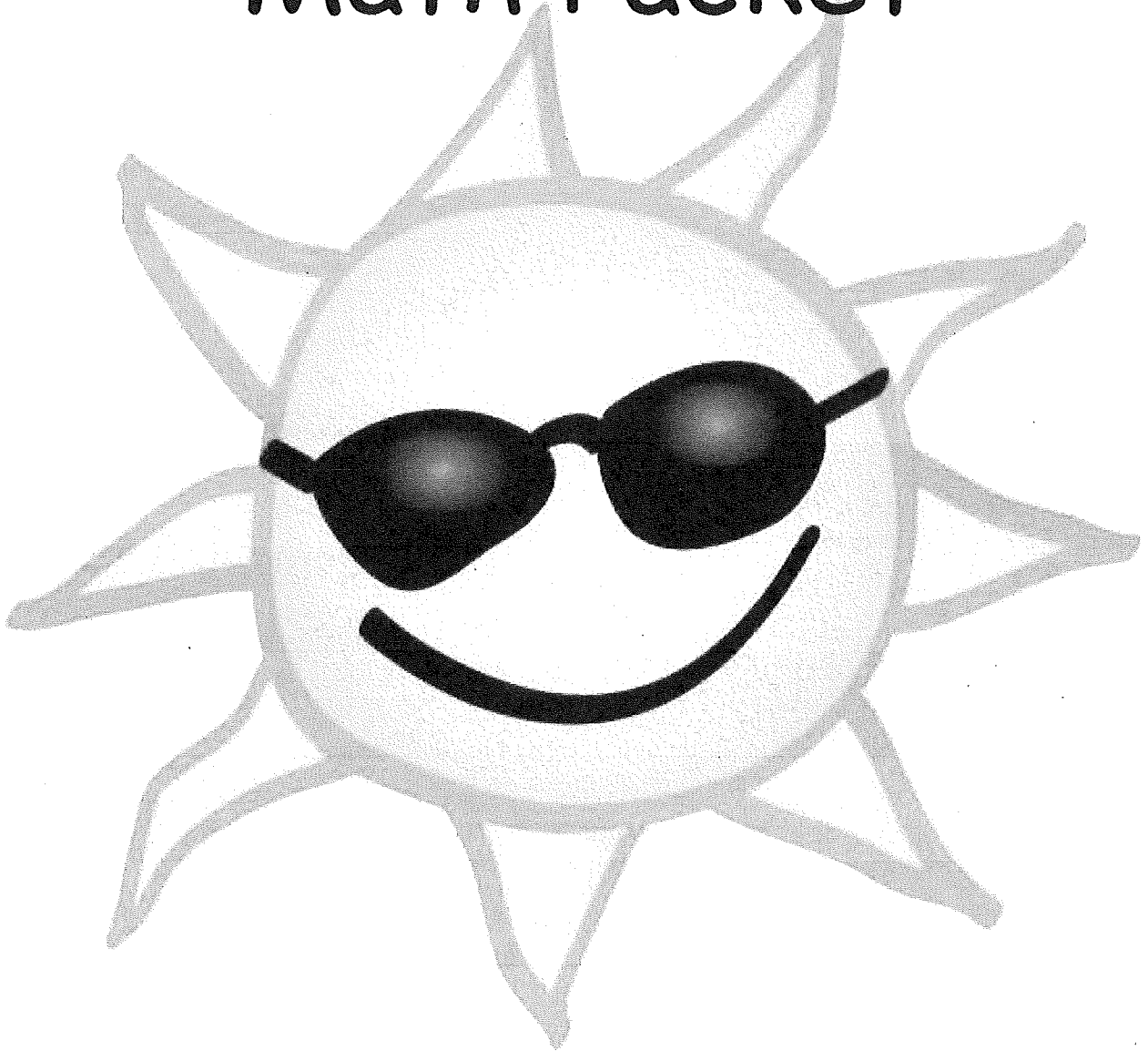


# Summer Math Packet



For students entering:

Math 8

Name: Answer Key

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

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

$\frac{8}{10} = \boxed{\frac{4}{5}}$

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

$\frac{4}{6} = \boxed{\frac{2}{3}}$

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

$4\frac{4}{4} = \boxed{5}$

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

$\frac{15}{15}$   
 $\boxed{7\frac{14}{15}}$

6)  $5\frac{1}{8} - 2\frac{5}{8} = 4\frac{20}{8} - 2\frac{15}{8} = \boxed{2\frac{5}{8}}$

7)  $\frac{1}{3} \times \frac{4}{5} = \boxed{\frac{4}{15}}$

8)  $\frac{3}{1} \times \frac{3}{4} = \boxed{9}$

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

$\frac{23}{4} \times \frac{32}{3} = \frac{184}{3} = \boxed{61\frac{1}{3}}$

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

$\frac{3}{4} \cdot \frac{8}{5} = \frac{6}{5} = \boxed{1\frac{1}{5}}$

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

$\frac{9}{1} \cdot \frac{3}{3} = \frac{27}{3} = \boxed{11\frac{1}{3}}$

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

$\frac{25}{6} \cdot \frac{5}{17} = \frac{125}{102} = \boxed{1\frac{23}{102}}$

**SIMPLIFYING EXPRESSIONS - combine like terms.**

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

$\boxed{12x}$

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

$\boxed{8x + 7b}$

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

$\boxed{7 + 4x}$

4)  $6y + 5 - y$

$\boxed{5y + 5}$

5)  $8a + 4 - 4a$

$\boxed{4a + 4}$

6)  $15 + 4x - 7$

$\boxed{8 + 4x}$

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

$\boxed{9x + 6}$

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

$\boxed{5n + 9}$

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

$3x + 12 + 2$   
 $\boxed{3x + 14}$

EQUATIONS: Solve for x. **SHOW YOUR WORK!**

1)  $x - 8 = 24$

$x = 32$

2)  $x + 4 = 38$

$x = 34$

3)  $x - 16 = -24$

$x = -8$

7)  $3x = 39$

$x = 13$

8)  $9x = 117$

$x = 13$

9)  $-2x = -400$

$x = 200$

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

$x = 60$

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

$x = 60$

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

$x = 70$

13)  $8 = -5r + 18$

$-10 = -5r$

$r = 2$

14)  $3x + 14 = -1$

$3x = -15$

$x = -5$

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

$-3x = -6$

$x = 2$

**FRACTIONS, DECIMALS, PERCENTS**

FRACTION	=	DECIMAL	=	PERCENT
$\frac{1}{4}$		0.25		25%
$\frac{45}{100} = \frac{9}{20}$		.45		45%
$\frac{3}{10}$		0.3		30%
$\frac{4}{10} = \frac{2}{5}$		0.4		40%
$\frac{8}{10} = \frac{4}{5}$		.8		80%
$\frac{5}{10} = \frac{1}{2}$		0.5		50%

## The Distributive Property

Simplify each expression. (Expand)

1)  $6(1 - 5m)$

$$6 \cdot 1 - 6 \cdot 5m$$

$$\boxed{6 - 30m}$$

3)  $3(4 + 3r)$

$$3 \cdot 4 + 3 \cdot 3r$$

$$\boxed{12 + 9r}$$

5)  $4(8n + 2)$

$$4 \cdot 8n + 4 \cdot 2$$

$$\boxed{32n + 8}$$

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

$$-6 \cdot 7k + -6 \cdot 11$$

$$-42k + -66 = \boxed{-42k - 66}$$

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

$$-6 \cdot 1 + -6 \cdot 11b$$

$$-6 + -66b = \boxed{-6 - 66b}$$

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

$$-3 \cdot 1 + -3 \cdot 2v$$

$$-3 + -6v = \boxed{-3 - 6v}$$

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

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

$$-6 - (-14k) = \boxed{-6 + 14k}$$

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

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

$$-105 + -285b$$

$$\boxed{-105 - 285b}$$

EX:

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

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

$$-2 - (-10v)$$

$$\boxed{-2 + 10v}$$

4)  $3(6r + 8)$

$$3 \cdot 6r + 3 \cdot 8$$

$$\boxed{18r + 24}$$

6)  $-(-2 - n)$

$$-1 \cdot -2 - (-1) \cdot n$$

$$2 - (-n) = \boxed{2 + n}$$

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

$$-3 \cdot 7n + -3 \cdot 1$$

$$-21n + -3 = \boxed{-21n - 3}$$

10)  $-10(a - 5)$

$$-10 \cdot a - (-10)(5)$$

$$-10a - (-50) = \boxed{-10a + 50}$$

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

$$-4 \cdot 3x + -4 \cdot 2$$

$$-12x + -8 = \boxed{-12x - 8}$$

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

$$-20 \cdot 8x + -20 \cdot 20$$

$$-160x + -400 = \boxed{-160x - 400}$$

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

$$14 \cdot x + 14 \cdot 1$$

$$\boxed{14x + 14}$$

## Combining Like Terms

Simplify each expression.

1)  $-6k + 7k$

$$\boxed{k}$$

2)  $12r - 8 - 12$

$$\boxed{12r - 20}$$

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

$$\boxed{10n - 13}$$

4)  $-4x - 10x$

$$\boxed{-14x}$$

5)  $-r - 10r$

$$\boxed{-11r}$$

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

$$\boxed{4x + 11}$$

7)  $11r - 12r$

$$\boxed{-r}$$

8)  $-v + 12v$

$$\boxed{11v}$$

9)  $-8x - 11x$

$$\boxed{-19x}$$

10)  $4p + 2p$

$$\boxed{6p}$$

11)  $5n + 11n$

$$\boxed{16n}$$

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

$$\boxed{-4n - 5}$$

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

$$\boxed{15r}$$

14)  $-5 + 9n + 6$

$$\boxed{9n + 1}$$

## Two-Step Equations With Integers

Solve each equation.

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

$$\frac{r}{10} = 1$$

$$\boxed{r = 10}$$

3)  $3p - 2 = -29$

$$3p = -27$$

$$\boxed{p = -9}$$

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

$$k - 10 = -14$$

$$\boxed{k = -4}$$

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

$$\frac{n}{4} = 2$$

$$\boxed{n = 8}$$

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

$$-5 + x = -22$$

$$\boxed{x = -17}$$

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

$$x + 9 = 6$$

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

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

$$-4 + x = 12$$

$$\boxed{x = 16}$$

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

$$\frac{n}{2} = -2$$

$$\boxed{n = -4}$$

4)  $1 - r = -5$

$$-r = -6$$

$$\boxed{r = 6}$$

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

$$n - 5 = 10$$

$$\boxed{n = 15}$$

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

$$9 + m = 6$$

$$\boxed{m = -3}$$

10)  $4n - 9 = -9$

$$4n = 0$$

$$\boxed{n = 0}$$

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

$$-12 + x = -33$$

$$\boxed{x = -21}$$

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

$$\frac{n}{3} = 5$$

$$\boxed{n = 15}$$

## Multi-Step Equations

Solve each equation.

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

$$11a = -11$$

$$\boxed{a = -1}$$

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

$$4x + 9 = 17$$

$$4x = 8$$

$$\boxed{x = 2}$$

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

$$12r - 1 = 11$$

$$12r = 12$$

$$\boxed{r = 1}$$

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

$$-10 = 0$$

NO SOLUTION!

9)  $42 = 8m + 13m$

$$42 = 21m$$

$$\boxed{m = 2}$$

distribute FIRST!

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

$$18 = 9x - 18$$

$$36 = 9x$$

$$\boxed{x = 4}$$

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

$$-8n = 16$$

$$\boxed{n = -2}$$

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

$$0 = -7n$$

$$\boxed{n = 0}$$

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

$$9r + 11 = 29$$

$$9r = 18$$

$$\boxed{r = 2}$$

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

$$-p = 12$$

$$\boxed{p = -12}$$

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

$$a + 1 = -2$$

$$\boxed{a = -3}$$

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

$$30 = -30n - 30$$

$$60 = -30n$$

$$\boxed{n = -2}$$

## Evaluating Variable Expressions

Evaluate each using the values given.

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

$$\boxed{57} \quad \text{EX. } n^2 - m$$

$$8^2 - 7$$

$$64 - 7$$

$$\boxed{57}$$

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

$$\boxed{24}$$

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

$$\boxed{7}$$

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

$$\boxed{3}$$

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

$$\boxed{11}$$

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

$$\boxed{20}$$

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

$$\boxed{128} \quad \text{EX. } y + yx$$

$$8 + 8(15)$$

$$8 + 120$$

$$\boxed{128}$$

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

$$\boxed{12}$$

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

$$\boxed{11}$$

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

$$\boxed{2} \quad \text{EX. } 15 - (m + p)$$

$$15 - (3 + 10)$$

$$15 - 13$$

$$\boxed{2}$$

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

$$\boxed{6}$$

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

$$\boxed{33}$$



Name : \_\_\_\_\_

Score : \_\_\_\_\_

Teacher : \_\_\_\_\_

Date : \_\_\_\_\_

### Translate Algebraic Expressions

1) 2 times the sum of m and 3

$$\underline{2(m+3)}$$

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

$$\underline{\frac{2}{5}(n+8)}$$

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

$$\underline{z^3 - 6w + 4}$$

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

$$\underline{\frac{2}{5}g + 8z}$$

5) Add five-sixths to 8 times f

$$\underline{8f + \frac{5}{6}}$$

6) Two-thirds of p is subtracted from 7

$$\underline{7 - \frac{2}{3}p}$$

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

$$\underline{\frac{1}{5}(w+2) - 7s}$$

8) Three-fifths of k is added to 5

$$\underline{\frac{3}{5}k + 5}$$

9) Add 8 to 7 times b

$$\underline{7b + 8}$$

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

$$\underline{\frac{1}{4}y + \frac{1}{5}c + 9}$$



**Answer key**

Translate each verbal phrase into an algebraic expression :

1) 5 is not more than x

$$\underline{5 < x}$$

3) x is greater than or equal to 12

$$\underline{x \geq 12}$$

5) Value of x is greater than 7

$$\underline{x > 7}$$

7) x is not more than 13

$$\underline{x < 13}$$

9) Value of x is atleast 1

$$\underline{x \geq 1}$$

11) Value of x is less than or equal to 10

$$\underline{x \leq 10}$$

13) 16 is less than x

$$\underline{16 < x}$$

15) Value of x is not greater than 18

$$\underline{x < 18}$$

2) Value of x is greater than or equal to 14

$$\underline{x \geq 14}$$

4) 6 is not less than x

$$\underline{6 > x}$$

6) x is greater than 15

$$\underline{x > 15}$$

8) 9 is less than or equal to x

$$\underline{9 \leq x}$$

10) Value of x is less than 14

$$\underline{x < 14}$$

12) x is more than 3

$$\underline{x > 3}$$

14) Value of x is atmost 8

$$\underline{x \leq 8}$$

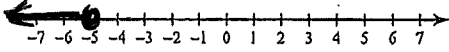
16) 2 is more than x

$$\underline{2 > x}$$

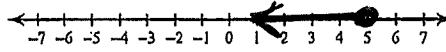
# Graphing Inequalities

Draw a graph for each inequality.

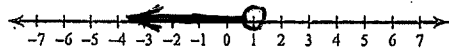
1)  $n \leq -5$



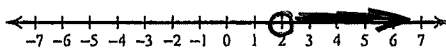
2)  $n \leq 5$



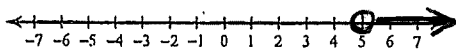
3)  $x < 1$



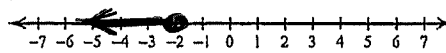
4)  $r > 2$



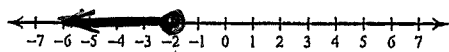
5)  $n > 5$



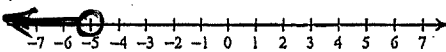
6)  $r \leq -2$



7)  $k \leq -2$



8)  $m < -5$



$>$	$\geq$	$<$	$\leq$
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)  $-10 + (-10)$

$\boxed{0}$

2)  $-6 + (-10)$

$\boxed{-16}$

3)  $-8 + 15$

$\boxed{7}$

4)  $-13 + (-3) + 2$

$\boxed{-14}$

5)  $-3 - 6$

$\boxed{-9}$

6)  $-2 - (-9)$

$-2 + (+9) = \boxed{7}$

7)  $13 - 19$

$\boxed{-6}$

8)  $-14 - 16 + 4$

$\sqrt{-30} + 4 = \boxed{-26}$

9)  $4 \times -4$

$\boxed{-16}$

10)  $-15 \times -2$

$\boxed{30}$

11)  $-12 \times -7$

$\boxed{84}$

12)  $-4 \times -3 \times -6$

$\sqrt{12} \times -6 = \boxed{-72}$

13)  $-15 \div -3$

$\boxed{5}$

14)  $25 \div 5$

$\boxed{5}$

15)  $-56 \div 7$

$\boxed{-8}$

16)  $-100 \div -5$

$\boxed{20}$

**EXPONENTS - evaluate**

1)  $3^2$

$= 3 \cdot 3$

$= \boxed{9}$

2)  $5^3$

$= \boxed{125}$

3)  $1^7$

$= \boxed{1}$

4)  $0^8$

$= \boxed{0}$

5)  $8^4$

$= \boxed{4096}$

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

1)  $7 \cdot 4 \div 2$

$\boxed{14}$

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

$\boxed{22}$

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

$\boxed{63}$

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

$\boxed{60}$

5)  $36 - 8^2 \div 7$

$\boxed{18}$

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

$\boxed{10}$

7)  $\frac{15-7}{3+1} = \frac{8}{4} = \boxed{2}$

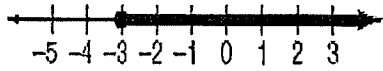
8)  $\frac{9+3}{3+3^2}$

$\downarrow$   
 $\frac{12}{12} = \boxed{1}$

**Order of Operations**

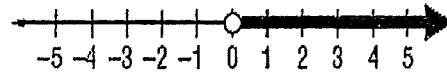
P- Parenthesis ( )	E- Exponents $5^2$	M- Multiplication $\times$	D- Division $\div$
A- Addition $+$	S- Subtraction $-$	Purple Elephants May Destroy A School.	
<b>P</b>	<b>E</b>	<b>M</b>	<b>D</b>
		<b>A</b>	<b>S</b>

1.) Write an inequality for the graph.



$$x \geq -3$$

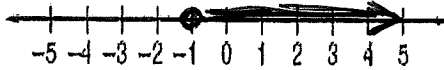
2.) Write an inequality for the graph.



$$x > 0$$

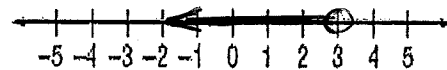
3.) Graph the inequality.

$$b \geq -1$$



4.) Graph the inequality.

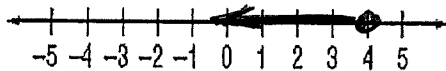
$$z < 3$$



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

$$y + 9 \leq 13$$

$$y \leq 4$$

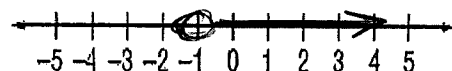


6.) Solve the inequality, then graph it on the number line.

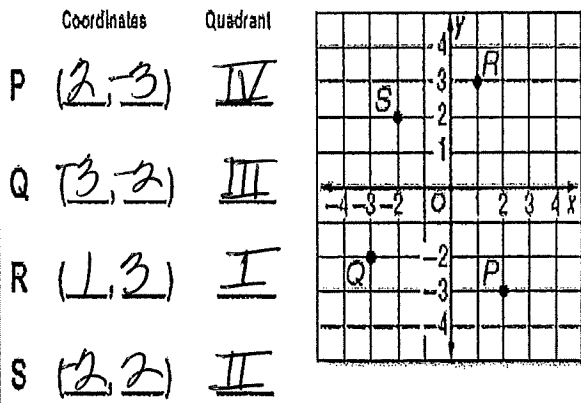
$$4x - 6 > -10$$

$$4x > -4$$

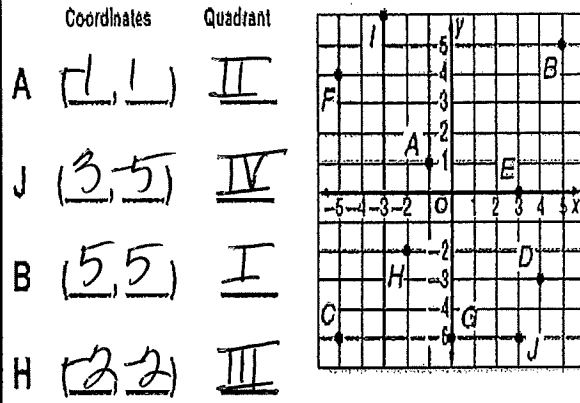
$$x > -1$$



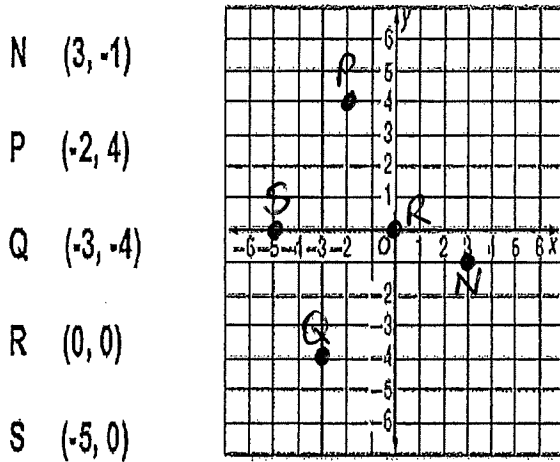
1.) Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.



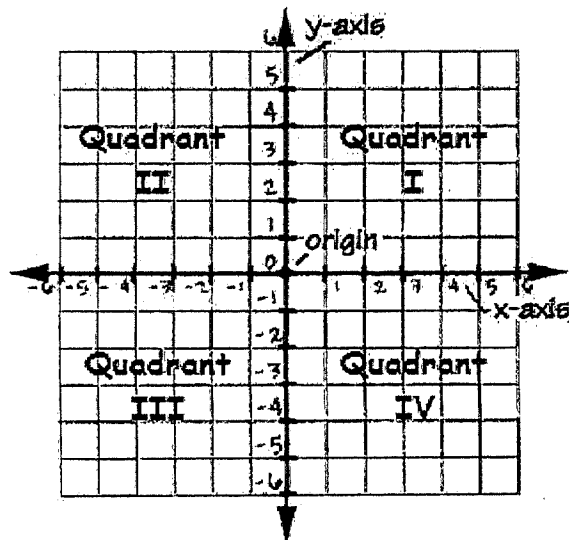
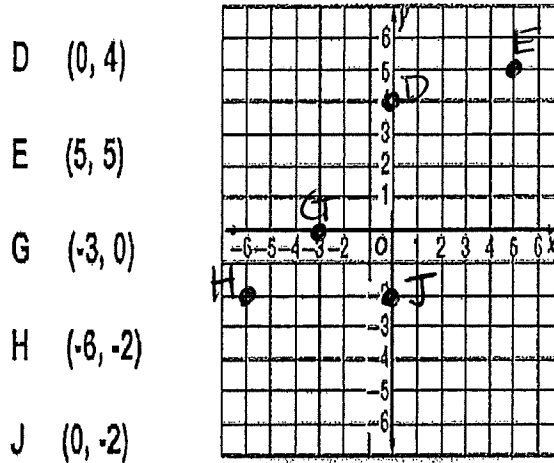
2.) Find each of the points below on the coordinate plane. Then identify the quadrant in which each point lies.



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



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



1.) Write  $15^4$  as a product of the same factor.

$$15 \cdot 15 \cdot 15 \cdot 15$$

2.) Write  $2^7$  as a product of the same factor.

$$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$$

3.) Evaluate  $7^3$ .

$$7 \cdot 7 \cdot 7 = \boxed{343}$$

4.) Evaluate  $8^4$ .

$$8 \cdot 8 \cdot 8 \cdot 8 = \boxed{4096}$$

5.) Write  $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$  in exponential form.

$$9^5$$

6.) Write  $12 \cdot 12 \cdot 12$  in exponential form.

$$12^3$$

1.) Evaluate:  $13^2 =$

169

2.) Evaluate:  $\sqrt{81} =$

9

3.) Evaluate:  $(-4)^3 =$

$-4 \cdot -4 \cdot -4$

$16 \cdot -4 = \boxed{-64}$

4.) Evaluate:  $\sqrt{100} =$

10

5.) Evaluate:  $(-2)^2 =$

$-2 \cdot -2 = \boxed{4}$

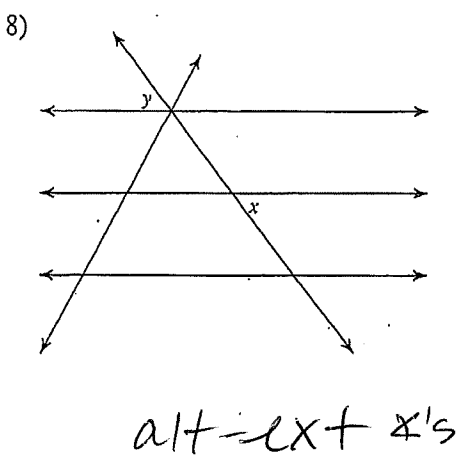
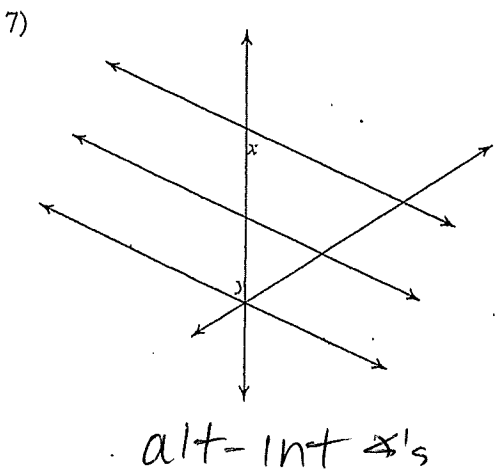
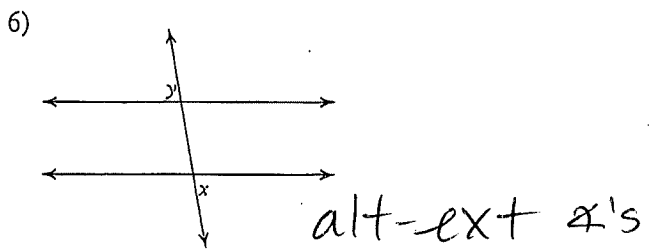
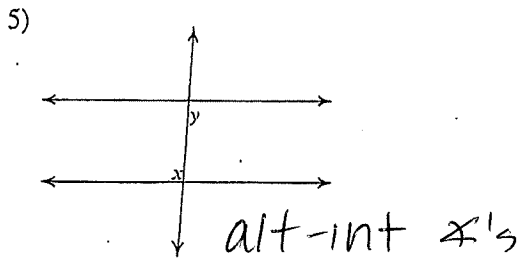
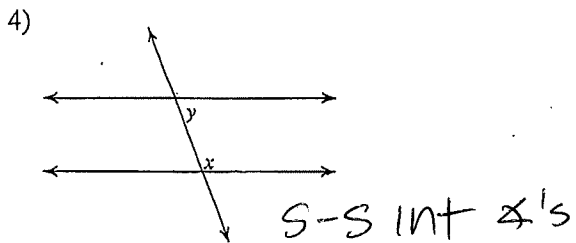
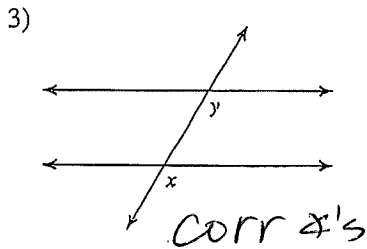
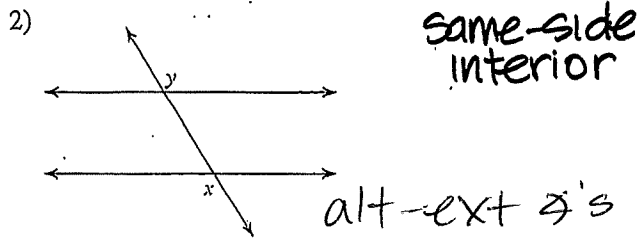
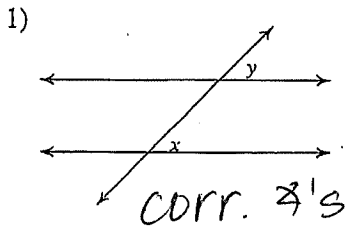
6.) Evaluate:  $\sqrt{36} =$

6

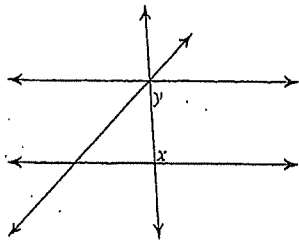


# Parallel Lines and Transversals

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

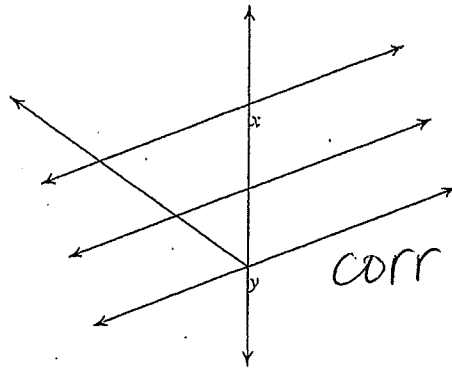


9)



S-S int  $\angle$ 's

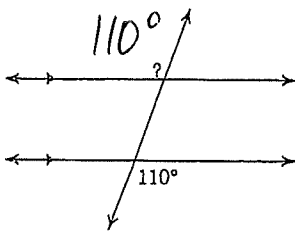
10)



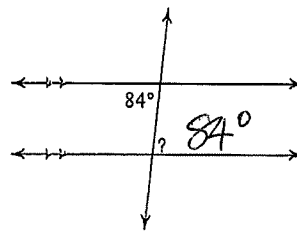
corr  $\angle$ 's

Find the measure of each angle indicated.

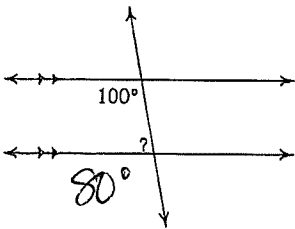
11)



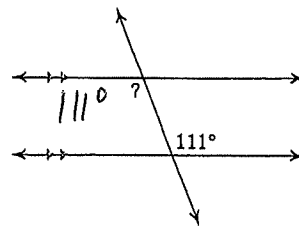
12)



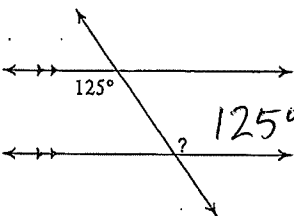
13)



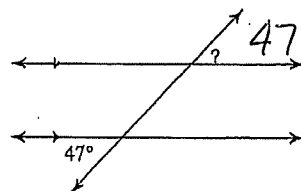
14)



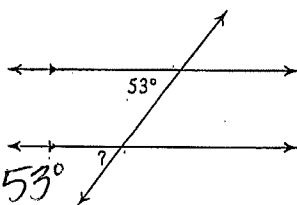
15)



16)



17)



18)

