

Honors Algebra II Summer Assignment

Pinkston 2023-2024

This “shortened” packet contains assigned problems only.



Possible online Resources if you don't remember or know how to do a problem.

www.purplemath.com

or try

<http://www.khanacademy.org/>

The first and second chapters of the textbook we will be using (up to section 2.5) contain a review of basic Algebra concepts. Instead of using class time to discuss these topics, I am assigning problems to you for the summer! ☺ I have compiled a packet of problems from various websites and combined those problems with my notes. **Your textbook: Holt McDougal (Algebra II) Larson**

This packet has **problems for you to complete.**

Be sure to read and follow all stated directions.

DIRECTIONS:

Complete the problems with quality. Do your best to review the material. Be prepared to ask questions the first week of school.

This packet will **NOT** be due on the first day of school, as it has been in years past. **You will be required to submit the Summer Assignment in three submissions: dates to be determined.** There will also be a Summative Summer Assignment test within the first two-three weeks of school.

It is in your best interest to complete the packet, by the start of school, with quality. It is to be considered a review of pre-requisite content.

Supplies:

- It is strongly suggested that you purchase a graphing calculator for the upcoming year. Check your local office supply store/on line. There are several on the market, however, the Texas Instruments: TI-84 and TI-84plus “family” of calculators are the preferred choice here at Brandywine. A few calculators that may NOT be used on tests and quizzes are the TI-Nspire CAS, TI-89, (non-remote -DESMOS graphing calculator), and the TI-92 (Or any Casio, Hewlett-Packard, etc. equivalent).
- There will be a classroom set of graphing calculators for your use IN SCHOOL.
- **Please purchase a three – ring binder, 2.5 to 3 inch.** A one - inch binder will not be large enough to last throughout the entire school year.

I may check my school email every 2-3 weeks during the summer in case you have any concerns:

mary.pinkston@bsd.k12.de.us

Have a wonderful summer and I will see you soon! Ms. Pinkston ☺

The Summer Assignment contains “sections.” In the full packet, there are hints, formulas, or notes at the beginning of each section. This edited packet contains problems only.

Summer Assignment problems:

Simplify each numerical/algebraic expression. Show all work! Only use a calculator to check.

1) $37 - (2^3 + 5 \times 2 - 3)$

2) $\frac{15 - [8 - (2 + 5)]}{18 - 5^2}$

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

4) $4(-3x + 7) - (9 + 11x)$

Evaluate.

1) $x \left(\frac{y}{2} + 3z^2 \right) - 2x$ if $x = \frac{1}{2}$, $y = 4$, $z = -2$

2) $12a - 4a^2 + 7a^3$ if $a = -10$

3) $\frac{-b + \sqrt{b^2 - 4ac}}{2a}$ if $a = 1$, $b = -4$, $c = -21$

4) $1.2(3)^x$ if $x = 5$

Express the following in simplest radical form.

1) $\sqrt{63}$ _____ 2) $\sqrt{72}$ _____ 3) $\sqrt{242}$ _____ 4) $\sqrt{256}$ _____ 5) $\sqrt{147}$ _____

Simplify each expression. Answers should be written using positive exponents.

1) $m^5 \cdot m^{11}$ _____

2) $(b^6)^3$ _____

3) w^{-17} _____

4) $\frac{y^{12}}{y^8}$ _____

5) $(3x^7)(-5x^{-3})$ _____

6) $(-9z^3bcd^0)^5$ _____

7) $\frac{-15x^7y^{-2}}{25x^{-9}y^5}$ _____

8) $\left(\frac{4x^9}{12x^4} \right)^3$ _____

Solve for the indicated variable. Circle your answers.

1) $6n + 2 = 14n - 10$

2) $9(y + 2) - 12 = -51$

*3) $2x^2 = 100$

4) $5 + 2(k + 4) = 5(k - 3) + 10$

5) $\frac{1}{2}x - 8 = 3$

6) $-5 + \frac{b}{4} = 13$

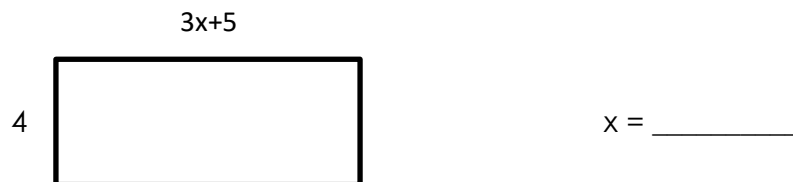
7) $8x - 24 = -6x + 18$

8) $4t + 7 + 6t = -33$

9) $4m + 2.3 = 9.7$

10) $\frac{1}{3} + \frac{4}{6}y = \frac{2}{3}$

11) Solve for x given the area = 215 sq. ft.



12) A taxicab company charges each person a flat fee of \$3.85 plus an additional \$.85 per quarter mile.

a. Write an equation that can be used to model the cost for each fare. _____

b. Use the equation to find the cost for one person to travel 8 mi. _____

Perform the indicated operations and simplify. Circle your answers.

1) $(2x - 3)(11x + 7)$

2) $(5x^2 - 4) - 2(3x^2 + 8x + 4)$

3) $-4x(6x + 11)$

4) $(8x - 7)^2$

5) $3x - 4 + 7x - 8 - 10x - 2$

6) $3x^3(4x + 5x^2 - 11x^4)$

7) $5x^3 + 2x^2 - 7x - x^3 + 5x^2 - 18$

8) $(5x^2 + x - 4) - (9x^2 - 4x - 11)$

Problems: Calculate the slope of the line that contains each pair of points. Circle your answers.

1) $(-3, -4)$ $(-4, 6)$

2) $(-4, -6)$ $(-4, -8)$

3) $(-5, 3)$ $(-11, 3)$

Do the problem. Circle your answer.

- 4) Application: The number of U.S. cell phone subscribers increased from 16 million in 1993 to 44 million in 1996. Determine the average rate of change and use it to estimate the number of subscribers in 2010. (*Use the formula for slope. Time is the INDEPENDENT VARIABLE (x).*)

Answer: _____

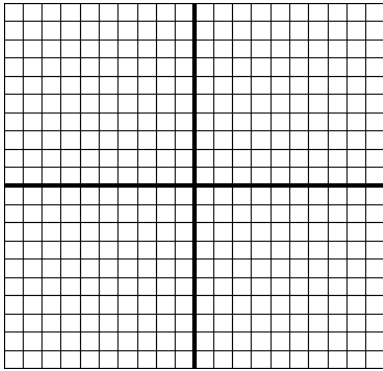
What influences could support or refute your estimate? _____

Complete the following.

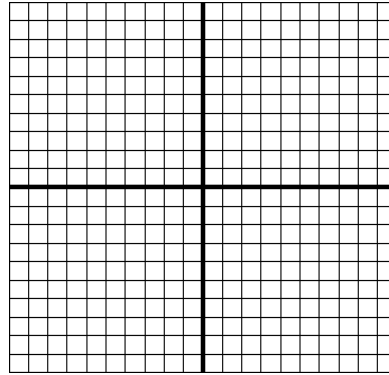
5. A hot air balloon is currently at an altitude of 10,000 feet. The pilot begins to **descend** the balloon at a rate of 36 feet per minute.
- a) Write an equation for the altitude (A) of the balloon as a function of the time (t). _____
- b) Find the altitude of the balloon after:
- i. 10 minutes _____ ii. 30 minutes _____ iii. 1 hour _____

Sketch the graph of each line in the space provided.

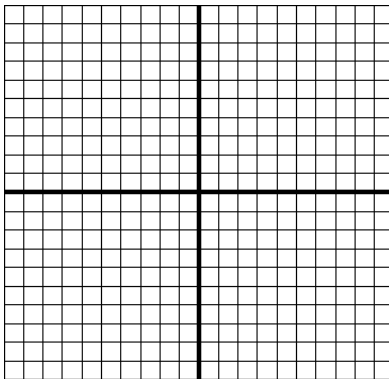
6. $y = 1x + 5$



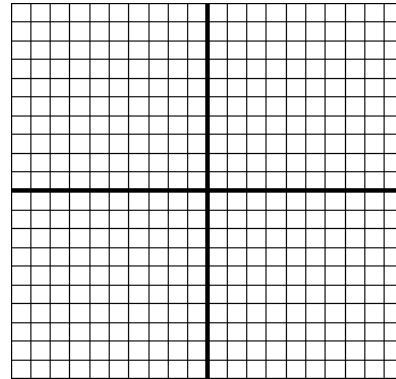
7. $y = -2x$



8. $y = \frac{5}{4}x - 8$

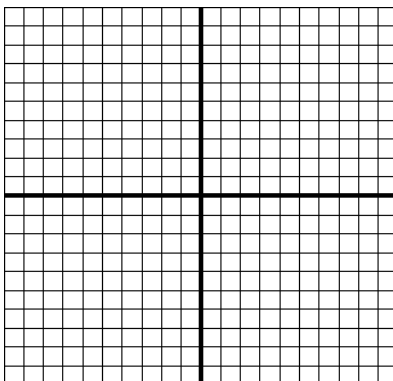


9. $y = -\frac{4}{3}x$

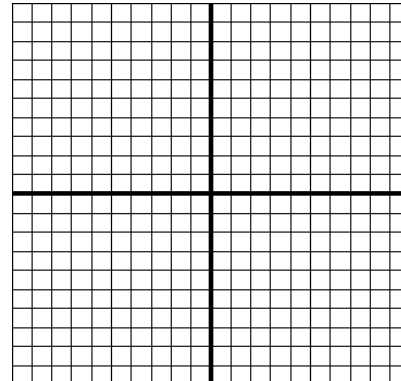


Sketch the graph of these "special" lines in the space provided. (Horizontal/Vertical)

10. $y = 6$



11. $x = -4$



Do this problem.

Which line is steeper?

Line 1: $(1, 2)$ $(9, 12)$ or Line 2: $(-2, 7)$ $(-3, 15)$ Answer: Line _____ is steeper.**Fill in the blanks/complete the problems.**

- 1) How do I re-write a linear equation, written in Standard Form to an equation written in Slope-Intercept form? **Solve for y.**

Given $-4x + 6y = 12$, write in slope intercept form. _____

- 2) How do I write an equation of a line using Point-Slope form?

Given a point on the line and the slope: $(-1, 5)$ $m = \frac{1}{4}$ _____

- 3) How do I write the equations of vertical and horizontal lines?

A horizontal line has a slope of _____.

A vertical line has an **undefined** slope or has _____ slope.

You are to complete problems #4 - 14 on the following pages.

- 4) Write an equation of the horizontal line that passes through the point $(6, -5)$. _____

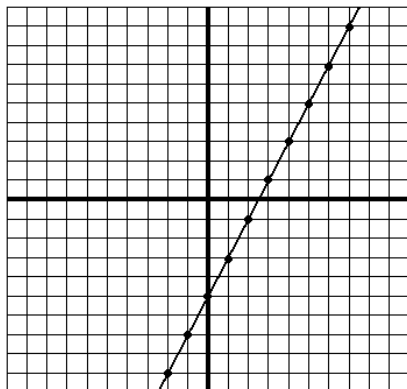
- 5) Write an equation of the line in slope-intercept form that contains the point $(2, -6)$ and has slope $m = 5$.

- 6) Write an equation of the line in slope-intercept form that contains the points $(1, -2)$ and $(4, 7)$.

- 7) Line w is **perpendicular** to $y = 6x - 2$ and passes through the point $(1, -2)$.
What is the equation of line w ?

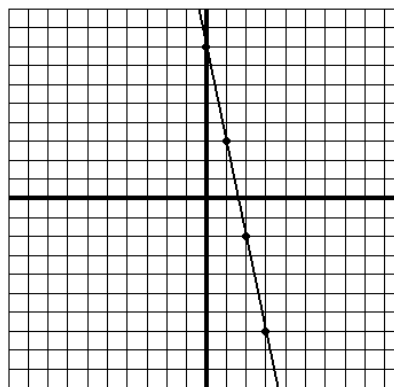
Write an equation of the line that:8) passes through the point $(-5,6)$ with a slope of 12. _____9) passes through the points $(4,1)$ and $(7,-11)$ _____10) passes through the points $(5,13)$ and $(7,13)$ _____

Find the slope and y-intercept and x-intercept of each line.

Then write the equation of each line in $y = mx + b$ form.**11.**

Slope = _____

y-intercept : _____

Equation: $y =$ _____**12.**

Slope = _____

y-intercept: _____

Equation: $y =$ _____13. $y = 4x - 7$

slope = _____

y-intercept (let $x = 0$) = _____x-intercept (let $y = 0$) = _____14. $6x - 3y = 18$

slope = _____

y-intercept (let $x = 0$) = _____x-intercept (let $y = 0$) = _____**Problems:**1. Given the relation: $\{(-2, 3) (8, 7) (10, 4) (-12, 9) (10, 13) (-11, 15)\}$

Domain: { _____ } Range: { _____ }

Is it a function?

Problems: Evaluate each function at the given value.

1) $f(x) = \frac{2x^2}{x-2}$ $f(3) =$ _____ $f(0) =$ _____ $f(-3) =$ _____

2) $f(x) = |5x + 6|$ $f(-2) =$ _____ $f(0) =$ _____ $f(-3) =$ _____

3) $g(x) = 3x + 8$ $g(3) =$ _____ $g(0) =$ _____ $g(-1) =$ _____

4) $h(x) = \sqrt{2x-8}$ $h(12) =$ _____ $h(15) =$ _____ $h(4) =$ _____

5) Bob's **average speed** during a trip is 57 miles per hour. Write a linear function that will model the distance he travels $f(x)$ as a function of the time (x) spent traveling. _____

6) Classify each as a Linear or Non-linear equation. **Circle the linear equations.**

a) $y = x^2 - 4x + 1$

b) $y = -2x + 3$

c) $y = 4^x$

d) $4x + 2y = 8$

e) $y = \frac{5+4x}{x-7}$

f) $y = \frac{4x+9}{3}$

Solve each system of equations by either the substitution method or the linear combination (addition/subtraction) method. Write your answer as an ordered pair.

1) $y = 2x + 4$
 $-3x + y = -9$

2) $2x + 3y = 6$
 $-3x + 2y = 17$

Same directions...

$$\begin{aligned} 3) \quad x - 2y &= 5 \\ 3x - 5y &= 8 \end{aligned}$$

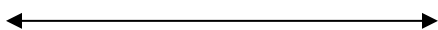
$$\begin{aligned} 4) \quad 3x + 7y &= -1 \\ 6x + 7y &= 0 \end{aligned}$$

IX. Do problems: Solving Linear Inequalities

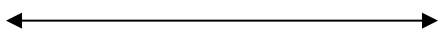
Solve each inequality. Then graph the solution set on a number line.

-Do the same steps that you would do if there were an equal sign. **Remember if you are multiplying or dividing by a negative number you need to reverse the inequality symbol.**

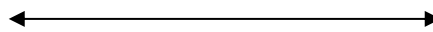
1. $3(y-7) < y+5$



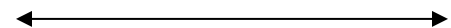
2. $-\left(\frac{3}{2}x+18\right) \leq 6$



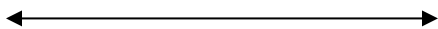
3. $2x - 8 > 14$



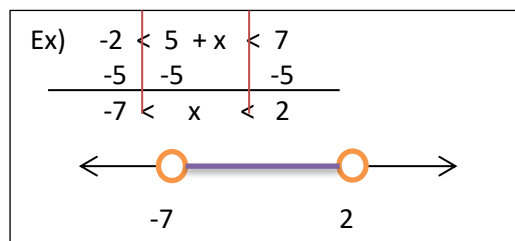
4. $-7 - 5z \geq -3(z+1)$



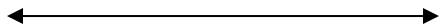
5. $9 < \frac{m}{2} - 3 < 11$



*Be sure to perform the steps to **each** of the three parts of the inequality.

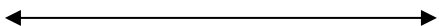


6. $\frac{2}{3}b - 2 > 10$ or $\frac{3}{4}b + 5 < -4$



Solve and graph the solution.

1. $|-6 + 3m| = 6$



Do these problems.

- 2) The number of calories, c , a person burns in the time, t , (in minutes), the person spends performing an activity **vary directly**. A 150 pound person can burn off 75 calories (1 cup of low-fat milk) by sitting in class for 50 minutes. How long must a 150 pound person sit in class to burn off 545 calories (a chicken pot-pie)?

- 3) Which set represents direct variation? Circle it.

X	1	2	3	5
Y	2	4	6	7

X	6	9	12	15
Y	2	3	4	5

Direct Variation word problems:

1. If the sales tax on a \$60 purchase is \$3.90, what would the sales tax be on a \$280 purchase?
2. A real estate agent made a commission of \$11,000 on a house that sold at \$220,000. At this rate, what commission will the agent make on a house that sells for \$450,000?

3. The acceleration of an object varies directly as the force acting on it. If a force of 240 Newtons causes an acceleration of 150 m/s^2 , what force will cause an acceleration of 100 m/s^2 ?

4. On a certain map, a field 280ft long is represented by a 5in. by 8in (long) rectangle. How wide is the field?

5. The stretch in a loaded spring varies directly as the load it support. A load of 15kg stretches a certain spring 3.6cm. What load would stretch the spring 6 cm?

6. The speed of an object falling from rest in a vacuum is directly proportional to the time it has fallen. After an object has fallen for 1.5seconds, its speed is 14.7 m/sec . What is its speed after it has fallen 5 seconds?

7. The speed of an object falling from rest is directly proportional to the square root of the distance the object has fallen. When an object has fallen 36 feet, its speed is 48 ft/sec . How much farther must it fall before its speed is 80 ft/sec ?