

Writing and Simplifying Expressions

Words to Algebra

Change the following into appropriate mathematical statements (expressions, equations, or inequalities).

- 1.) Five less than the square root of a number y .

$\square - 5$ $\sqrt{\quad}$
 ~~$y^2 - 5$~~ $\sqrt{y} - 5$ ~~$5 - \sqrt{y}$~~
y squared *5 minus \sqrt{y}*

- 2.) Twenty more than five times a number x is equal to one hundred.

$\square + 20$ $20 + 5x = 100$ ~~$20 > 5x = 100$~~ $5x + 20 = 100$
OK *OK*

- 3.) The quotient between a and b is at least seventeen.

~~$a \div b > 17$~~ ~~$\frac{a}{b} > 17$~~ $\frac{a}{b} \geq 17$
is more than *1st top 2nd bottom* *not equal*

- 4.) The cube of a number w is more than the sum of a number f and 2.

~~$w^2 > f + 2$~~ $w^3 > f + 2$ ~~$w^3 < f + 2$~~
1st 2nd *+* *less than*

Inequalities

Ask: Can it be more?
Can it be equal?

Square of a number

Words to Algebra

Change the following into appropriate mathematical statements (expressions, equations, or inequalities)

1.) Five less than the square root of a number y .

~~$\sqrt{y} - 5$~~ (root of y minus 5)
 ~~$5 - \sqrt{y}$~~ (5 minus root of y)
 $\boxed{\sqrt{y} - 5}$ (correct)
 $y^2 - 5$ (y squared minus 5)

2.) Twenty more than five times a number x is equal to one hundred.

~~$\square + 20$~~
 $20 + 5x = 100$ (correct)
 $\boxed{5x + 20 = 100}$ (correct)
 $20 > 5x = 100$ (20 is more than 5 times x equals 100)

3.) The quotient between a and b is at least seventeen.

Inequalities bigger $>$

Ask: can it be more? can it be equal?

~~$\frac{a}{b} \geq 17$~~ (1st top, 2nd bottom, is more is equal)
 $\boxed{\frac{a}{b} \geq 17}$ (correct)

4.) The cube of a number w is more than the sum of a number f and 2.

~~$w^2 > f + 2$~~ (Square of w)
 ~~$w^3 > f + 2$~~ (more not equal)
 $w^3 > f + 2$ (correct)

Operations

	+	-	•	÷
Add		subtract	Multiply	divide
Sum		minus	Product	quotient
more than		Difference	times	ratio
Plus		less than	factor	fraction
Total		take away	'per' 'of'	over
Combined				

Equals

Inequalities

$5 \leq 60$

	=	<	>	\leq	\geq
Equal		is less than	is more than	is less than or equal to	is greater than or equal to
Same as			is greater than	at most	is at least
equivalent		is no more than	is no less than	limit	maximum minimum
is					
outcome					

Simplify Expressions

Simplify the following expressions.

5.) $17 - 4 + 3^2$
 PE $17 - 4 + 9$
 AS $13 + 9$
 MD 22

6.) $2\sqrt{10^2 - 8^2}$
 PE $2\sqrt{100 - 64}$
 AS $2\sqrt{36}$
 E $2 \cdot 6$
 MD 12
 AS

7.) $\frac{4 - 5 \cdot 4}{-2^2}$
 PM $4 - 20$
 PE -4
 AS -16
 MD -4
 AS 4

$(-2)^2 = 4$
 $-2^2 = -4$

8.) $7 - 2(4^2 \div 8 \cdot 2)$
 PE $7 - 2(16 \div 8 \cdot 2)$
 PD $7 - 2(2 \cdot 2)$
 PM $7 - 2(4)$
 MD $7 - 8$
 AS -1

Name _____ Algebra 2 Prep/Review Portfolio Work _____ Hour _____

Assigned Date _____ Due Date _____

Self-Assessment:	Cannot complete	Attempted	Nearly There	Can explain to others
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Objective: **Simplifying Expressions**

- Know the difference between an expression and an equation
- Use the Order of Operations to simplify expression

Links: Order of Operations	CCSS Math: 6.EE.A.2, 6.EE.A.2c
Substituting and Evaluating Expressions	https://bit.ly/3eXUW9 https://bit.ly/3871Lny

1. What is the difference between an expression and an equation?
2. What does each letter in PEMDAS stand for?
3. Why is PEMDAS called The Order of Operations?

For Numbers 4-6, Simplify each expression.

4. $3 \cdot (2 \cdot 4^3) \div 4$ 5. $\frac{13 - (2 + 3 - 7)^2}{15} + 5$ 6. $9(2^3 \div 4 \cdot 5) - 10 \cdot 4$

7. Identify the following from this expression $\frac{1}{3}x^2 + 7 - (8y - 20x)$

Terms	Coefficients	Variables	Constants	Factor Pairs

8. Simplify the expression showing Work: $\frac{1}{3}x^2 + 7 - (8y - 20x)$, if $x = 4$ and $y = 5$.

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Objective: **Simplifying Expressions**

- Know the difference between an expression and an equation
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CCSS Math:	6.EE.A.2, 6.EE.A.2c
Links: Order of Operations	https://bit.ly/3eKJW9
Substituting and Evaluating Expressions	https://bit.ly/3871Lny

1. What is the difference between an expression and an equation?

an equation has an equal sign
an expression does not

2. What does each letter in PEMDAS stand for?

P: Parentheses E: Exponents M: Multiply D: Divide
A: Addition S: Subtracting

3. Why is PEMDAS called The Order of Operations?

PEMDAS has the order in which we perform math operations on expressions

★ *Change to 4*
For Numbers 4-6, Simplify each expression.

4. $3 \div (2+4^3) \cdot 4$ 5. $\frac{13-(2+3-7)^2}{15} + 5$ 6. $9(2^3 \div 4 \cdot 5) - 10 \cdot 4$

$3 \div (2+64) \cdot 4$ $\frac{13-(5-7)^2}{15} + 5$ $9(8 \div 4 \cdot 5) - 40$

$3 \div (66) \cdot 4$ $\frac{13-(-2)^2}{15} + 5$ $9(2 \cdot 5) - 40$

$\frac{1}{22} \cdot \frac{4}{1}$ $\frac{13-4}{15} + 5$ $\frac{9 \cdot 10}{15} - 40$

$\frac{2}{11}$ $\frac{84}{15} \rightarrow \frac{28}{5}$ $90 - 40$

$\frac{13-4}{15} + 5$ $\frac{84}{15} \rightarrow \frac{28}{5}$ $90 - 40$

7. Identify the following from this expression $\frac{1}{3}x^2 + 7 - (8y - 20x)$

Terms	Coefficients	Variables	Constants	Factor Pairs
$\frac{1}{3}x^2, 7, -8y, 20x$	$\frac{1}{3}, -8, 20$	x and y	7	1, 7 1, 2, 4, 8 1, 2, 4, 5, 10, 20

8. Simplify the expression showing Work: $\frac{1}{3}x^2 + 7 - (8y - 20x)$, if $x = 4$ and $y = 5$.

$\frac{1}{3}(4^2) + 7 - (8(5) - 20(4))$

$\frac{1}{3}(16) + 7 - (40 - 80)$

$\frac{16}{3} + 7 - (-40)$

$5\frac{1}{3} + 47$

$52\frac{1}{3}$ or $52.\bar{3}$