x = 0, 1, 2, find y.

Answer: ?

Module 6: Geometry Basics

21. Find the perimeter of a rectangle with length 8 cm and width 5 cm.

Answer: $26cm$

$8 \cdot 2 = 16$

$5 \cdot 2 = 10$

$16 + 10 = 26$

22. What is the perimeter of a regular hexagon with side length 4 inches?

Answer: $24cm$

$4 \cdot 6 = 24 cm$

23. Find the area of a rectangle that is 6 feet long and 4 feet wide. Include units.

Answer: $24 ft^2$

$6 \cdot 4 = 24$

24. Find the area of a triangle with base 10 cm and height 6 cm.

Answer: $30cm$

$10 \cdot 6 = 60cm$

$60 \cdot \frac{1}{2} = 30 cm$

Module 7: Data and Statistics

25. Find the mean (average) of these test scores: 82, 90, 76, 88, 84.

Answer: _____84_____

$$5 \overline{)420}$$

$$\begin{array}{r} 282 \\ 90 \\ 76 \\ 88 \\ +84 \\ \hline 420 \end{array}$$

26. Find the median of this data set: 15, 23, 18, 30, 25, 19, 21.

Answer: _____?_____

27. In the data set {3, 5, 5, 7, 5, 9, 5, 2}, what is the mode?

Answer: I don't know what a mode is.

Please help

28. Find the range of this data set: 45, 52, 38, 61, 47, 39.

Answer: _____38-61_____

Module 8: Introduction to Algebra

29. Find the next two terms in the arithmetic sequence: 7, 12, 17, 22, __, __

Answer: _____27, 32_____

30. Find the next term in the geometric sequence: 2, 6, 18, 54, __

Answer: _____162_____

$$\begin{array}{r} 54 \\ \times 3 \\ \hline 162 \end{array}$$

31. Write a variable expression for 'five more than three times a number n'.

Answer: _____3n+5_____

32. Identify the slope and y-intercept of the line $y = -2x + 7$.

Answer: _I don't know how to find slope or y-intercept._

find slope or y-intercept.
Please help