

Name _____

Date _____

Unit One: Expressions, Equations & Inequalities Test Review

1. Identify the value of
- x
- that satisfies the equation
- $6(x - 4) - 4(x + 3) = -22$

$$\begin{array}{r} 6x - 24 - 4x - 12 = -22 \\ 2x - 36 = -22 \\ \quad +36 \quad +36 \end{array} \quad \begin{array}{l} 2x = 14 \\ \boxed{x = 7} \end{array}$$

2. Solve the inequality:
- $-5(3y + 7) < 40 + 2y$

$$\begin{array}{r} -15y - 35 < 40 + 2y \\ -2y \quad +35 \quad +35 \quad -2y \\ \hline -17y < 75 \\ \quad -17 \quad -17 \end{array}$$

$$\boxed{y > -\frac{75}{17}}$$

3. Alex already has the following scores on tests: 95, 74, 86 and 89. If he wants his test average to be an 84, what must he score on his next test?

$$\frac{344 + x}{5} = 84$$

$$\begin{array}{r} 344 + x = 420 \\ -344 \quad -344 \\ \hline x = 76 \end{array}$$

$$\boxed{76\%}$$

4. If 23 more than 3 times a number is -31, what is the number?

$$\begin{array}{l} 23 + 3x = -31 \\ 3x = -54 \\ x = -18 \end{array}$$

$$\boxed{-18}$$

5. Write the equation that can be used to solve this problem:

The sum of two consecutive odd integers is -92.

$$\begin{array}{l} x \\ x+2 \end{array}$$

$$\boxed{2x + 2 = -92}$$

6. Fido's Dog Walkers charges \$5 per dog and a sign-up fee of \$15. Write an equation to find the number of dogs (
- x
-) that could use this company's service if they want to make \$530 on their opening day.

$$x = \# \text{ of dogs} \quad 5x + 15 = 530$$

7. Anders and Chele are both saving money for their vacations. The table shows the models for the amount of money they have each saved after
- x
- weeks.

Anders	$f(x) = 3x + 105$
Chele	$f(x) = 5x + 15$

After how many weeks will Anders and Chele have the same amount of money?

$$\begin{array}{r} 3x + 105 = 5x + 15 \\ -5x \quad -105 \quad -5x \quad -105 \\ \hline -2x = -90 \\ \quad -2 \quad -2 \end{array} \quad \begin{array}{l} x = 45 \\ \boxed{45 \text{ weeks}} \end{array}$$

8. The members of the Indy Spirit Club are buying t-shirts. The t-shirts will cost \$7.00 each plus a one-time fee of \$15.00 for the design of the shirt. The total order can be no more than \$617.

A. Write the inequality to represent this situation.

$X = \# \text{ of shirts}$ $7X + 15 \leq 617$

B. Solve the inequality.

$$\begin{array}{r} 7X + 15 \leq 617 \\ -15 \quad -15 \\ \hline 7X \leq 602 \end{array}$$

$X \leq 86$

At most 86 shirts

9. The sum of three consecutive even integers is 222. What is the value of the largest of the three integers? Set up and solve an equation to find your answer.

X
 $X+2$
 $X+4$

$3X + 6 = 222$

$72, 74, 76$

$3X = 216$

$X = 72$

10. What is the solution to the inequality: $-4(2x + 5) - 6x < 6x + 26$

$$\begin{array}{r} -8X - 20 - 6X < 6X + 26 \\ -14X - 20 < 6X + 26 \\ -20X < 46 \end{array}$$

$X > -\frac{23}{10}$

11. Amy's test scores are 71, 94, 90, 86 and 88. What is the lowest she can score on the next test to achieve an average of at least an 87?

$\frac{429 + X}{6} \geq 87$

$429 + X \geq 522$
 $X \geq 93$

At least 93%

12. Solve the following equation: $12x + 8 = -3(-4x + 10)$

$$\begin{array}{r} 12X + 8 = 12X - 30 \\ -12X \quad -12X \\ \hline 8 = -30 \end{array}$$

\emptyset

13. Solve the following equation: $4(2x - 7) = 3x - 30 + 5x + 2$

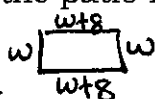
$8X - 28 = 8X - 28$

∞

All \mathbb{R} numbers

14. The length of a rectangular patio is 8 more than the width of the patio. The perimeter of the patio is 68 feet. What is the area of the patio?

$w = \text{width}$
 $w+8 = \text{length}$



$4w + 16 = 68$

$4w = 52$
 $w = 13$

$w+8 = 13+8$
 21

Area = length (width)
 $= 21(13)$
 $= 273 \text{ ft}^2$

15. The sum of 4 times a number and 6 is one more than 5 times the number. Find the number.

$4X + 6 = 1 + 5X$
 $-5X \quad -5X$
 $-X + 6 = 1$

$-X + 6 = 1$
 $-6 \quad -6$
 $-X = -5$
 $X = 5$

$X = 5$

16. The area of a triangle, A , can be calculated using the formula $A = \frac{1}{2}bh$, where b is the length of the base and h is the height. What formula represents the height of the triangle in terms of the area and length? (Solve for h)

$$(2) A = \frac{1}{2}bh$$

$$\frac{2A}{b} = \frac{bh}{b}$$

$$h = \frac{2A}{b}$$

17. If $-6x + 70 > 105 + x$ and x is an integer, what is the greatest possible value of $x + 10$?

$$\begin{array}{r} -6x + 70 > 105 + x \\ -x \quad \quad -x \\ \hline -7x + 70 > 105 \\ -70 \quad -70 \\ \hline \end{array}$$

$$\frac{-7x}{-7} > \frac{35}{-7}$$

$$x < -5$$

$$x + 10$$

$$(-6) + 10$$

$$\boxed{4}$$

less than -5 would be -6, -7, etc.

18. Solve: $\frac{1}{5}x + \frac{7}{10} = \frac{1}{2}x - \frac{83}{10}$

$$2x + 7 = 5x - 83$$

$$\begin{array}{r} -5x \quad \quad -5x \\ \hline -3x + 7 = -83 \\ -7 \quad -7 \\ \hline \end{array}$$

$$\frac{-3x}{-3} = \frac{-90}{-3}$$

$$\boxed{x = 30}$$

19. Simplify the expression using the correct order of operations:

$$\begin{array}{l} 4 + 6(2^3 - 5)^2 \\ 4 + 6(8 - 5)^2 \\ 4 + 6(3)^2 \\ 4 + 6(9) \end{array}$$

$$4 + 54$$

$$\boxed{58}$$

20. Part A: Write an equation to find three consecutive integers whose sum is -303.

$$\begin{array}{l} x \\ x+1 \\ x+2 \end{array}$$

$$\boxed{3x + 3 = -303}$$

$$\begin{array}{r} 3x + 3 = -303 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{-306}{3} \quad x = -102$$

Part B: List the three integers.

$$\boxed{-102, -101, -100}$$

21. Part A: Write the equation to find three consecutive even integers whose sum is 270.

$$\begin{array}{l} x \\ x+2 \\ x+4 \end{array}$$

$$\boxed{3x + 6 = 270}$$

$$\begin{array}{r} 3x + 6 = 270 \\ -6 \quad -6 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{264}{3}$$

$$x = 88$$

Part B: List the three integers.

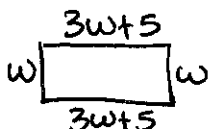
$$\boxed{88, 90, 92}$$

22. The length of a rectangle is 5 more than three times the width. The perimeter is 82 feet. Find the length.

Draw or use $P = 2L + 2W$

$w = \text{width}$

$3w + 5 = \text{length}$



$$8w + 10 = 82$$

$$\begin{array}{r} -10 \quad -10 \\ \hline \end{array}$$

$$\frac{8w}{8} = \frac{72}{8} \quad w = 9$$

length

$$3w + 5$$

$$3(9) + 5$$

$$27 + 5 = \boxed{32 \text{ ft}}$$

23. What are the algebraic terms in the expression below:

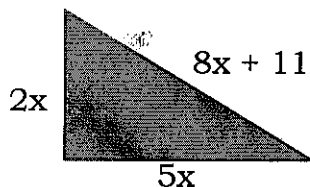
$$-10x^2y + 3xy - 7$$

Terms: $-10x^2y$, $3xy$, -7

24. The expression $12x + 25y + 9w + 2z$ represents the cost, in dollars to purchase x boxes of staplers, y bins of packing tape, w containers of drawer organizers and z packages of glue sticks. Which is NOT true?

- A. The term $9w$ represents the cost of 9 containers of drawer organizers.
- B. The coefficient 12 represents the cost of each box of staplers.
- C. The variable y represents the cost of one bin of packing tape.
- D. The term $2z$ represents the cost of z packages of glue sticks at \$2 per package.

25. Write the algebraic expression that represents the perimeter of this triangle:



$$\begin{aligned} & \underline{2x} + \underline{5x} + \underline{8x + 11} \\ & \boxed{15x + 11} \end{aligned}$$

26. Translate the following verbal expression into an algebraic expression. Use "x" if any variables are necessary.

Four times the sum of a number and sixteen is negative sixty.

$$\begin{aligned} & \boxed{4(x + 16) = -60} \\ & 4x + 64 = -60 \\ & \quad -64 \quad -64 \end{aligned}$$

$$\begin{aligned} & * \text{Doesn't need to be solved} \\ & \frac{4x}{4} = \frac{-124}{4} \\ & x = -31 \end{aligned}$$

27. Marie and her two friends Marco and Max bought 6 sodas and b bags of chips for \$2 each and then split the cost. The amount of money that Marie spent is represented by the expression $\frac{1}{3}(6 + 2b)$

Does the number of sodas effect the value of b ?

No, the number of sodas will not be effected by the value of b