

Strath Haven Middle School
Summer Math Packet
Students Entering 8th Grade
Enriched

NAME: _____

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

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.

1) $7 \cdot 4 \div 2$

2) $2^2 \cdot 8 - 10$

3) $(5+4) \cdot 7$

4) $(5 + 3)^2 - 4$

5) $36 - 5^2 + 7$

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

7) $\frac{15-7}{3+1}$

8) $\frac{9+3}{3+3^2}$

FRACTIONS: Solve the following problems with fractions. Calculators are not permitted.

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

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.

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.

1) $6(1 - 5m)$

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

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) $-5 + 9n + 6$

$$15) n - 4 - 9$$

$$16) 4n - n$$

$$17) -3x - 9 + 15x$$

$$18) -9k + 8k$$

$$19) -16n - 14n$$

$$20) 15n - 19n$$

$$21) -4 + 7(1 - 3m)$$

$$22) -5n + 3(6 + 7n)$$

$$23) -2n - (9 - 10n)$$

$$24) 10 - 5(9n - 9)$$

$$25) 9a + 10(6a - 1)$$

$$26) -9(6m - 3) + 6(1 + 4m)$$

$$27) -10(1 - 9x) + 6(x - 10)$$

$$28) 5(-2n + 4) + 2(n + 3)$$

$$29) -3(10b + 10) + 5(b + 2)$$

$$30) -7(n + 3) - 8(1 + 8n)$$

Two-Step Equations With Integers

Solve each equation.

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

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

$$3) 3p - 2 = -29$$

$$4) 1 - r = -5$$

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

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

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

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

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

$$10) 4n - 9 = -9$$

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

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

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

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

$$15) \frac{p}{4} + 8 = 7$$

$$16) 9 + \frac{n}{4} = 15$$

$$17) 6 + \frac{x}{2} = 4$$

$$18) \frac{b+11}{3} = -2$$

$$19) \frac{a-10}{3} = -4$$

$$20) -12r + 4 = 100$$

$$21) \frac{m}{16} - 9 = -8$$

$$22) -7 + 4r = -15$$

$$23) \frac{m-13}{2} = -8$$

$$24) -5x + 13 = -17$$

$$25) \frac{k+10}{-2} = 5$$

$$26) \frac{p+8}{-2} = 10$$

$$27) -14r - 19 = 303$$

$$28) \frac{x}{-4} - 5 = -8$$

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) $a - 2 + 3 = -2$

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

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

$$13) 37 = -3 + 5(x + 6)$$

$$14) -13 = 5(1 + 4m) - 2m$$

$$15) 4(-x + 4) = 12$$

$$16) -2 = -(n - 8)$$

$$17) -6(1 - 5v) = 54$$

$$18) 8 = 8v - 4(v + 8)$$

$$19) 10(1 + 3b) = -20$$

$$20) -5n - 8(1 + 7n) = -8$$

$$21) 8(4k - 4) = -5k - 32$$

$$22) -8(-8x - 6) = -6x - 22$$

$$23) 8(1 + 5x) + 5 = 13 + 5x$$

$$24) -11 - 5a = 6(5a + 4)$$

Write each phrase as an algebraic expression.

1.) 7 less than m	2.) The quotient of 3 and y
3.) 7 years younger than Jessica	4.) 3 times as many marbles as Bob has
5.) Let t = the number of tomatoes Tye planted last year. This year she planted 3 times as many. Write an algebraic expression to show how many tomatoes Tye planted this year.	6.) Last week Jason sold x number of hot dogs at the football game. This week he sold twice as many as last week, and then he sold 10 more. Write an expression to show how many hot dogs Jason sold this week.

Evaluate the following expressions using the given values for a, b, and c. Show each step!

1.) Evaluate $6 + 3b$ if $b = 7$

2.) Evaluate $6a^2$ if $a = 4$

3.) Evaluate $5(6) - c$ if $c = 7$

4.) Evaluate $\frac{b^4}{4}$ if $b = 2$

5.) Evaluate $\frac{7.5m}{5}$ if $m = 2$

6.) Evaluate $\frac{(n)^2}{3}$ if $n = 9$

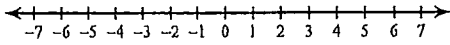
Write an inequality for each of the following:

1.) Five times a number is greater than 25.	2.) The sum of a number and 6 is at least 15.
3.) 24 divided by some number is less than 7.	4.) Five dollars less than two times Chris' pay is at most \$124.
5.) In Ohio, you can get your license when you turn 16. Write an inequality to show the age of all drivers in Ohio.	6.) Suppose a DVD costs \$19 and a CD costs \$14. Write an inequality to find how many CDs you can buy along with one DVD if you have \$65 to spend.

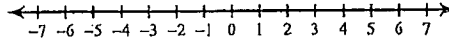
Graphing Inequalities

Draw a graph for each inequality.

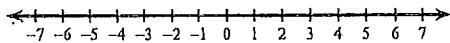
1) $n \leq -5$



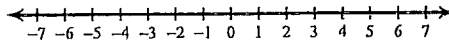
2) $n \leq 5$



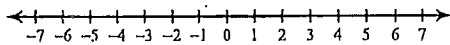
3) $x < 1$



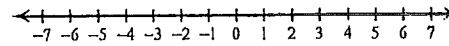
4) $r > 2$



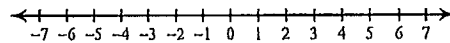
5) $n > 5$



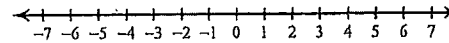
6) $r \leq -2$



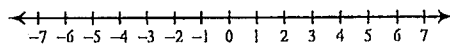
7) $k \leq -2$



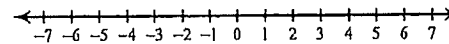
8) $m < -5$



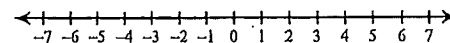
9) $x \geq 2$



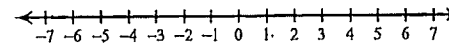
10) $-5 \geq v$



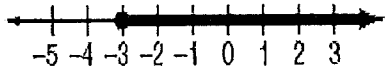
11) $-2 \geq v$



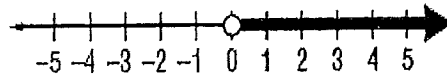
12) $x < 5$



1.) Write an inequality for the graph.

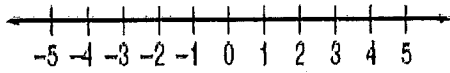


2.) Write an inequality for the graph.



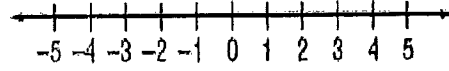
3.) Graph the inequality.

$$b \geq -1$$



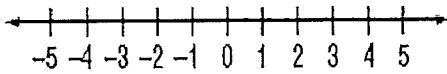
4.) Graph the inequality.

$$z < 3$$



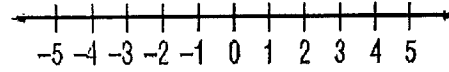
5.) Solve the inequality, then graph it on the number line.

$$y + 9 \leq 13$$



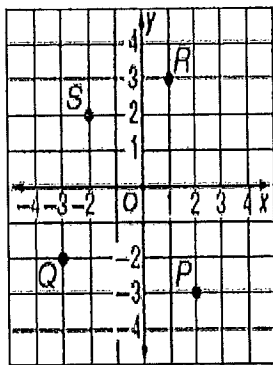
6.) Solve the inequality, then graph it on the number line.

$$4x - 6 > -10$$



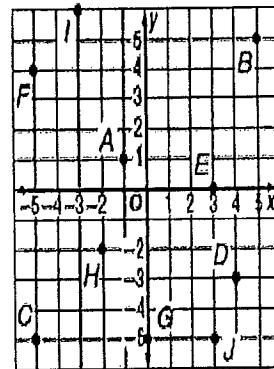
1.) Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.

	Coordinates	Quadrant
P	(<u> </u> , <u> </u>)	<u> </u>
Q	(<u> </u> , <u> </u>)	<u> </u>
R	(<u> </u> , <u> </u>)	<u> </u>
S	(<u> </u> , <u> </u>)	<u> </u>



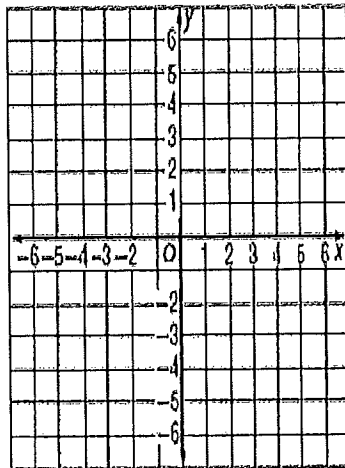
2.) Find each of the points below on the coordinate plane. Then identify the quadrant in which each point lies.

	Coordinates	Quadrant
A	(<u> </u> , <u> </u>)	<u> </u>
J	(<u> </u> , <u> </u>)	<u> </u>
B	(<u> </u> , <u> </u>)	<u> </u>
H	(<u> </u> , <u> </u>)	<u> </u>



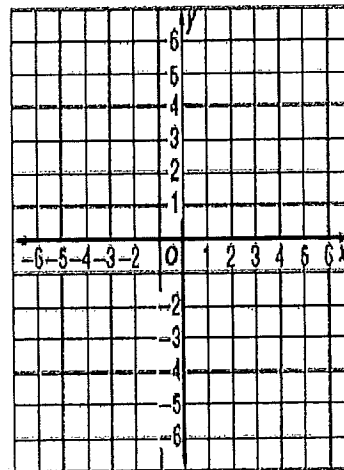
3.) Graph and label each point on the coordinate plane.

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)



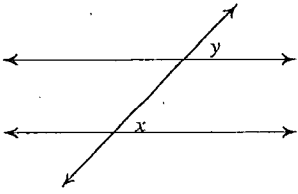
1.) Write 15^4 as a product of the same factor.	2.) Write 2^7 as a product of the same factor.
3.) Evaluate 7^3 .	4.) Evaluate 8^4 .
5.) Write $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$ in exponential form.	6.) Write $12 \cdot 12 \cdot 12$ in exponential form.

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

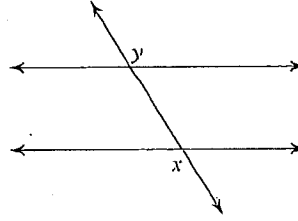
Parallel Lines and Transversals

Identify each pair of angles as corresponding, alternate interior, alternate exterior, or consecutive interior.

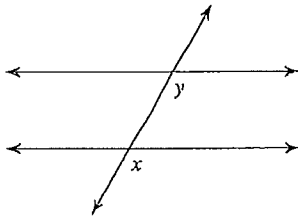
1)



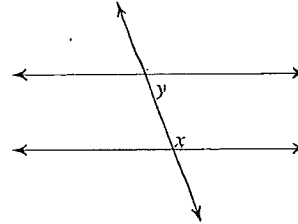
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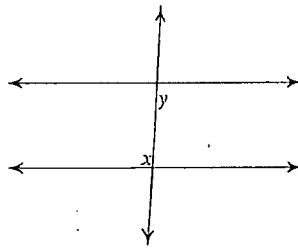
3)



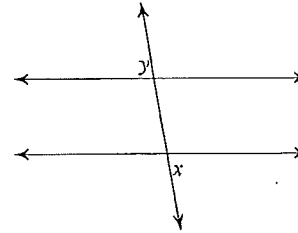
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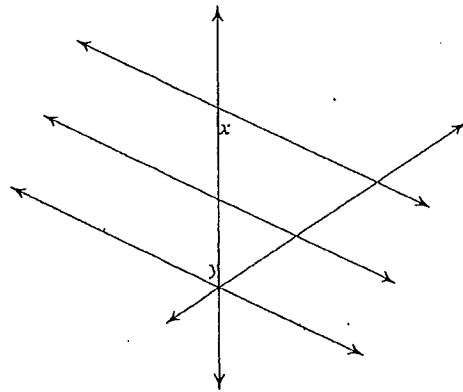
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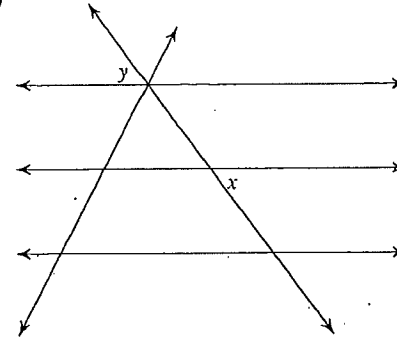
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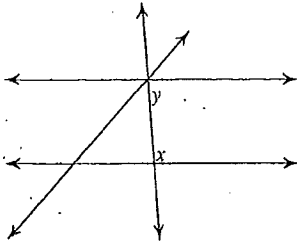
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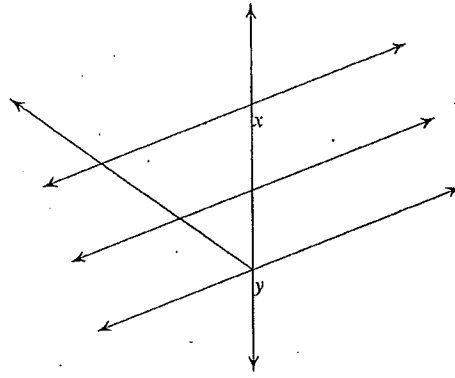
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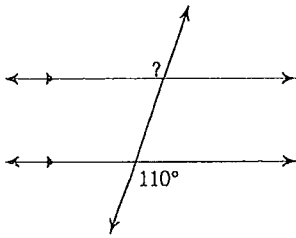


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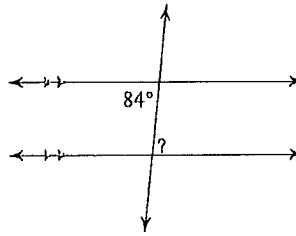


Find the measure of each angle indicated.

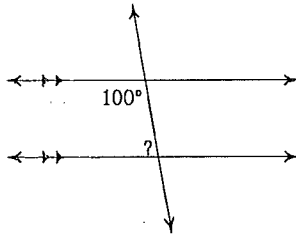
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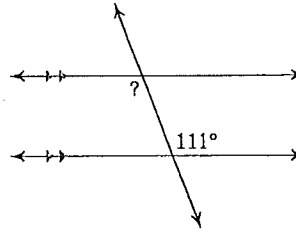
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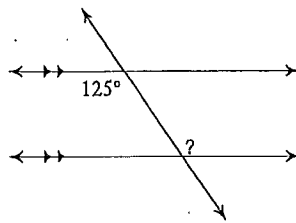
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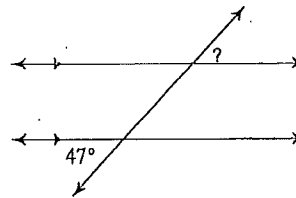
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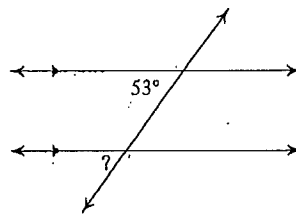
15)



16)



17)



18)

