Algebra 1 Final Review 2014

** You will be able to have _ONE_ 4x6 note card (Front and Back) on your final!**

- Prioritize your studies by focusing on targets you scored low on 1st –note your scores next to targets.
- Each target is given at least one problem in this packet
- Review problems are listed next to each target – You will need your book – always check answers!
- Answer keys will be available in the classroom and online at www.mahonymath.weebly.com
- After school help is available T/W/Th 2:45-4

Targets	Learning Targets	Ch 1 Problems
T 1-1	I can move between algebraic expressions and verbal expressions.	1.1 Pg. 7 #11-30all
T 1-2	I can use dimensional analysis to convert between units.	Dimensional Analysis Worksheet
T 1-3	I can use the convention of "order of operations" to perform calculations and simplify algebraic expressions.	1.2 Pg. 13 #39-54all

1. Write and algebraic expression to go with this sentence:

   "The difference between the cube of a number and three times that same number."

2. Convert 34 meters per hour to millimeters per second. (1 meter = 100 cm, 1 cm = 10 mm)

3. Evaluate: $\quad -9 + \dfrac{9+21}{3(4+1)} - (-3)$

Targets	Learning Targets	Ch 2 Problems
T 2-2	I can solve multi-step equations.	2.2 Pg. 86 #19-33o, 50-55all 2.3 Pg. 94 #11-22all, 25-29o
T 2-3	I can solve equations with variables on both sides	2.4 Pg. 100 #1-9all, 10-22even
T 2-4	I can interpret and use a proportion to solve a problem.	2.6 Pg. 115 #15-33o, 2.7 Pg. 122 #15-23o, 36-42all

Solve:

1. $\dfrac{3}{4}q - 7 = 8$

2. $\dfrac{3}{12} = \dfrac{2}{x+6}$

3. $75 - 9x = 5(-4 + 2x)$

4. $2(5 - 8x) + 6 = -10 - 16x$

State whether the percent of change is an _increase_ or _decrease_. Then find the percent of change.

5. original: 25
   new: 18

6. original: 36
   new: 45

Targets	Ch 3 Learning Target	Ch 3 Problems
T3-1	I can find the slope and rate of change; interpret it in the context of a problem.	3.3 Pg. 177 # 1-13all
T 3-2	I can graph linear equations using a table.	Graphing with Tables Retake Problems Worksheet
T 3-5	I can determine independent and dependent variables in real world situations.	Independent and Dependent Variables RETAKE WKST

For # 1-4, find the slope.

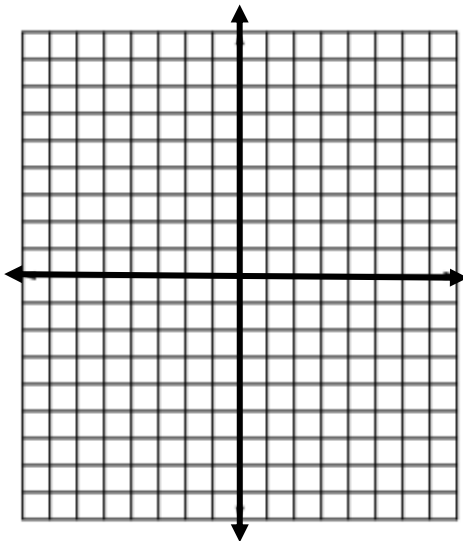1. $(243, 85), (121, -105)$

2. $(-13, 56), (-13, -7)$

3.

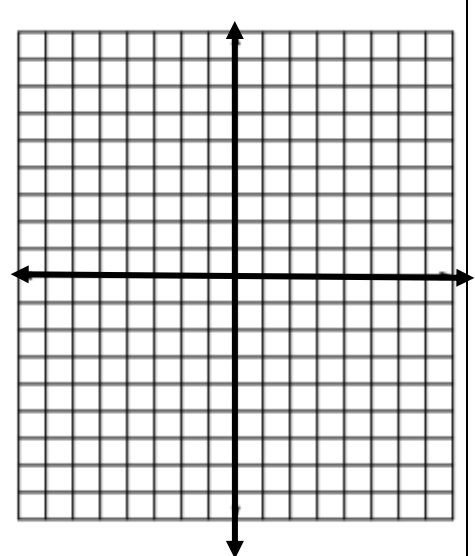| x	y
-16	-1
-6	-5
-1	-7

4. $4x - 5y = 15$

Graph the lines using a table:

5. $y = 2x + 3$

6. $2y - 5 = 10x - 3$

7. Newberg Nickel Arcade charges $5 to get in and $0.05 for each game played.
   The equation $y = 0.05x + 5$ represents the total cost y for x games played. Identify the independent and dependent variables.

8. Peter coaches soccer clinics and charges $15.00 per player. T stands for the total amount of money he makes and P stands for the number of players that sign up. Identify the independent and dependent variables.

Targets	Ch 4 Learning Targets	Ch 4 Problems
T4-1	I can graph equations in slope-intercept form.	Pg. 219 #1-15o
T 4-2	I can write equations in slope-intercept form from real world problems and use the equation to solve problems.	Pg. 229 #1-9all, 24-27all
T 4-4	I can graph scatter plots, write lines of best fit and use them to make predictions	4.5 Retake Worksheet

1. Write an equation in slope-intercept form that has a slope of 4 and passes through (1, 9).

2. Write an equation of the line that passes through (-1, 6) and (3, –2).

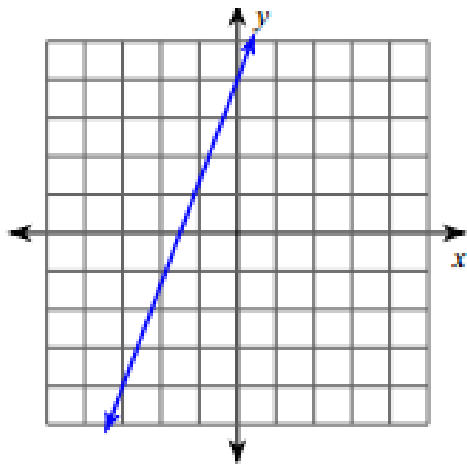3. Slope: -10
   Y-intercept: 0

   Equation: _____

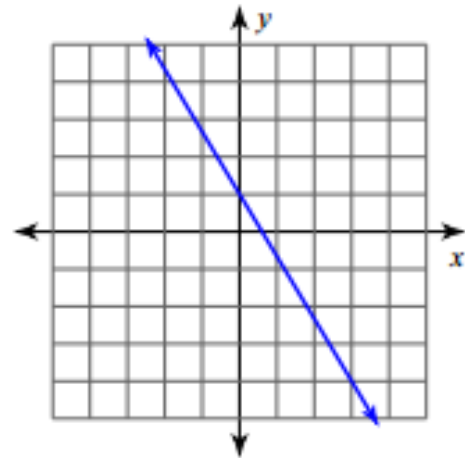4. Slope: $\frac{5}{6}$
   Y-intercept: -8

   Equation: _____

5.
   Slope:_____
   Y-intercept:_____

   Equation: _____

6.
   Slope:_____
   Y-intercept:_____

   Equation: _____

7. Below is a table relating the age of a person and the percent of their money that they have spend on entertainment. **Make a scatter plot of the data**. **Label your graph**

Age	30	40	50	60	70	80
Percent Spent on Entertainment	15	13	12	8	6	4

a. Describe the correlation and what it means.

b. Draw a line of best fit. List two points on the line.
c. Write an equation for the line of best fit.

d. Use your equation to predict the percent spent when a person is 20.

Targets	Ch 4 Learning Targets	Ch 4 Problems
TP-1	I can determine if lines are parallel and write equations for parallel lines.	Retake WS
TP-2	I can determine if lines are perpendicular and write equation for perpendicular lines.	Retake WS

State whether the graphs of the following equations are parallel, perpendicular or neither.

1. $y = 2x$
   $y = 2x - 4$

2. $2y + 3x = 5$
   $3y - 2x = 5$

3. Write an equation perpendicular to the given line through the point:
   $(2, 5)$ and $perpendicular$ to $3x + 5y = 7$

4. Write and equation parallel to the given line through the point.
   $(-6, 5)$ and $parallel$ to $y = \frac{1}{3}x + 9$.

Targets	Ch 5 Learning Targets	Ch 5 Problems
T5-2	I can solve and verify multiple step inequalities and graph them on a number line.	Pg. 300 #13-21o,29-33, 45
T 5-4	I can solve and graph inequalities with two variables.	Pg. 320 #13-23o, 39, 41

1. $-3 > -4 + \frac{k}{9}$

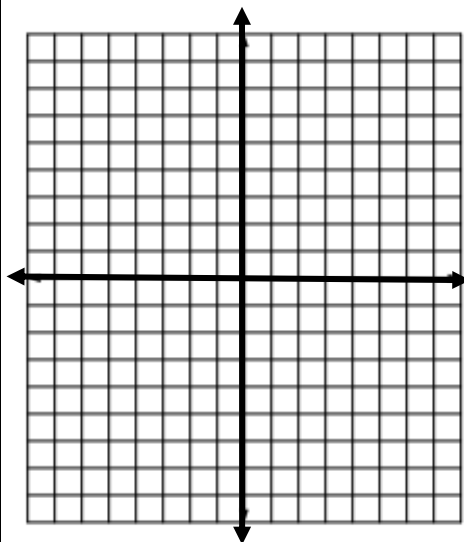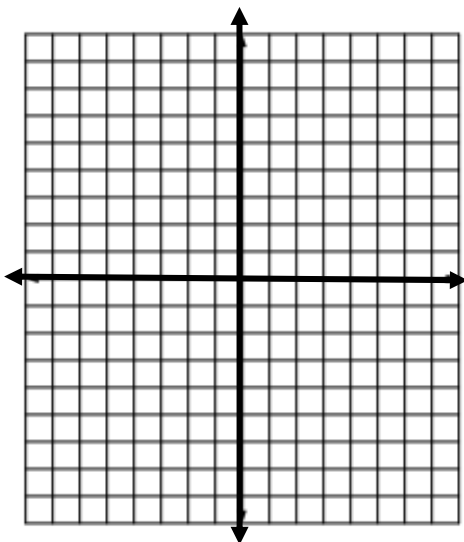2. $-7 \geq \frac{-4+p}{2}$

3. $-7(2 + 5x) + 1 \geq 57$

4. $-2n - 2(3n + 2) \geq -4(1 + 7n)$

Graph and shade the solution set of the following inequalities.

| 1. $y \leq 2x - 3$	2. $5x - 3y < -15$

Targets	Ch 6 Learning Targets	Ch 6 Retake Problems
T 6-1	I can solve systems of equations by graphing.	Pg. 339 #27-35o
T 6-2	I can solve systems of equations by using substitution and determine the number of solutions.	Pg. 347 #9-19o
T 6-3	I can solve systems of equations by using elimination and determine the number of solutions.	Pg. 360 #7-19o

1. $y = \frac{1}{2}x - 3$

   $y = 2 - \frac{3}{4}x$

2. $-x + y = -3$

   $4x + 3y = 12$
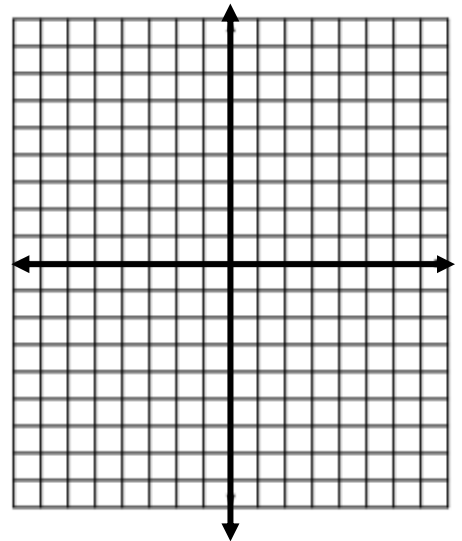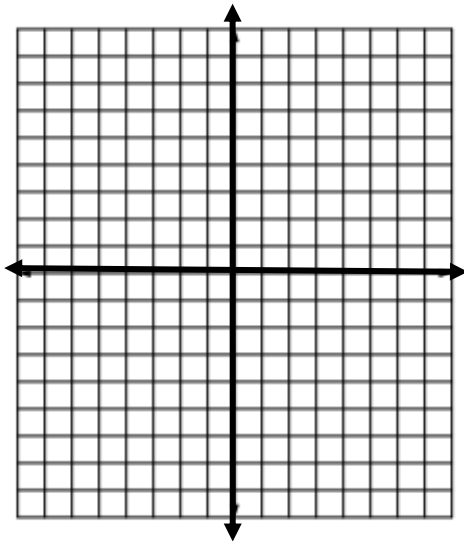
Solve using substitution.
1. $y = -1 - x$
   $y = -13 - 5x$
	2. $-7x - 2y = -13$
	   $x - 2y = 11$

Solve using elimination.
3. $-7x + y = 19$
   $-2x + 3y = -19$
	4. $-4x - 2y = 14$
	   $-10x + 7y = -25$

5. Tickets to a concert are $5 for balcony seats and $10 for orchestra seating. The attendance was 600 and the total money received was $4750. How many people purchased each type of seat?

Targets	Ch 7 Learning Targets	Ch 7 Problems
T 7-1	I can multiply monomials using the properties of exponents and simplify expressions.	7.1 pg. 394 #7-19all
T 7-2	I can divide monomials using the properties of exponents and simplify expressions.	7.2 pg. 402 #1-9, 11
T 7-3	I can use all properties of exponents to solve exponents.	7.2 pg. 402 #19-41o, 53, 56

1. $(2gh^4)^3((-2g^4h)^3)^2 =$

2. $3(7d^2)^4 =$

3. $\dfrac{8a^5b^8}{40a^7b^3} =$

4. $\dfrac{-8x^{12}y^3}{10y^{10}x^6} =$

5. $\left(\dfrac{2x^{-4}}{3y^3}\right)^4 =$

6. $\left(\dfrac{7x^3y^5}{6x^{-9}y^{-3}}\right)^{-2} =$

Ch. 8 Problems

Targets	Ch 8 Learning Targets	Ch 8 Problems
T 8-1	I can perform addition and subtraction on polynomials.	Pg 468 #11-17o, 57
T 8-2	I can multiply polynomials using the distributive & double distributive method or FOIL.	Pg 483 #13-29o Pg 489 #31-37o
T 8-6	I can use factoring and the zero product property to solve quadratic equations.	Factoring to Solve WS#4

Simplify
1. $(5a^2 + 6a + 2) - (7a^2 - 7a + 5)$

Simplify
2. $6t(2t - 3) - 5(2t^2 + 9t - 3)$

Multiply 3. $(4h - 2)(4h - 1)$	Multiply 4. $(w + 4)(w^2 + 3w - 6)$
Factor 5. $7x + 49$	Factor 6. $8m - 6$
Factor 7. $t^2 - 15t + 56$	Factor 8. $-12 - 9m + 3m^2$
Solve 9. $h^2 + 2h = 35$	Solve 10. $a^2 + 14a = -45$
Solve 11. $3h^2 + 2h - 16 = 0$	Solve 12. $15n^2 - n = 2$

T1-2 Dimensional Analysis Retake Problems
(Unit Conversion)

Conversions

1 hour = 60 minutes	1 kg = 2.2 lbs	
1 mile = 5280 feet	1 lb = 0.45 kg	1000 m = 1 kilometer
1 yard = 3 feet	1 quart = 0.946 liters	1000 mm = 1 meter
1 meter = 3.28 feet	1 m/s = 2.2 miles/hour	100 cm = 1 meter
1 km = 0.62 miles	1 foot = 12 inches	10 mm = 1 centimeter
1 light second = 300,000,000 meters	1 inch = 2.54 cm = 25.4 mm	1 minute = 60 seconds

Convert the following quantities using Dimensional Analysis and showing ALL of your work including the units. ANSWERS MUST HAVE UNITS!!

    A. 565,900 seconds into days

    B. 17 years into minutes

    C. 60 miles per hour into meters per second

    D. 130 meters per second into miles per hour

    E. 1100 feet per second into miles per hour

T3-2 Graphing with Tables Worksheet
Graph and label two lines on each grid.

1. $y = -2x$

X		Y

2. $y = x + 3$

X		Y

3. $y = \frac{1}{2}x$

X		Y

4. $y = 2x + 1$

X		Y

5. $y = 4$

X		Y

6. $y = 4x - 2$

X		Y

Independent and Dependent Variables

Identify the independent and dependent variables.

    a. The height of a child at birth and on each birthday from age 1 to age 25

    b. The height of a ball that is thrown upward from the top of a building from the time it is thrown until it hits the ground

    c. The balance of a savings account over time.

    d. The number gallons you buy and the total cost of the gas.

    e. The amount of money you make and the total hours worked.
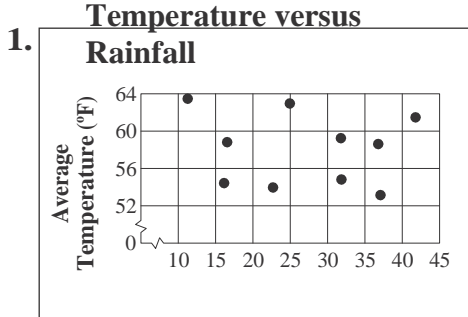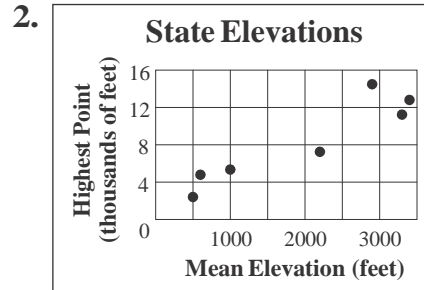
T4-4 Practice
Scatter Plots and Lines of Fit

Determine whether each graph shows a *positive correlation*, a *negative correlation*, or *no correlation*. If there is a positive or negative correlation, describe its meaning in the situation.

1.

Temperature versus Rainfall

Source: National Oceanic and Atmospheric Administration

2.

State Elevations

Source: U.S. Geological Survey

3. DISEASE The table shows the number of cases of Foodborne Botulism in the United States for the years 2001 to 2005.

a. Draw a scatter plot and determine what relationship, if any, exists in the

b. Draw a line of fit for the scatter plot.

c. Write the slope-intercept form of an equation for the line of fit.

U.S. Foodborne Botulism Cases				
Year	2001	2002	2003	2004	2005
Cases	39	28	20	16	18

Source: Centers for Disease Control

U.S. Foodborne
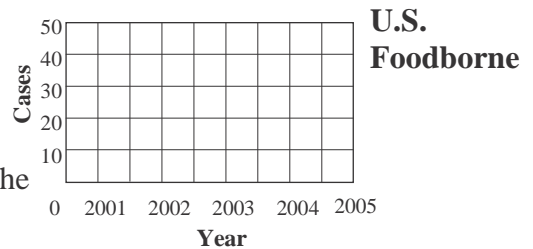
4. ZOOS The table shows the average and maximum longevity of various animals in captivity.

a. Draw a scatter plot and determine what relationship, if any, exists in the data.

b. Draw a line of fit for the scatter

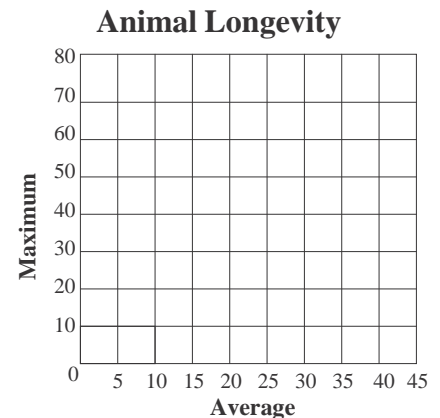**c.** Write the slope-intercept form of an equation for the line of fit.

d. Predict the maximum longevity for an animal

Longevity (years)							
Avg.	12	25	15	8	35	40	41	20
Max.	47	50	40	20	70	77	61	54

Source: Walker's Mammals of the World

Animal Longevity

Section 4-5

T P-1 Parallel Line Retake Problems

State whether the graphs of the following equations are parallel or neither.

1. $x + y = 5$ $x + y = -10$	2. $x + y = 5$ $x - y = 5$
3. $y = 2x$ $y = 2x - 4$	4. $2y + 3x = 5$ $3y - 2x = 5$
5. $3x - 8y = 11$ $3x - 6y = 10$	6. $2y + 3x = 5$ $3y + 3x = 5$

Find an equation of the line that passes through each given point and is parallel to the line with the given equation.

7. $(4, 2)\ y = 2x - 4$	8. $(3, 1)\ \ y = \frac{1}{3}x + 6$
9. $(4, 2)\ \ y = -\frac{3}{4}x - 5$	10. $(-4, 0)\ \ y = -5x + 2$

T P-2 Perpendicular Line Retake Problems

State whether the graphs of the following equations are perpendicular or neither.

1. $x + y = 5$
   $x + y = -10$

2. $x + y = 5$
   $x - y = 5$

3. $y = 2x$
   $y = 2x - 4$

4. $2y + 3x = 5$
   $3y - 2x = 5$

Find an equation of the line that passes through each given point and is perpendicular to the line with the given equation.

5. $(-2, 0)$ $y = -3x + 7$	6. $(2, 5)$ $3x + 5y = 7$
7. $(0, -4)$ $6x - 3y = 5$	8. $(12, 6)$ $\frac{3}{4}x + \frac{1}{2}y = 2$
9. $(1, -5)$ $8y = x + 16$	10. $(4, -1)$ $y = x + 2$