

Name: Key

Date: _____

Unit 1 Review: Part 1

1: Writing and interpreting algebraic expressions and inequalities

Write a sentence for each verbal expression or equation.

1.) $5x + 1 = -8$

The product of 5 and a number, x, plus one is equal to negative 8.

2.) $x^3 - 9$

a number, x, cubed decreased by nine.

3.) $x - 7 = 1$

a number, x, minus seven is the same as one.

4.) $7x + 2$

Seven multiplied by a number, x, increased by two.

Translate each sentence into a verbal expression or equation.

5.) 6 more than the product of 3 and a number is greater than or equal to 2.

$$6 + 3n \geq 2$$

6.) 6 times a number minus 12

$$6n - 12$$

7.) A number raised to the second power plus 3 is 10.

$$n^2 + 3 = 10$$

8.) 5 less than a number squared

$$n^2 - 5$$

2: Simplifying expressions using the order of operations (PEMDAS). * only

Simplify each expression.

9.) $-3(2x - 1) + 4x - 9$

$$\underline{-6x + 3 + 4x - 9}$$

$$\boxed{-2x - 4} \text{ or } \boxed{-2x + -4}$$

10.) $2x + 4(y + 2x) - 4y$

$$\underline{2x + 4y + 8x - 4y}$$

$$\boxed{10x}$$

distribute if you cannot combine like terms

* cannot

distribute over * & \div Symbols

11.) $\frac{1}{4}(12 - 20x)$

$$\boxed{3 - 5x} \text{ or } \boxed{3 + -5x}$$

12.) $2(5 \cdot 4 \div 2) + 10$ * DON'T Distribute

$$2(20 \div 2) + 10 \quad 20 + 10$$

$$2(10) + 10$$

$$\boxed{30}$$

13.) $3(12 \div 6) - (2 - 9)$

$$3(2) - (-7)$$

$$6 + 7$$

$$\boxed{13}$$

14.) $\frac{10 \div 5 \cdot 4 - 3 \cdot 3}{2 + 3 + 4 - 5 - 6}$

$$\frac{5 \cdot 4 - 9}{9 - 5 - 6}$$

$$\frac{20 - 9}{4 - 6}$$

$$\frac{-1}{-2}$$

$$\frac{1}{2}$$

$$\frac{2 \cdot 4 - 3 \cdot 3}{-2}$$

$$\frac{8 - 3 \cdot 3}{-2}$$

$$\frac{8 - 9}{-2}$$

$$\frac{-1}{-2} = \boxed{\frac{1}{2}}$$

Answers may vary!

* Do NOT distribute if you can combine like terms in parentheses.

15.) $5(3^2 - 2 \div 2 - 5)$

$5(9 - 2 \div 2 - 5)$

$5(9 - 1 - 5)$

$5(3)$

$\boxed{15}$

16.) $\frac{1}{3}(9 - 3 \cdot 3)$

$\frac{1}{3}(9 - 9)$

$\frac{1}{3}(0)$

$\boxed{0}$

17.) $x - 2y + 3z$ when $x = 2, y = 3$ and $z = 4$

$2 - 2(3) + 3(4)$

$2 - 6 + 12$

$-4 + 12$

$\boxed{8}$

18.) $3x^2 + y - 10z$ when $x = 2, y = 20$ and $z = -2$

$3(2)^2 + 20 - 10(-2)$

$3(4) + 20 + 20$

$12 + 20 + 20$

$\boxed{52}$

Exp first!

3: Solving equations.

Solve the following equations.

19.) $4x - (2 - x) = 12$

$4x - 2 + x = 12$

$\boxed{x = \frac{14}{5}}$

$5x - 2 = 12$

$+2 \quad +2$

$5x = 14$

21.) $\frac{-x}{4} + 8 = 12$

$\frac{-x}{4} = 4$

$-x = 16$

$\boxed{x = -16}$

20.) $7x + 32 = -4x + 1$

$+4x \quad +4x$

$11x + 32 = 1$

$-32 \quad -32$
 $11x = -31$

$\boxed{x = \frac{-31}{11}}$

22.) $\frac{2}{3}x - 7 = -3$

$+7 \quad +7$

~~$\frac{2}{3}x = 4$~~
 $\frac{2}{3}x = 4 \cdot \frac{3}{2}$

$\boxed{x = 6}$

23.) $12(x - 2) - 1 = 9x - 22 + 3(x - 1)$

$12x - 24 - 1 = 9x - 22 + 3x - 3$

true $\rightarrow 12x - 25 = 12x - 25$

$\boxed{\text{All real \#s or } \mathbb{R}}$

24.) $\frac{2}{5}x - 5 = \frac{2}{5}x - 8$

$+5 \quad +5$

$\frac{2}{5}x = \frac{2}{5}x - 3$

False

$\boxed{\text{No solution or } \emptyset}$

25.) $\frac{15-x}{4} = 6.2$

$15 - x = 25$

$-x = -3$

$\boxed{x = 3}$

26.) $\frac{2x+10}{3} = -4 - 3$

$2x + 10 = 12$

$2x = 2$

$\boxed{x = 1}$

27.) $-7 + 2(4x + 8) = 3(3 - x)$

$-7 + 8x + 16 = 9 - 3x$

$+3x \quad +3x$
 $-7 + 11x + 16 = 9$

$11x + 9 = 9$

$-9 \quad -9$

$11x = 0$

$\frac{11x}{11} = \frac{0}{11}$
 $\boxed{x = 0}$

28.) $2x - (8x + 10) = -6x - 18$

$2x - 8x - 10 = -6x - 18$

$-6x - 10 = -6x - 18$

False

$\boxed{\text{No solution or } \emptyset}$