

Algebra II GT/Pre-AP
Unit 1 – Equations and Inequalities
August 25 to September 10

Date	Topic	Assignment	Did It ☺
Mon 8/25	Introductions	TBA	
Tues 8/26	1.1 and 1.2 Properties of Real Numbers Evaluate/Simplify Expressions (Day 1)	Worksheet p. 2	
Wed 8/27	1.1 and 1.2 Properties of Real Numbers (Day 2)	Worksheet p. 3	
Thur 8/28	1.3 Solve Linear equations	Worksheet p. 4	
Fri 8/29	1.3 Solve Literal Equations	Pg. 30 (4,5,8-14 even,17,18-20,22-26 even,29,30,34,38) and W.S. p.5 (top)	
Mon 9/1	Labor Day – No school		
Tues 9/2	1.6 Solving Linear Inequalities	Pg. 45 (11-14, 18, 20, 24, 26, 32, 33, 38- 50even,51, 52 and W.S. p.5 (middle)	
Wed 9/3	Solve Absolute Value Equations	Worksheet p. 5 (bottom)	
Thur 9/4	1.7 Solve Absolute Value Inequalities	Worksheet p. 6	
Fri 9/5	Extra Practice Quiz - Linear and Absolute value equations	Extra Practice Review for Test on Tuesday	
Mon 9/8	Domain and Range from graph Write D & R in Roster, Set builder and Interval notations (Notes p. 7- 8)	Worksheet p. 9 – 10	
Tues 9/9	Review for test	Review for test	
Wed 9/10	TEST Unit 1	Read pgs. 72-76 Page 76 (4-14even,21-23,34-39)	

Tuesday, August 26

1.1 and 1.2 Properties of Real Numbers

List the members of the set, or write ϕ to represent the empty set.

- $\{p \mid p \text{ is an odd natural number}\}$
- $\{\text{natural numbers less than one}\}$
- $\{g \mid g \text{ is an odd number less than 11}\}$

State whether the set is finite, infinite, or the empty set.

- $\{\text{real numbers}\}$
- $\{p \mid p \text{ is an even number between 10 and 11}\}$
- $\{\text{number of students at Bush High School}\}$

Name all the sets of numbers to which each of the following numbers belong.

- $\frac{-11}{3}$
- $-\sqrt{81}$
- $\sqrt{23}$
- 0
- 7.22
- $-4.\overline{17}$
- π

- Write a rational number that is not an integer.
- Write an irrational number.

Graph the following on a number line.

- All whole numbers less than 5.
- All integers between -3 and 4.
- All integers between -3 and 4, inclusive.
- All natural numbers greater than -2.
- All real numbers less than or equal to 4.

Name the first number described.

- The first counting number.
- A whole number that is not a natural number.
- The successor of the natural number 64,499.

State whether the sentence is always, sometimes, or never true.

- A natural number is a whole number.
- A rational number is a real number.
- A whole number is a rational number.
- An integer is an irrational number.

Write the next natural number in the infinite sequence:

1, 1, 2, 3, 5, 8, 13, 21, 34, ____

Evaluate the expression for the given values.

- $(3x)^2 - y^3$; when $x = 4$ and $y = 5$
- $\frac{x+2y}{4x-y}$; when $x = -3$ and $y = 4$
- $\frac{b^3 - c^3}{(b-c)^3}$; when $b = 6$ and $c = 3$

Simplify each expression.

- $9j + 4k - 2j - 7k$
- $p^3 + 3q^2 - q + 3p^3$
- $3y^2 + 5x - 12x + 9y^2 - 5$
- $3(x^2 - y) + 9(x^2 + 2y)$

- Cross-Training. You exercise for 60 minutes, spending w minutes walking and the rest of the time running. If walking burns 4 calories per minute and jogging burns 10 calories per minute, write and simplify an expression to determine how many calories you burn if you spend 20 minutes walking.

Wednesday, August 27

1.2 and 1.2 Properties of Real Numbers (Cont'd)

Identify the property the statement illustrates.

1. $(4+9)+3 = 4+(9+3)$

2. $15 \cdot 1 = 15$

3. $6 \cdot 4 = 4 \cdot 6$

4. $5 + (-5) = 0$

5. $7(2+8) = 7(2) + 7(8)$

6. $(6 \cdot 5) \cdot 7 = 6 \cdot (5 \cdot 7)$

Use the properties and definitions of operations to show that the statement is true. Justify each step.

7. $6 \cdot (a \div 3) = 2a$

8. $(12b+15) - 3b = 15 + 9b$

9. $2(2x+4) - 3x = x+8$

10. $3(a+4) + 7 = 3a+19$

11. $9 \div [7 - (3+1)] = 3$

12. $3a - (7 + 2a) = a - 7$

13. $5g(x \div 2) = \frac{5}{2}x$

Tell whether the statement is always, sometimes, or never true for real numbers a , b , and c . Explain your answer.

14. $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

15. $(a - b) - c = a - (b - c)$

16. $(a \div b) \div c = a \div (b \div c)$

17. $a(b \div c) = ab \div ac$

18. Let $\frac{a}{b}$ and $\frac{c}{d}$ be two distinct rational numbers. Find the rational number that lies halfway between $\frac{a}{b}$ and $\frac{c}{d}$ on a number line.

Review

19. List the members of the set belonging to $\{p \mid p \text{ is a natural number less than } 5\}$.

20. Graph the following on a number line:

a. All integers between -2 and 3.

b. All natural numbers greater than -3.

c. All Real Numbers.

D. All whole numbers less than 4.

21. The Dead Sea (the lowest point on Earth) is at an elevation of -1385 feet. Mount Everest (the highest point on Earth) is at an elevation of 29,029 feet. Write an algebraic expression to find the difference between the two elevations. What is the difference?

Thursday, August 28: Solving linear equations

Solve the equation on your own paper. Show all work. Check your answer.

1. $4n - 7 = 5 - 2n$

2. $5m - 2 = -m - 2$

3. $6 - 5b = b + 9$

4. $5d + 17 = 4(d + 3)$

5. $-4(n + 2) = 3(n - 4)$

6. $3(x + 5) = 3x + 15$

7. $-2(4 - 3x) + 7 = 6(x + 1)$

8. $\frac{1}{5}d + \frac{1}{8}d = 2$

9. $\frac{4}{7}z + \frac{2}{3}z = 13$

10. $\frac{1}{2}x + 4 = -\frac{2}{3}x + \frac{1}{2}$

11. $\frac{2}{3}a - \frac{1}{12} = a + \frac{1}{8}$

12. $5(x - 4) = 5x + 12$

13. $7(t - 3) = 2(t - 9) + 2t$

14. $5(2 - x) = 3 - 2x + 7 - 3x$

15. $3(2x - 5) - x = -7(x + 3)$

16. $1.1h + 1.3 = 6.8$

17. $3.8w + 3.2 = 2.3(w + 4)$

18. $\frac{3}{5}(8r - 5) = -\frac{4}{5}(7 - 6r)$

19. $\frac{5}{3}(w - 4) = \frac{2}{3}(w + 4) + \frac{2}{3}w$

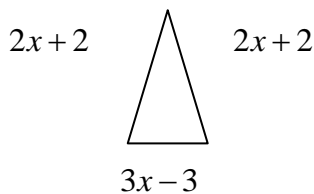
20. $0.8x + 2 = 2 - 0.4x$

*21. **Challenge.** Solve the equation $ax + b = cx + d$ for x in terms of a , b , c , and d . Under what circumstances is there no solution? Under what conditions are all real numbers solutions?

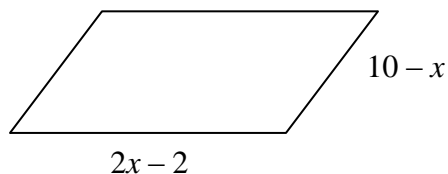
22. **Catalog Purchase.** You are ordering T-shirts from a catalog. Each T-shirt costs \$15. The cost of shipping is \$6 no matter how many you order. The total cost is \$111. How many T-shirts did you order?

23. **Car Sales.** A salesperson at a car dealership has a base salary of \$25,000 per year and earns a 5% commission on total sales. How much must the salesperson sell to earn \$50,000 in one year?

24. Solve for x . Then find the length of each side of the figure. The perimeter of the triangle is 29 feet.



25. Solve for x . Then find the length of each side of the figure. The perimeter of the parallelogram is 26 inches.



Friday, August 29: Solving literal equations

Solve for the indicated variable:

1. $ax - by = mx + y$ (for y)
2. $\frac{3}{x} + \frac{2}{y} = -4$ (for y)
3. $x + by = mx$ (for y)
4. $\frac{a}{x} - \frac{b}{y} = c$ (for y)
5. $ax + by = x - dy$ (for y)
6. For problems #5: What values of "x" would give us All Real Solutions.
What values of "x" would give us No Solution.

Tuesday, September 2

I. Graph the solution set of each compound sentence. Rewrite each solution as an inequality.

1. $n < -7$ or $n \geq 0$
2. $a < -3$ and $a > 5$
3. $x \geq -4$ or $x > 3$
4. $x > 2$ or $x < 6$
5. $m \leq -3$ and $m < 1$
6. $h > -1$ and $h < 7$
7. $g \geq 8$ or $g < 9$
8. $x > -2$ and $x > 1$
9. $a \leq 3$ or $a < 0$
10. $m \geq -1$ or $m < -4$
11. $y > 7$ and $y < 3$
12. $c < 4$ and $c < 7$

Wednesday, September 3

I. Solve the following equations.

1. $|x| = 9$
2. $|m - 5| = -3$
3. $|k + 3| = 6$
4. $|6 - p| = 4$
5. $|2d - 5| = 13$
6. $|3p - 6| = 21$
7. $|5 + 2j| = 9$
8. $\left| \frac{1}{4}x - 3 \right| = 10$
9. $2|y + 1| = 8$
10. $|3y - 7| + 8 = 13$
11. $|3 - 3x| = 0$
12. $4|m + 5| - 3 = 1$
13. $\frac{1}{2}|5 - m| = 7$
14. $-3|x - 7| - 4 = -16$
15. $-|2x + 6| = 3$
16. $3|20 - 9m| + 4 = 25$
17. $\left| \frac{1}{2}y + 4 \right| - 1 = 7$
18. $-2|7h - 10| - 5 = -13$

II. Solve the following. Check for Extraneous solutions.

19. $|3x - 4| = x$
20. $|8x - 1| = 6x$
21. $|x + 24| = -7x$
22. $|9 - 2x| = 10 + 3x$
23. $4|x + 5| - 3x = -7x$
24. $-|2x - 3| + 4 = x + 3$
25. $\frac{1}{2}|x + 7| - 4x = 3$

Thursday, September 4

I. Solve the following.

1. $|x| \leq 5$

2. $|n-11| \geq 1$

3. $|f+6| < 2$

4. $|h+10| \leq 10$

5. $|2x+6| \geq 10$

6. $|5z+1| > 14$

7. $|2x-7| < -3$

8. $|24-q| \leq 11$

9. $|19-5t| > 7$

10. $\left|\frac{1}{2}x-10\right| < 6$

11. $\left|\frac{2}{5}x-8\right|+4 \geq 12$

12. $|x+8| > -4$

13. $|x+1| < -25$

14. $|3x-7| > 0$

15. $|3x-7| \leq 0$

16. $2|3x-1| > 14$

17. $-\frac{1}{2}|x-7|+4 \leq 3$

18. $3|2x+3|-7 > 5$

19. $-|3x-8|+9 < 14$

20. $2|4x+9|-4 > -6$

21. $|y|-7 \geq 4$

22. Solve the inequality for x in terms of a , b , and c . Assume a , b , and c are real numbers and $c > 0$.

$$|ax+b| < c \text{ where } a > 0.$$

23. **Gymnastics.** The horizontal bar used in gymnastics events should be placed 110.25 inches above the ground, with a tolerance (margin of error) of 0.4 inches. Write an absolute value inequality for the acceptable heights.

24. **Temperature.** The recommended oven setting for cooking a pizza in a professional brick-lined oven is between 550 degrees F and 650 degrees F, inclusive. Write an absolute value inequality for this temperature range.

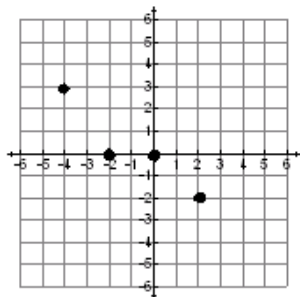
Monday September 8: Domain and Range (Notes)

State the domain and range for each picture in set builder notation and then tell if the picture is a function (yes or no). In the blanks below each graph, write the Domain and Range in Interval Notation

1) Domain _____

Range _____

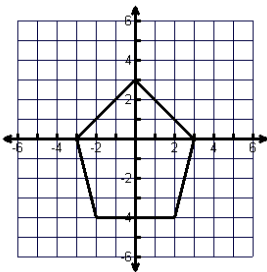
Function? _____



2) Domain _____

Range _____

Function? _____



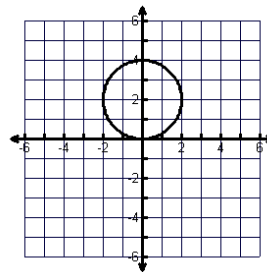
D: _____

R: _____

3) Domain _____

Range _____

Function? _____



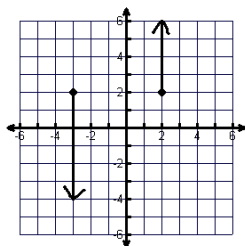
D: _____

R: _____

4) Domain _____

Range _____

Function? _____



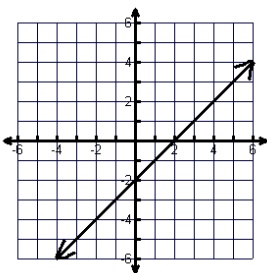
D: _____

R: _____

5) Domain _____

Range _____

Function? _____



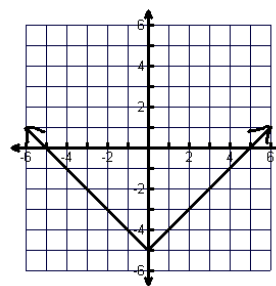
D: _____

R: _____

6) Domain _____

Range _____

Function? _____



D: _____

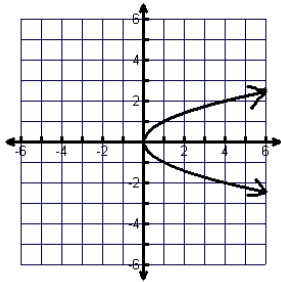
R: _____

Over →

7) Domain _____

Range _____

Function? _____



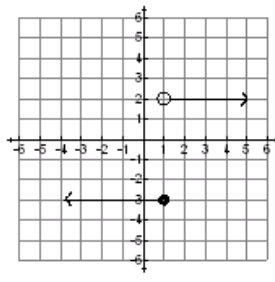
D: _____

R: _____

8) Domain _____

Range _____

Function? _____



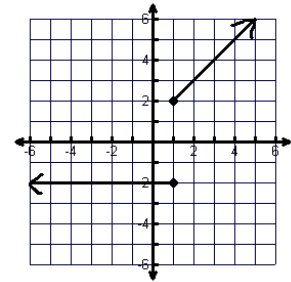
D: _____

R: _____

9) Domain _____

Range _____

Function? _____



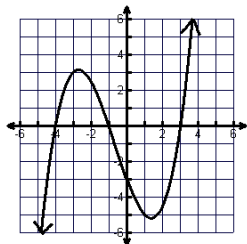
D: _____

R: _____

10) Domain _____

Range _____

Function? _____



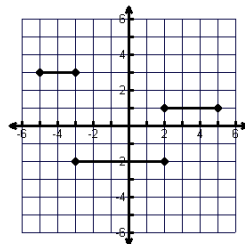
D: _____

R: _____

11) Domain _____

Range _____

Function? _____



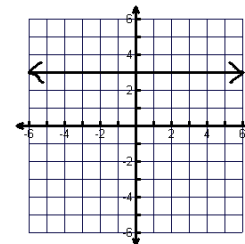
D: _____

R: _____

12) Domain _____

Range _____

Function? _____

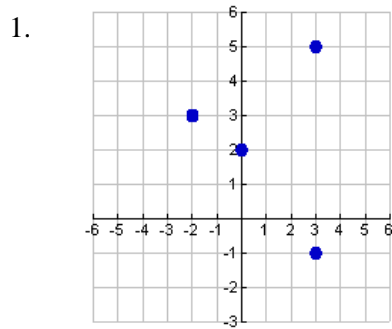


D: _____

R: _____

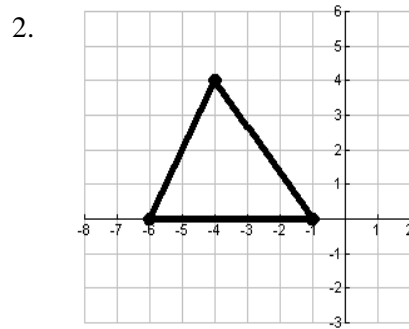
Mon Sept 8: Domain and Range (Homework)

I. For each relation do the following (may need a separate sheet of paper): a) determine if it is a function, b) write the domain and range in set builder AND c) interval notation



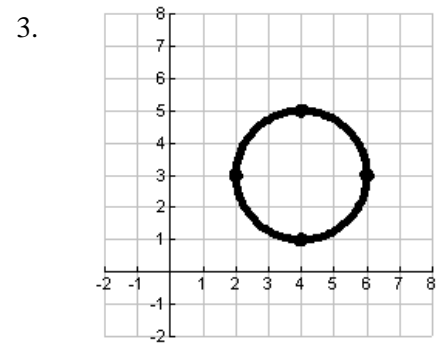
D: _____

R: _____



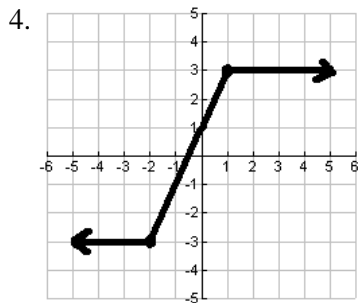
D: _____

R: _____



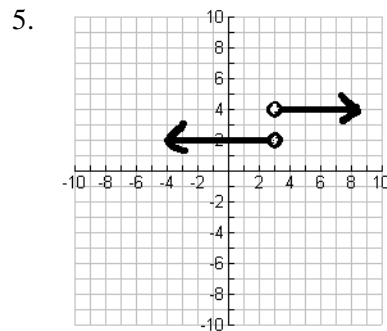
D: _____

R: _____



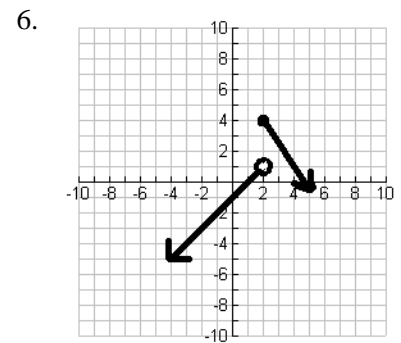
D: _____

R: _____



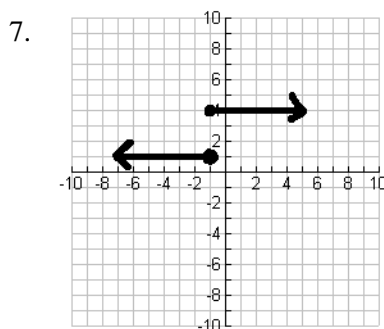
D: _____

R: _____



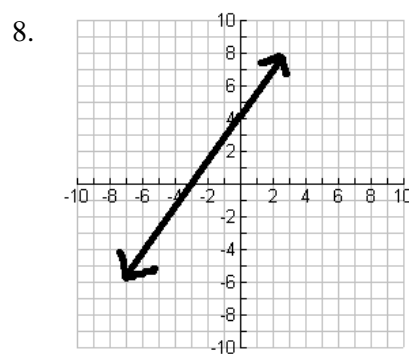
D: _____

R: _____



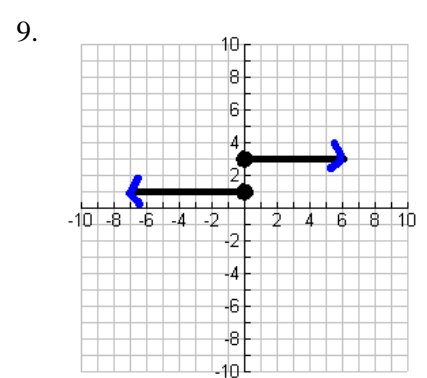
D: _____

R: _____



D: _____

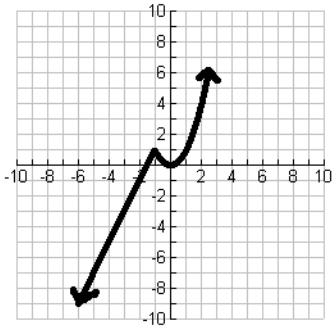
R: _____



D: _____

R: _____

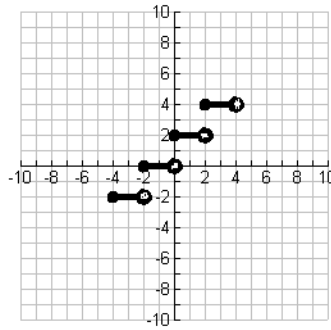
10.



D: _____

R: _____

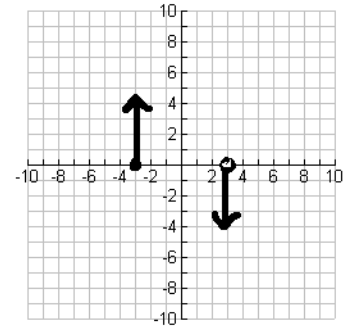
11.



D: _____ D: _____

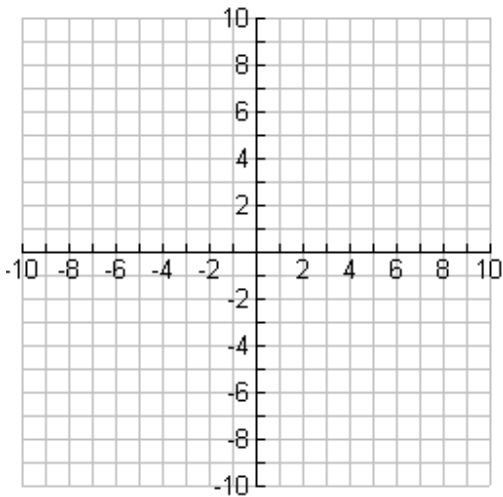
R: _____ R: _____

12.

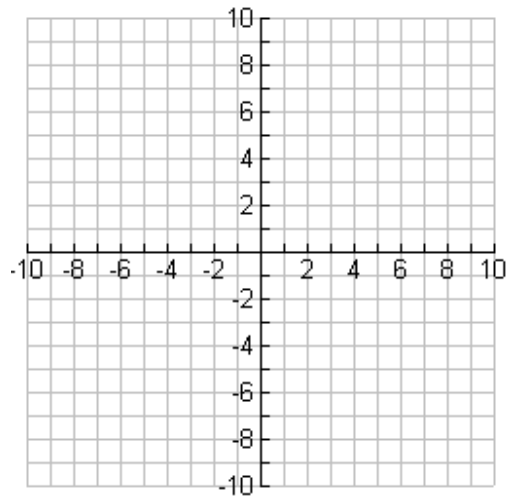


II. Graph a function with the following domain and range.

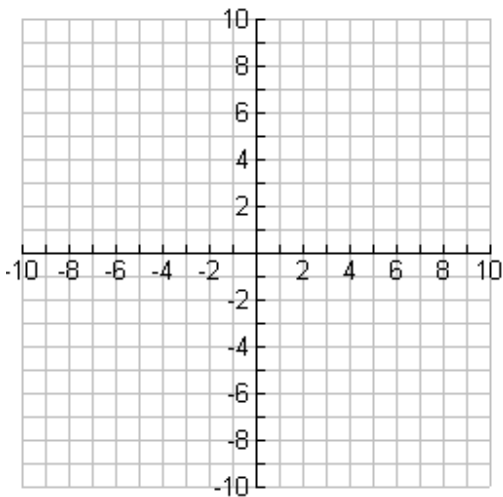
13. Domain: $x \geq 2$
Range: $y \leq 1$



14. Domain: $x \leq -1$ or $x \geq 2$
Range: $y \leq -2$



15. Domain: $-4 < x \leq 7$
Range: $-2 < y \leq 4$



16. Domain: $x \geq 2$
Range: $y < -2$ or $y > 3$

