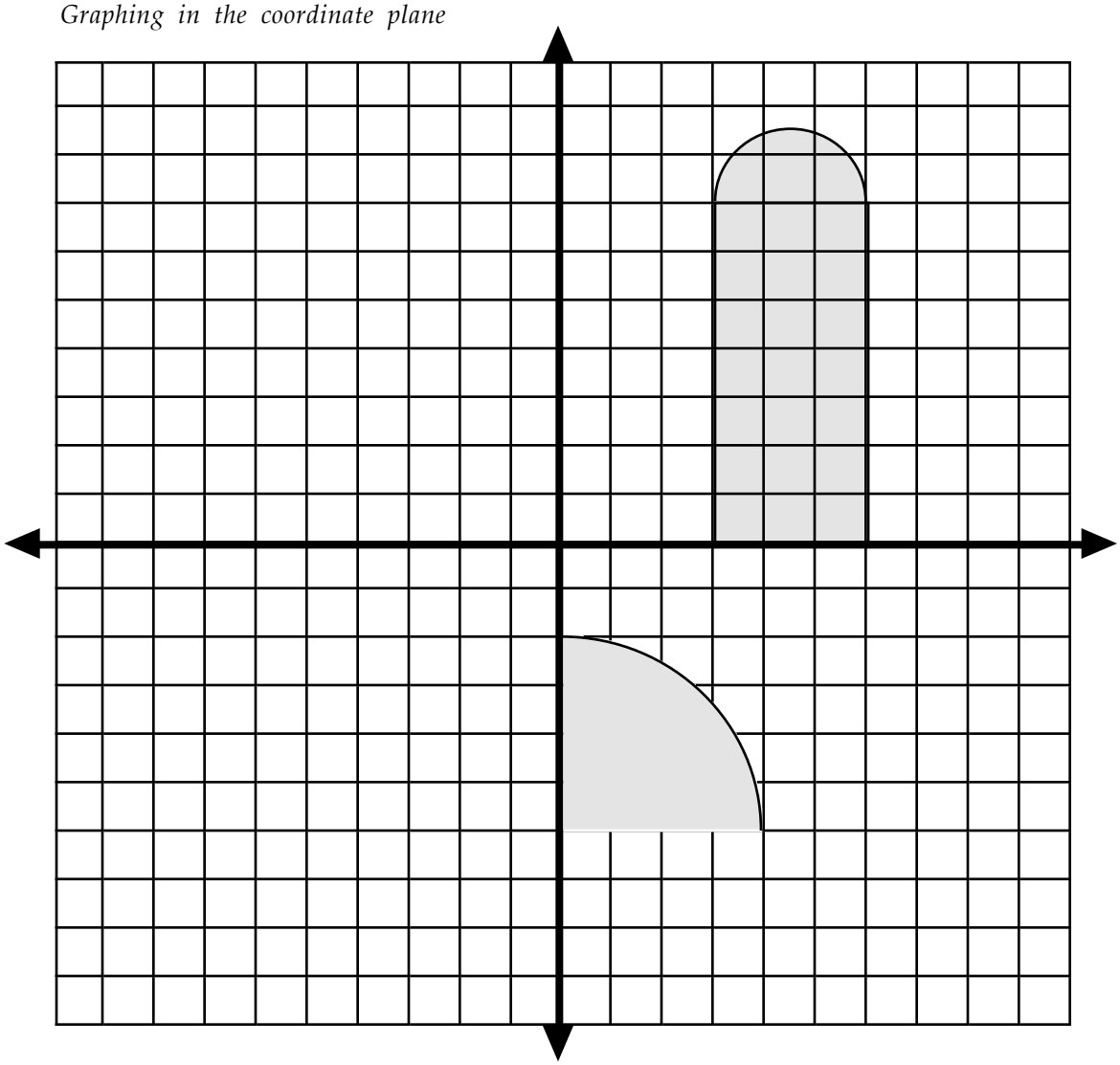
Problem Set 2 *Name* _____ *Period* _____

Algebra I

1 *Graphing in the coordinate plane*



On the coordinate plane above :

- Identify and label the 4 quadrants
- Identify and label the axes
- Plot and label these points ***A*** *(- 7, 0)* ***B*** *(- 4, 4)* ***C*** *(0, 0)* ***D*** *(0, - 6)*

  E *(6, - 6)* ***F*** *(6, 0)* ***G*** *(9, 4)* ***H*** *(3, 4)*

1 a) Connect the points which form triangle Δ ABC. Find the area of triangle ABC.

b) Connect the points which form quadrilateral CHGF. What name do we give to this figure ? Find the area of CHGF.

c) Find the exact area and perimeter/circumference of the 1st quadrant figure ?
Find the exact area and perimeter/circumference of the 4th quadrant figure ?

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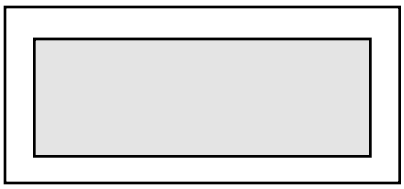
d) A circle has a center at point (- 4, - 3). The edge of the circle is <u>tangent</u> to the 'x' axis at point (- 4, 0).

Draw the circle on the coordinate plane.
What is the radius and diameter of the circle ?

Find the <u>exact</u> area and circumference of circle .
(This means that you leave your answer *in terms of pi* - π)

2 The plans for a new lawn are as follows. The rectangular lawn will be 26 feet by 20 feet (26' x 20'). The lawn will be surrounded by a 2 foot wide stone path.
Grass 'sod' sells for 35¢ a square foot.



a) Find the area of the lawn. What will be the total cost for the grass sod ?

b) Find the area of the stone path.

c) If tax and delivery for the grass was 10 % of the total cost, what would be the total charge to complete the project ?

3 Simplify *then* evaluate the following *<u>numerical expressions</u>*:

a) $(3^2 - 6) \div 3 - 1$

b) $[12 \div 2^2 - 3] \times [(-3.58) \div 4.68]$

c) $3 + 8 - (-4) - 5 - (-2) + 3 - 10 - (5)$

d) $\dfrac{-24 \bullet 36}{9 \bullet -12}$

e) $|-4| - (3 + 1)$

f) $-2(-3 - 5)$

4 **Variable expressions** (write a variable expression for each)

a) three more than twice number 'x'

b) 9 less than four times a number 'n'

c) three times a number 'h' decreased by 4

d) the quantity two more than 'z' divided by the product of 5 and 'z'

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5 **Evaluate** the following expressions

a)	$4a - 3c$	for	$a = 3$	$c = 5$
b)	$y^2 - 2x$	for	$x = 2$	$y = -3$
c)	$m^2 - n + 7$	for	$m = 4$	$n = -2$

6 An 2 foot baby Anaconda will increase in length at a rate of 10% a month for the first year of life. How many inches in length will the Anaconda be by the end of second month?

7 An ivy vine grows at a rate of 2 ft/year (2 feet each year).

Write an expression which describes how long the vine will be in 'n' years.
Write an expression which describes how long the vine will be in 'd' decades.

8 Jill is one year older than twice Sally's age. Write an expression which shows how old Jill is in terms of Sally. If Jill is 17 years old now, how old will Sally be in three years ?

9 The Brady Amusement Park charges $5 for adults, $3 for children between the ages 5 and 16 years. Those younger than 5 enter the park free. Write and expression describing the total cost for a group of 'a' adults, 'b' children and a three year old.

- Find the total cost for 6 adults, three children over the age 8.
- If the above group ate hot dogs, candy and drinks totaling $23.75 during their visit, will a $100 dollar bill cover there total cost?

10 The price of a share Emory stock sold for $ 20 at the beginning of the week. It closed out the week selling for an astounding $ 25. By what percent did the stock increase over the course of the week.

11 a) The National Museum of Greece charges a $5 entrance fee and $4 for each hour one stays in the museum. Represent this information as a function - an expression for the total cost of a visit, a table with values and a graph showing this data.

b) The skateboard park charges $7 for entrance into the ramp area and $3 for each hour one stays. Represent this information as a function - an expression for the total cost of a stay, a table with values and a graph showing this data.

c) Each hour one remains in the Gameland video parlor, it costs $4. You may play all the games for on charge. Unfortunately, one must pay $8 to get in the building. Represent this information as a function - an expression for the total cost of gaming time, a table with values and a graph showing this data.

d) A season pass to Water Park costs $35. Once one has the pass, all day entrance to the park is $5 for each visit. Represent this information as a function - an expression for the total cost of a visit, a table with values and a graph showing this data.

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12 At the end of 4th grade, James stood four feet two inches tall. At the end of 6th grade , he measured four feet nine inches. By what percent did his height increase over that period of time ?

13 The length of a rectangle is 3 less than four times the width. The perimeter is 44 inches.

a. Develop *an expression* for the perimeter of the rectangle.

b Develop *an equation* which would allow you to find the length and width of the rectangle

14 Simplify the following variable expressions

a) $8 + m + 3y - 4m - 6y - 7 + 5m + 2y$

b) $2a + c + 3(a + c) - 4$

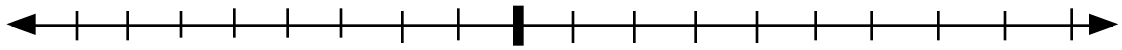
c) $5 + 3(4 - b) + 4(b - 2)$

d) $3(2 + c) - 2(a + c) - 1$

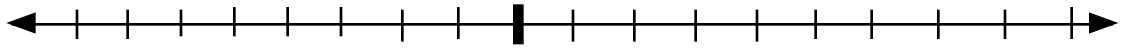
e) $-4(2b - 3) + 7b - 2(b - 3) + 2c$

15 Graphing the following

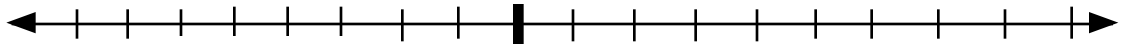
a) $y \geq -2$



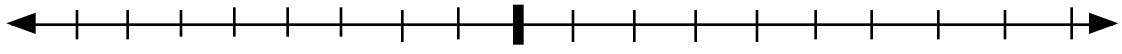
b) $z + 3 \leq 5$



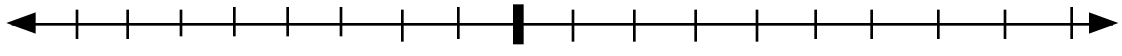
c) $|m| > 2.5$



d) $2k + 1 \geq 9$



e) $|c + 2| \geq 1$



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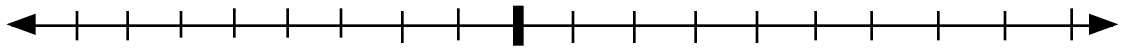
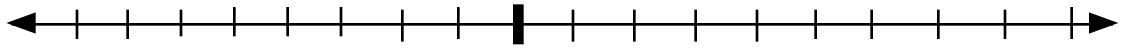
16 Extension Graphing Inequalities

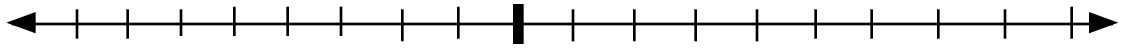
a) A number 'b' is greater than or equal to 3 _____
Inequality



b) 3 more than a number 'n' is less than 5
Inequality _____



c) 1 more than twice a number 'p' is greater than 7.
Inequality _____



d) 3 less than two times a number 'm' is greater than 9
Inequality _____

17 a) Solve $6\frac{1}{8} - 2\frac{2}{3}$ $3.7 + 4\frac{3}{8}$

$6\frac{2}{5} \div 2\frac{2}{7}$ Find 15 % of 28

b) $\sqrt{37}$ I have a square with an area of 37 - what is the length of a side ?
Rational - Irrational ?

$\sqrt{37}$ is between $\sqrt{}$ and $\sqrt{}$ closer to ?

c) To convert Celsius temperatures (European)
to Fahrenheit temperatures (United States) **F° = (9/5) C + 32°**

If the temperature in Greece was 40° Celsius, should you be at the beach or in the house to keep warm?

d) Use the Distributive Property twice to multiply then simplify (x + 2) (x + 5)

Use the Distributive Property twice to multiply then simplify (k - 4) (k + 3)