POPE JOHN PAUL II
PREPARATORY SCHOOL

8th Grade Math

Optional Enrichment Assignment

May 2024

Dear Rising 8th Grade Families,

In an effort to help all families and students make the transition from 7th grade math to 8th grade math, we have put together a packet of optional enrichment problems. The packet will not be collected or graded at any point. These problems have been compiled to provide extra practice and review of previously taught concepts. We are providing this so that all families have an idea of what skills and concepts will be used and built on during the 8th grade math year.

To be best prepared for 8th grade math when we return in August, the following is a list of prerequisite skills for the class:

1. All operations of integers
2. Conversion of fraction, decimals, and percents
3. Translating and simplifying algebraic expressions
4. Distributive Property and factoring algebraic expressions
5. Exponents and square roots
6. Evaluating algebraic expressions
7. Combining like terms
8. Translating and solving one-step, two-step, and multi-step equations
9. Solving and graphing inequalities
10. Plotting and identifying ordered pairs on a coordinate plane.

Next school year, students will begin using calculators to tackle more complex problems. All students will be required to purchase a TI-84, TI-84 Plus, or TI - 84 Plus CE calculator that will be used in math and science classes from 8th grade to 12th grade.

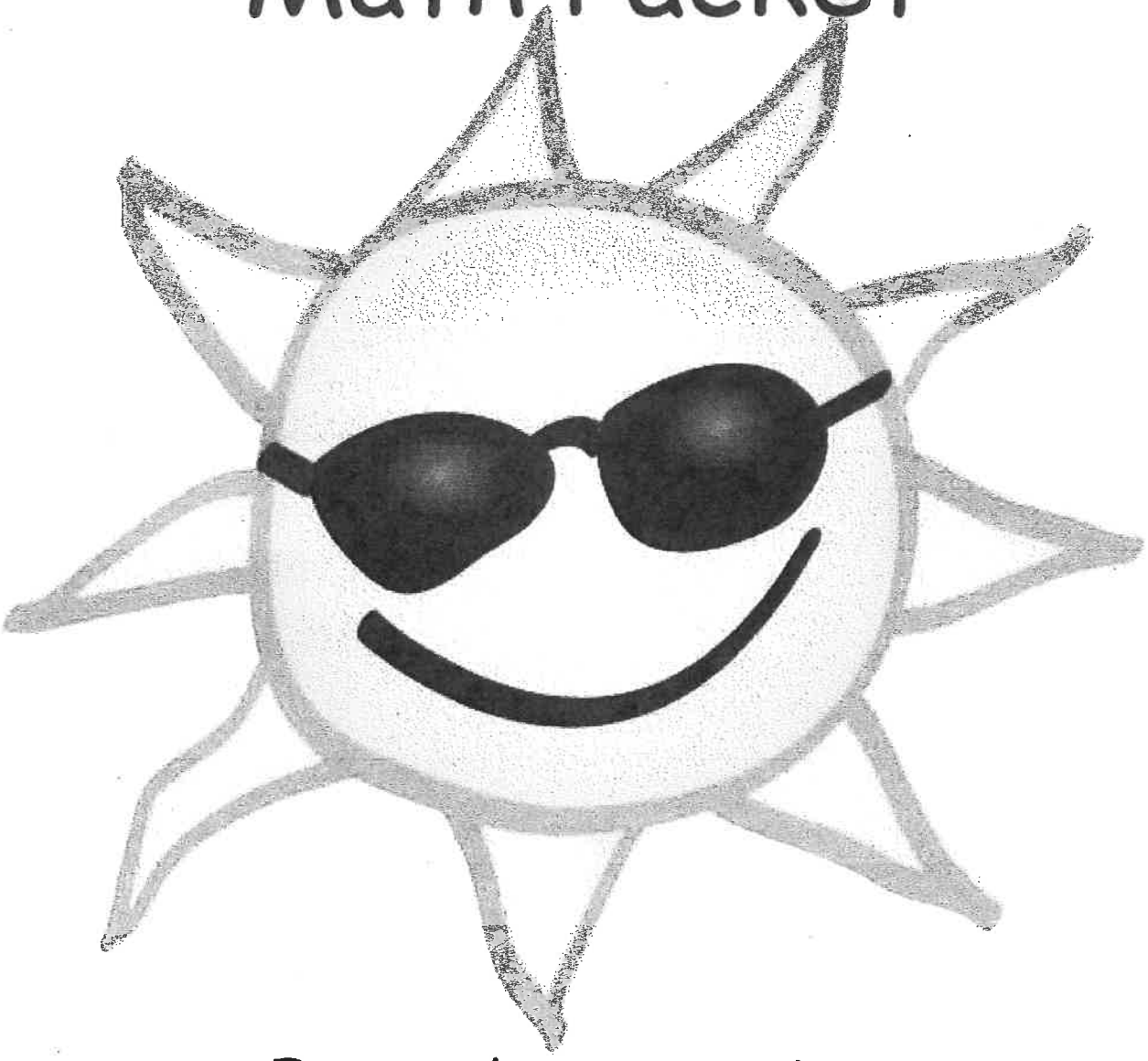
If you have any questions or would like additional information about the math program, please contact Amanda Peper, the Mathematics Department chair, at amanda.peper@popeprep.org.

Sincerely,
Arynn Powers

Teacher Contact
Mrs. Peper (amanda.peper@popeprep.org)

Summer

Math Packet



For students entering:

Math 8

Name: _____

FRACTIONS: Solve the following problems with fractions. Calculators are not permitted. SHOW YOUR WORK!

1) $\frac{7}{10} + \frac{1}{10}$

2) $\frac{5}{6} - \frac{1}{6}$

3) $3\frac{1}{4} + 1\frac{3}{4}$

5) $1\frac{2}{5} + 6\frac{8}{15}$

6) $5\frac{1}{9} - 2\frac{5}{6}$

7) $\frac{1}{3} \times \frac{4}{5}$

8) $12 \times \frac{3}{4}$

9) $5\frac{3}{4} \times 10\frac{2}{3}$

10) $\frac{3}{4} \div \frac{5}{8}$

11) $9 \div 4\frac{2}{3}$

12) $4\frac{1}{6} \div 3\frac{2}{5}$

SIMPLIFYING EXPRESSIONS – combine like terms.

1) $3x + 2x + 7x$

2) $5x + 2b + 3x + 5b$

3) $3 + 2x + 4 + 2x$

4) $6y + 5 - y$

5) $8a + 4 - 4a$

6) $15 + 4x - 7$

7) $6x + 2 + 3x + 4$

8) $2n + 12 + 3n - 3$

9) $3(x + 4) + 2$

EQUATIONS: Solve for x. Show your work!

1) $x - 8 = 24$

2) $x + 4 = 38$

3) $x - 16 = -24$

7) $3x = 39$

8) $9x = 117$

9) $-2x = -400$

10) $\frac{x}{3} = 20$

11) $\frac{x}{4} = 15$

12) $\frac{x}{-5} = -14$

13) $8 = -5r + 18$

14) $3x + 14 = -1$

16) $-3x + 1 = -5$

FRACTIONS, DECIMALS, PERCENTS

FRACTION	= DECIMAL	= PERCENT
$\frac{1}{4}$		
		45%
$\frac{3}{10}$		
	0.4	
		80%
	0.5	

The Distributive Property

Simplify each expression. (Expand)

1) $6(1 - 5m)$

EX:

2) $-2(1 - 5v)$

$-2 \cdot 1 - (-2 \cdot 5v)$

$-2 - (-10v)$

$\boxed{-2 + 10v}$

3) $3(4 + 3r)$

4) $3(6r + 8)$

5) $4(8n + 2)$

6) $-(-2 - n)$

7) $-6(7k + 11)$

8) $-3(7n + 1)$

9) $-6(1 + 11b)$

10) $-10(a - 5)$

11) $-3(1 + 2v)$

12) $-4(3x + 2)$

13) $(3 - 7k) \cdot -2$

14) $-20(8x + 20)$

15) $(7 + 19b) \cdot -15$

16) $(x + 1) \cdot 14$

Combining Like Terms

Simplify each expression.

1) $-6k + 7k$

2) $12r - 8 - 12$

3) $n - 10 + 9n - 3$

4) $-4x - 10x$

5) $-r - 10r$

6) $-2x + 11 + 6x$

7) $11r - 12r$

8) $-v + 12v$

9) $-8x - 11x$

10) $4p + 2p$

11) $5n + 11n$

12) $n + 4 - 9 - 5n$

13) $12r + 5 + 3r - 5$

14) $-5 + 9n + 6$

Two-Step Equations With Integers

Solve each equation.

1) $\frac{r}{10} + 4 = 5$

2) $\frac{n}{2} + 5 = 3$

3) $3p - 2 = -29$

4) $1 - r = -5$

5) $\frac{k - 10}{2} = -7$

6) $\frac{n - 5}{2} = 5$

7) $-9 + \frac{n}{4} = -7$

8) $\frac{9 + m}{3} = 2$

9) $\frac{-5 + x}{22} = -1$

10) $4n - 9 = -9$

11) $\frac{x + 9}{2} = 3$

12) $\frac{-12 + x}{11} = -3$

13) $\frac{-4 + x}{2} = 6$

14) $-5 + \frac{n}{3} = 0$

Multi-Step Equations

Solve each equation.

1) $6a + 5a = -11$

2) $-6n - 2n = 16$

3) $4x + 6 + 3 = 17$

4) $0 = -5n - 2n$

5) $6r - 1 + 6r = 11$

6) $r + 11 + 8r = 29$

7) $-10 = -14v + 14v$

8) $-10p + 9p = 12$

9) $42 = 8m + 13m$

10) $a - 2 + 3 = -2$

Distribute FIRST!

11) $18 = 3(3x - 6)$

12) $30 = -5(6n + 6)$

Kuta Software - Infinite Pre-Algebra

Name_____

Evaluating Variable Expressions

Date_____ Period____

Evaluate each using the values given.

1) $n^2 - m$; use $m = 7$, and $n = 8$

Ex. $n^2 - m$

$(8^2) - 7$

$64 - 7$

$\boxed{57}$

2) $8(x - y)$; use $x = 5$, and $y = 2$

3) $yx \div 2$; use $x = 7$, and $y = 2$

4) $m - n \div 4$; use $m = 5$, and $n = 8$

5) $x - y + 6$; use $x = 6$, and $y = 1$

6) $z + x^3$; use $x = 1$, and $z = 19$

7) $y + yx$; use $x = 15$, and $y = 8$

8) $q \div 6 + p$; use $p = 10$, and $q = 12$

9) $x + 8 - y$; use $x = 20$, and $y = 17$

10) $15 - (m + p)$; use $m = 3$, and $p = 10$

11) $10 - x + y \div 2$; use $x = 5$, and $y = 2$

12) $p - 2 + qp$; use $p = 7$, and $q = 4$

Name : _____ Score : _____

Teacher : _____ Date : _____

Translate Algebraic Expressions

Words and Phrases to Math Symbols

1) 2 times the sum of m and 3

2) Two-fifths of the sum of n and 8

3) z cubed minus the product of 6 and w plus 4

4) Two-fifths of g is added to the product of 8 and z

5) Add five-sixths to 8 times f

6) Two-thirds of p is subtracted from 7

7) One-fifth of the sum of w and 2 minus the product of 7 and s

8) Three-fifths of k is added to 5

9) Add 8 to 7 times b

0) The sum of one-fourth of y, one-fifth of c, and 9

Addition

Plus
And
Total of
Altogether Increased By
Combined Add Sum
Together More Than
Added To
In All
Make

Subtraction

Subtract Gave Take Away
Decrease By Fewer Minus
Shared Fewer Than Less Than
Difference Less

Multiplication

Times Triple
Double Product
Multiplied By
OF
Increased By a Factor
Twice Multiple

Division

Quotient of Per Ratio of
Divided By Half Divisor
Divided Into Percent Split Up

Equals

Is Are Were Was

Will Be Yields Sold For

Parenthesis Words

The Quantity of
Twice the sum of
Times the sum of
Times the difference of
Plus the difference of

Translating Phrases

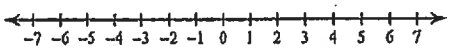
Translate each verbal phrase into an algebraic expression : (inequality)

1)	5 is not more than x _____	2)	Value of x is greater than or equal to 14 _____
3)	x is greater than or equal to 12 _____	4)	6 is not less than x _____
5)	Value of x is greater than 7 _____	6)	x is greater than 15 _____
7)	x is not more than 13 _____	8)	9 is less than or equal to x _____
9)	Value of x is atleast 1 _____	10)	Value of x is less than 14 _____
11)	Value of x is less than or equal to 10 _____	12)	x is more than 3 _____
13)	16 is less than x _____	14)	Value of x is atmost 8 _____
15)	Value of x is not greater than 18 _____	16)	2 is more than x _____

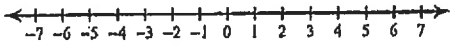
Graphing Inequalities

Draw a graph for each inequality.

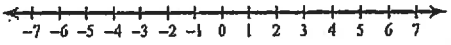
1) $n \leq -5$



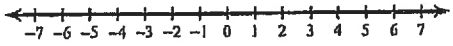
2) $n \leq 5$



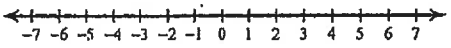
3) $x < 1$



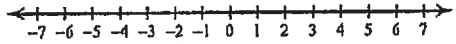
4) $r > 2$



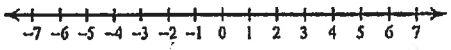
5) $n > 5$



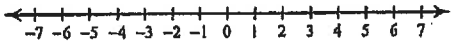
6) $r \leq -2$



7) $k \leq -2$



8) $m < -5$



>	≥	<	≤
Is more than Is greater than Is larger than above	minimum at least Is not less than not smaller than	Is smaller than Is less than below	maximum at most not more than Is not greater than
			

INTEGERS: All students should be able to add, subtract, multiply, and divide integers. Calculators are not permitted.

1) $-10 + (-10)$ 2) $-6 + (-10)$ 3) $-8 + 15$ 4) $-13 + (-3) + 2$

5) $-3 - 6$ 6) $-2 - (-9)$ 7) $13 - 19$ 8) $-14 - 16 + 4$

9) 4×-4 10) -15×-2 11) -12×-7 12) $-4 \times -3 \times -6$

13) $-15 \div -3$ 14) $25 \div 5$ 15) $-56 \div 7$ 16) $-100 \div -5$

EXPONENTS - evaluate

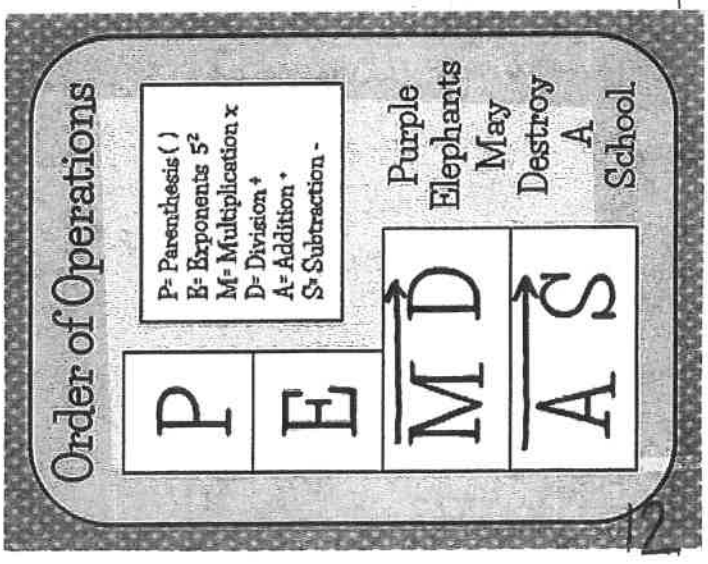
1) 3^2 2) 5^3 3) 1^7 4) 0^8 5) 8^4

ORDER OF OPERATIONS: Simplify the following expressions using the order of operations. SHOW YOUR WORK!

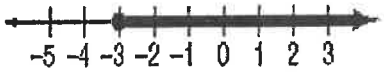
1) $7 \bullet 4 \div 2$ 2) $2^2 \bullet 8 - 10$ 3) $(5+4) \bullet 7$

4) $(5+3)^2 - 4$ 5) $36 - 5^2 + 7$ 6) $4 + 6(5-2) \div 3$

7) $\dfrac{15-7}{3+1}$ 8) $\dfrac{9+3}{3+3^2}$



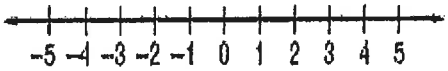
1.) Write an inequality for the graph.



2.) Write an inequality for the graph.

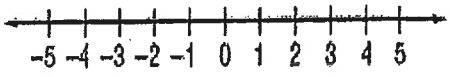
3.) Graph the inequality.

$b \geq -1$



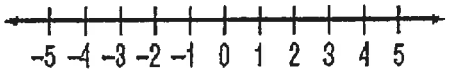
4.) Graph the inequality.

$z < 3$



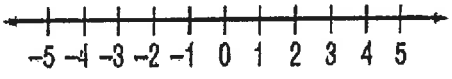
5.) Solve the inequality, then graph it on the number line.

$y + 9 \leq 13$



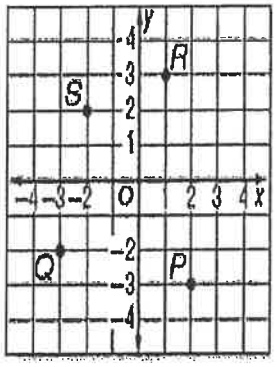
6.) Solve the inequality, then graph it on the number line.

$4x - 6 > -10$



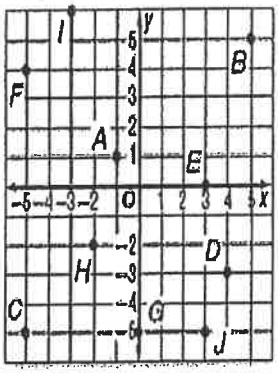
1.) Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.

	Coordinates	Quadrant
P	(___, ___)	___
Q	(___, ___)	___
R	(___, ___)	___
S	(___, ___)	___



2.) Find each of the points below on the coordinate plane. Then identify the quadrant in which each point lies.

	Coordinates	Quadrant
A	(___, ___)	___
J	(___, ___)	___
B	(___, ___)	___
H	(___, ___)	___



3.) Graph and label each point on the coordinate plane.

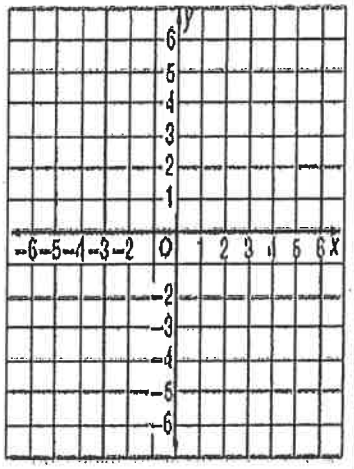
N (3, -1)

P (-2, 4)

Q (-3, -4)

R (0, 0)

S (-5, 0)



4.) Graph and label each point on the coordinate plane.

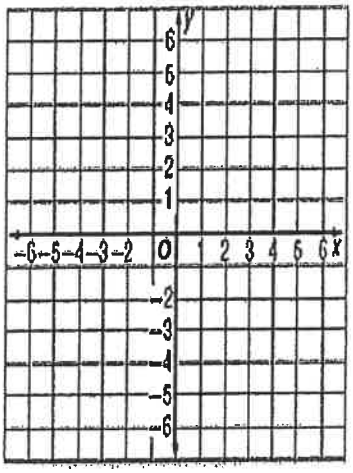
D (0, 4)

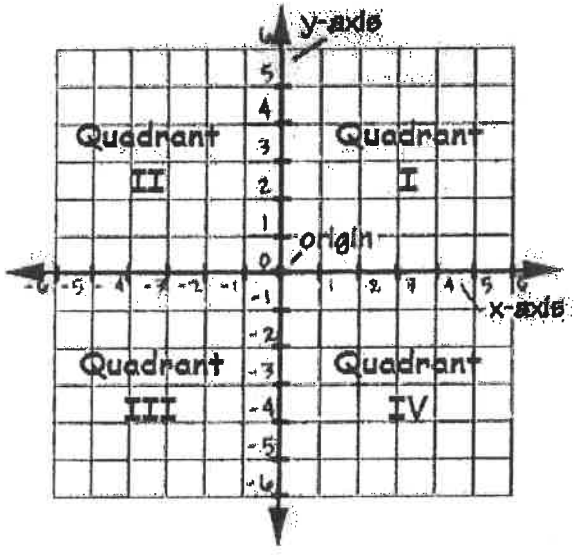
E (5, 5)

G (-3, 0)

H (-6, -2)

J (0, -2)





1.) Write 15^4 as a product of the same factor.	2.) Write 2^7 as a product of the same factor.
3.) Evaluate 7^3.	4.) Evaluate 8^4.
5.) Write $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$ in exponential form.	6.) Write $12 \cdot 12 \cdot 12$ in exponential form.

1.) Evaluate: $13^2 =$	2.) Evaluate: $\sqrt{81} =$
3.) Evaluate: $(-4)^3 =$	4.) Evaluate: $\sqrt{100} =$
5.) Evaluate: $(-2)^2 =$	6.) Evaluate: $\sqrt{36}$