ACADEMIC ALGEBRA II SUMMER PACKET

NAME_____

EAST ALLEGHENY SCHOOL DISTRICT

Donald Mac Fann Principal
Email: dmacfann@eawildcats.net High School
Tele: (412) 824-9700 Ext. 1010 Fax:(412) 825-4570

June 1, 2012

Dear Student,

You will be required to complete a study packet pertaining to the math course that you are scheduled for as of June 8, 2012**. Should you change your schedule, you are required to obtain the corresponding study packet to the new math class selected.** Those packets can be obtained from the high school office or downloaded from the district's website at ***www.eawildcats.net***.

Study packets are due on the first day of school. You will be asked to write down the answers to random questions selected by the instructor. (You will take your answers straight from your completed packet.) Failure to do this will result in a score of **zero**. The score you receive on this **study packet check** will count for **12.5 % of your first nine weeks grade**. Below is the number of questions selected out of the total number of questions for each subject.

- Algebra I: 48 Questions / 144 Total
- Honor's Algebra I: 48 Questions / 144 Total
- Geometry: 25 Questions / 160 Total
- Honor's Geometry: 40 Questions / 176 Total
- Algebra II: 19 Questions / 130 Total
- Honor's Algebra II: 19 Questions / 130 Total
- Algebra III/Trigonometry: 20 Questions / 158 Total
- Honor's Pre- Calculus: 40 Questions / 109 Total
- Integrated Math: 47 Questions / 99 Total
- Statistics: 25 Questions / 133 Total
- College Algebra: 91 Questions / 91 Total
- Honor's Calculus: 30 Questions / 107 Total

Teachers will review, practice and re-teach the study packet material for as long as he/she deems necessary. Upon completion of the review, you will take an exam on the study packet material. The score you receive on this **exam** will count for **12.5% of your first nine weeks grade**.

Your teacher will collect the study packet the same day that the study packet exam is given.

Should you have your math course changed after the school year begins,

- You will not need to complete another study packet if one was already completed but your grade will travel with you to the new class.
- If you do not want your grade to travel with you, you will have the option to
  - Complete a new study packet, study packet check and study packet exam for your new class, if you so desire.
  - This must be completed within one week of the last day to make a schedule change as determined by administration.
  - If you failed to complete a study packet for the original class, then you **must** complete a study packet, study packet check, and study packet exam for the new class. This must be completed by the date determined by the receiving teacher.

Students who transfer in from another school district after the teacher has finished covering the study packet material, **must** take the exam to help the teacher better understand the new student's mathematical abilities. He/she will not be required to complete the study packet and will therefore be **excluded** from the grading of the study packet check and study packet exam.

The next page contains some helpful websites to visit should you experience difficulties completing the work.

You are permitted to sign a textbook out for the summer, however, you will be responsible for the cost of the book if it is not returned in good condition. (Sign out sheets and books are located in the high school office.)

*The hours to borrow a book are listed below. If these hours are not feasible for you, please contact Mr. MacFann, 412-824-9700 ext 1000 or the Superintendent's Office, 412-824-9700 ext 4158.

Monday – Friday (9:00 am – 11:00 am) Monday – Friday (1:30 pm – 3:15 pm)

Helpful Websites

www.phschool.com

- **access to our textbooks used in our Algebra I, Geometry, Algebra II, and Algebra III courses**
- **contains video tutorials on various math topics**
- **Click SuccessNet Login**
- **Use the following user names to login**
- **Algebra I: username : algebra1**
  password: wildcat1
- **Geometry: username: geometry**
  password: wildcat1
- **Algebra II and III: username: algebra2**
  password: wildcat1

www.khanacademy.org – videos on an extensive list of math topics (all levels)

www.calculus-help.com/tutorials - help with advanced math topics

http://www.mathopenref.com – help with geometry topics

www.freemathhelp.com - offers help at all levels

www.purplemath.com/modules/ - offers help at all levels

www.coolmath.com – offers help on a variety of topics

http://coolmath.com/graphit/ - an on-line graphing calculator

http://go.hrw.com/math/midma/gradecontent/manipulatives/GraphCalc/graphCalc.html - an online graphing calculator

http://www.webgraphing.com/ - access to numerous on-line graphing calculators

Other recommendations:

*Google your topic, view you-tube videos, reference a textbook.

Thank you for your continued support,

The East Allegheny High School Math Department

Amanda DeMedio	ademedio@eawildcats.net	Marcie Sippey	msippey@eawildcats.net
Brian See	bsee@eawildcats.net	Sandy McCurdy	smccurdy@eawildcats.net
Frank Szatkowski	fszatkowski@eawildcats.net	Valerie Ekis	vekis@eawildcats.net
Jennifer Smith	jsmith@eawildcats.net		

**If you e-mail a teacher and you do not get a response within 24 hours, you should call/e-mail Mr. MacFann, 412-824-9700 ext 100, dmacfann@eawildcats.net or the Superintendent's Office, 412-824-9700 ext 4158, lsedlak@eawildcats.net.*

ALGEBRA II

Dear Student PLEASE READ,

Please complete the following packet. This packet is a comprehensive review of all of the mathematics that will be necessary to be successful in Academic Algebra II next school year. This packet WILL be collected on September 8th, 2011, the first day of school. We will then review problems from the packet for the next week. You will have a test on the reviewed material on Friday, September 16, 2011. This packet and test will be worth 25% of your first 9-week grade.

Should you lose of misplace your packet over the summer months, you have two options of recovery. You may go to the high school office and ask for another copy of this packet, or you may go online to eawildcats.net and print out another copy for yourself directly from the EA website.

Take your time with this packet, as it is very important to your grade at the beginning of next year. You might want to pace yourself with this packet and complete a few pages each week this summer to keep you from getting frustrated and burnt out. Remember, all concepts within the packet are those which you should already know. It is just a review to prepare you for the start of next year!

Good luck and have a wonderful summer break.

Algebra 2 Teachers

SOLVING EQUATIONS

Objective: To solve equations using more than one transformation.

Example 1

Solve for x.

3x – 7 = 8	
3x – 7 + 7 = 8 + 7	Add 7 to both sides of the equation
3x = 15	Combine like terms
x = 5	Divide both sides by 3

Solve for the variable. Show all the steps. All answers will not be integers; write these as a mixed number.

1. $2x+1=15$

2. $-11+4x=25$

3. $13-5x=22$

4. $7-3x=-10$

5. $-x+16=28$

6. $7x+2=0$

A

Example 2

Solve for x

12 + 3x = 2 + 5x	
12 + 3x – 3x = 2 + 5x – 3x	Subtract 3x from both sides
12 = 2 + 2x	Combine like terms
12 – 2 = 2 – 2 + 2x	Subtract 2 from both sides
10 = 2x	Combine like terms
5 = x	Divide both sides by 2

Solve for the variable. Show all the steps. All answers will not be integers; write these as a mixed number.

7. $2x - 15 + x = 9$

8. $7x - 90 = 120 + x$

9. $8x + 8 = x + 1$

10. $4x + 5 + 5x + 40 = 180$

11. $22 - 13x = -8 - 2x - 18x$

12. $2 + 5x + 18 = -7x + 1$

B

SOLVING EQUATIONS USING THE DISTRIBUTIVE PROPERTY

Objective: To solve equations involving the distributive property.

<u>Example 1</u>
Solve for x.

3(4x – 5) = 9	
12x – 15 = 9	Distribute the 3
12x – 15 + 15 = 9 + 15	Add 15 to both sides
12x = 24	Combine like terms
x = 2	Divide both sides by 2

Solve for the variable. Show all the steps. All answers will not be integers; write these as a mixed number.

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

2. $5(x+7)=0$

3. $6(x-4)+5=11$

4. $-3=7(x-2)+11$

5. $-2(14x+5)=-8$

6. $-(x+7)-4=6$

C

Example 2

Solve for x.

$\frac{1}{2}(x+6)=12$	
$\frac{1}{2}x+3=12$	Distribute
$\frac{1}{2}x+3-3=12-3$	Subtract 3
$\frac{1}{2}x=9$	Combine like terms
$2\bullet(\frac{1}{2}x)=(9)\bullet 2$	Multiply by reciprocal
$x=18$	Simplify

Solve for the variable. Show all the steps. All answers will not be integers; write these as a mixed number.

7. $\frac{1}{3}(x-15)=-1$

8. $\frac{2}{5}(x+10)=18$

9. $-\frac{3}{4}(x+12)=-3$

D

EVALUATING ALGEBRAIC EXPRESSIONS

Objective: To evaluate an algebraic expression

Example

Evaluate the expression if $x = 2$ and $y = -5$

$6x - 2y$	Original problem
$6(2) - 2(-5)$	Substitute the values given into the expression and multiply
$12 + 10$	Add
22	Final answer

Evaluate each expression. Show all work.

1. $2x - (3 - 4y)$, when $x = 5$ and $y = -3$

2. $10x - (4y + z)$, when $x = 2$, $y = 3$ and $z = -4$

3. $4x + (5 - 3y)$, when $x = 5$ and $y = -1$

4. $-7x - (-4x^2 - y)$, when $x = 4$ and $y = -6$

5. $-2x^2 + y^3 - z$, when $x = 2$, $y = -1$, and $z = 2$

6. $\dfrac{2x}{y + 3z}$, when $x = 3$, $y = -1$ and $z = -3$

THE DISTRIBUTIVE PROPERTY

Objective: To use the distributive property

Example

$-4(x+5)+3x$	Original problem
$-4(x)+-4(5)+3x$	Distribute the -4
$-4x-20+3x$	Simplify
$-x-20$	Combine like terms

Simplify the following expressions. Show all work.

1. $4x-2(3+5x)$

2. $x(x-5)-x^2-2$

3. $3(3x-1)-11x-1$

4. $-2(x-5)+3(-4-x)$

5. $4-2(x+5)+3x(x-2)$

6. $15-(x-2)+4(x-3)$

PROPORTIONS

Objective: To solve proportions

Example

$\frac{3a-5}{4} = \frac{a}{3}$	Original problem
$3(3a-5) = 4a$	Cross-multiply
$9a - 15 = 4a$	Distribute
$5a = 15$	Combine like terms
$a = 3$	Final answer

Solve each proportion for the indicated variable. Show all work.

1. $\frac{x}{12} = \frac{2}{3}$

2. $\frac{n}{24} = \frac{n-3}{30}$

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

4. $\frac{x-7}{10} = \frac{x-8}{25}$

5. $\frac{x+6}{x-2} = \frac{2}{x}$

6. $\frac{y}{3} = y - 6$

SOLVING LINEAR EQUATIONS

Objective: To solve a linear equation

Example

$\frac{2}{5}(x-3)=x-2$	Original problem
$\frac{2}{5}x-\frac{6}{5}=x-2$	Distribute the $\frac{2}{5}$
$\frac{5}{1}\left[\frac{2}{5}x-\frac{6}{5}=x-2\right]$	Multiply the entire equation by 5 to clear the fractions
$2x-6=5x-10$	Subtract $5x$ from both sides of the equation
$-3x-6=-10$	Add 6 to both sides of the equation
$-3x=-4$	Divide both sides of the equation by -3
$x=\frac{4}{3}$	Solve for x

Solve each equation. Show all work.

1. $\frac{2}{3}y-8=0$

2. $15-\frac{1}{6}x=-1$

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

4. $2x-1=x-5+3x$

5. $3(y-1)=-(y-5)$

6. $15(1-x)=-3(-x-2)$

7. $\frac{3}{4}(2-x)=x+1$

8. $\frac{1}{3}(y-2)=y+4$

9. $2x-(1-x)=11-x$

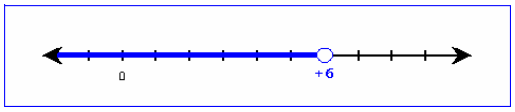
SOLVING LINEAR INEQUALITITES

Objective: To solve and graph simple inequalities

Remember if you multiply or divide by a negative number when solving an inequality you <u>must</u> switch the way the inequality sign points.

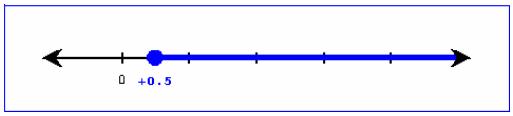
Example 1

$3y-8<10$	Original problem
$3y<18$	Add 8 to both sides
$y<6$	Divide both sides by 3



Example 2

$3x-2\le 5x-3$	Original problem
$3x\le 5x-1$	Add 2 to both sides
$-2x\le -1$	Subtract $5x$ from both sides
$x\ge \frac{1}{2}$	Divide both sides by -2 and reverse the inequality



Solve and graph. Show all work.

1. $3x-1>-4$

2. $3x\ge 6x+12$

3. $y<7y-24$

4. $-\frac{3}{4}x\le -3$

5. $-\frac{x}{2}>\frac{3}{2}$

6. $2-x<4+x$

7. $-12>-4y$

8. $2x+5\le -1$

9. $3(x-2)-2\ge x-5$

FINDING SLOPE OF A LINE

Objective 1: To find the slope of a line when given two points

Objective 2: To find the slope when given an equation of a line

Example 1

Find the slope of the line containing $(-3,4)$ and $(2,1)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$m = \dfrac{1-4}{2-(-3)}$ Substitute values into the formula

$m = \dfrac{-3}{2+3}$ Simplify

$m = -\dfrac{3}{5}$ Simplify

Example 2

Find the slope of the line $2x - y = 1$

Solve the equation for y and put in slope-intercept form.

$y = mx + b$

$-y = -2x + 1$ Subtract $2x$ from each side

$y = 2x - 1$ Multiply both sides by -1

$m = 2$ Slope is 2

Find the slope of the segment defined by the given two points. Show all work.

1. $(3,1)$ and $(6,-4)$
2. $(-2,6)$ and $(10,0)$
3. $(-4,1)$ and $(-5,2)$

Find the slope of each line. Show all work.

4. $9x + 3y = 3$
5. $x + 2y = 4$
6. $-2x + 5y = 12$

EQUATIONS OF LINES

Objective: To write an equation of a line in standard form when given the slope and one point

Example

Write an equation of a line in standard form that passes through the point $(1, 2)$ and has a slope of $\frac{2}{3}$.

$y - y_1 = m(x - x_1)$	Use the ***point-slope form*** to find the equation
$y - 2 = \frac{2}{3}(x - 1)$	Substitute in for m, x_1, and y_1
$y - 2 = \frac{2}{3}x - \frac{2}{3}$	Distributive Property
$y = \frac{2}{3}x + \frac{4}{3}$	Add 2 to both sides
$3y = 2x + 4$	Multiply by 3 on both sides to clear the fractions
$-2x + 3y = 4$	Subtract $2x$ on both sides
$2x - 3y = -4$	Multiply equation by -1 to put equation in ***standard form***

Remember when adding fractions you must find a common denominator.

Example: $-\frac{2}{3} + \frac{2}{1}$

$-\frac{2}{3} + \frac{6}{3}$

$\frac{4}{3}$

Find the equation of the line in standard form for the given slope and point. Show all work.

1. $(3, 1)$ $m = -3$

2. $(0, -4)$ $m = \frac{1}{2}$

3. $(-3, 4)$ $m = \frac{2}{3}$

4. $(4, -2)$ $m = \frac{1}{2}$

5. $(-6, 5)$ $m = -\frac{1}{3}$

6. $(-2, -4)$ $m = \frac{4}{5}$

EQUATIONS OF LINES

Objective: To write an equation of a line in standard form when given two points

Example

Write an equation of a line in standard form that passes through the points $(-3,2)$ and $(5,-2)$

$m=\dfrac{y_2-y_1}{x_2-x_1}$	Find the slope
$m=\dfrac{-2-2}{5-(-3)}$	Substitute values into the formula
$m=-\dfrac{1}{2}$	Simplify to find the slope(m)
$y-y_1=m(x-x_1)$	Use the ***point-slope form*** to find the equation
$y-2=-\dfrac{1}{2}[x-(-3)]$	Substitute one of the above points in for (x_1,y_1) and $-\dfrac{1}{2}$ for m
$y-2=-\dfrac{1}{2}(x+3)$	Simplify
$y-2=-\dfrac{1}{2}x-\dfrac{3}{2}$	Distributive Property
$y=-\dfrac{1}{2}x+\dfrac{1}{2}$	Add 2 to both sides
$2y=-x+1$	Multiply by 2 on both sides to clear the fractions
$x+2y=1$	Add x on both sides to put equation in ***standard form***

In this example the point $(-3,2)$ was used however the point $(5,-2)$ could also have been used.

Remember when adding fractions you must find a common denominator.

Example: $-\dfrac{3}{2}+\dfrac{2}{1}$

$-\dfrac{3}{2}+\dfrac{4}{2}=\dfrac{1}{2}$

Find the equation of the line in standard form for the given two points. Show all work.

1. $(6,2)$ and $(-2,6)$
2. $(-2,-2)$ and $(5,5)$
3. $(6,1)$ and $(0,-3)$

IDENTIFYING PARALLEL AND PERPENDICULAR LINES

Objective: To determine if two lines are parallel or perpendicular

Example 1

Two lines are ***parallel*** if their <u>slopes are the same</u> but they have different y-intercepts.

Line 1 contains $(-2,5)$ and $(4,3)$

Line 2 contains $(-1,3)$ and $(2,2)$

The slope of Line 1 is $\dfrac{3-5}{4-(-2)} = -\dfrac{1}{3}$

The slope of Line 2 is $\dfrac{2-3}{2-(-1)} = -\dfrac{1}{3}$

same slope

Example 2

Two lines are ***perpendicular*** if their <u>slopes are negative reciprocals</u> of each other.

Line 1 contains $(1,4)$ and $(2,7)$

Line 2 contains $(-2,1)$ and $(1,0)$

The slope of Line 1 is $\dfrac{7-4}{2-1} = 3$

The slope of Line 2 is $\dfrac{0-1}{1-(-2)} = -\dfrac{1}{3}$

Negative reciprocal slope

Determine if the lines are parallel, perpendicular, or neither. Show all work.

1. Line 1 contains $(1,7)$ and $(-3,-5)$
   Line 2 contains $(-6,-20)$ and $(0,-2)$

2. Line 1 contains $(4,-4)$ and $(-16,1)$
   Line 2 contains $(1,5)$ and $(5,21)$

3. Line 1 contains $(3,-13)$ and $(22,4)$
   Line 2 contains $(6,2)$ and $(-8,9)$

Write each equation in slope-intercept form and find the slope of each line. Compare the slopes and determine if the lines are parallel, perpendicular, or neither. Show all work.

4. $\begin{cases} x+y=-2 \\ x-y=6 \end{cases}$

5. $\begin{cases} y=2x-1 \\ 2x-y=-3 \end{cases}$

6. $\begin{cases} x+2y=-1 \\ 3x-y=1 \end{cases}$

GRAPHS OF LINEAR EQUATIONS

Objective: To use *x* and *y*-intercepts to sketch a quick graph of a line

Example

Use *x* and *y*-intercepts to sketch the line of $3x+5y=15$.

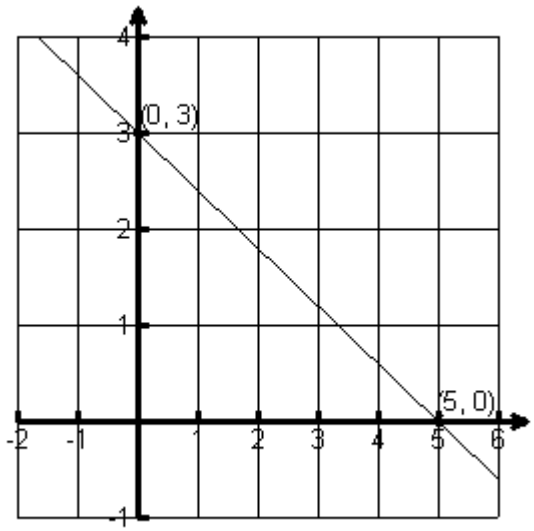
x-intercept

$3x+5y=15$	Original problem
$3x+5(0)=15$	Find *x*-intercept by setting *y* = 0
$x=5$	*x*-intercept is $(5,0)$

y-intercept

$3x+5y=15$	Original problem
$3(0)+5y=15$	Find *y*-intercept by letting *x*= 0
$y=3$	*y*-intercept is $(0,3)$

To sketch the line, plot the intercepts, and draw a line through them.



Sketch the graph of each line using the *x* and *y*-intercepts. Show all work.

1. $9x+3y=18$

   x-int: _____

   y-int: _____

2. $5x-10y=10$

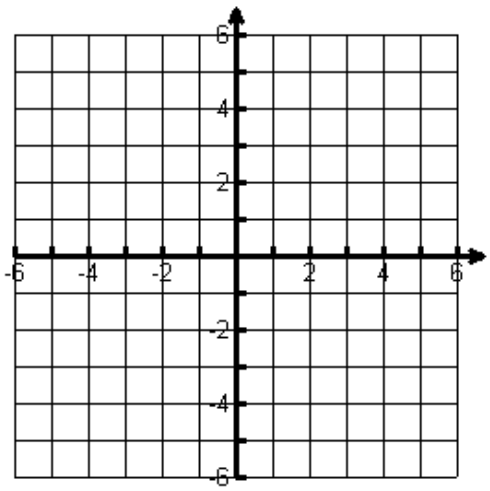
   x-int: _____

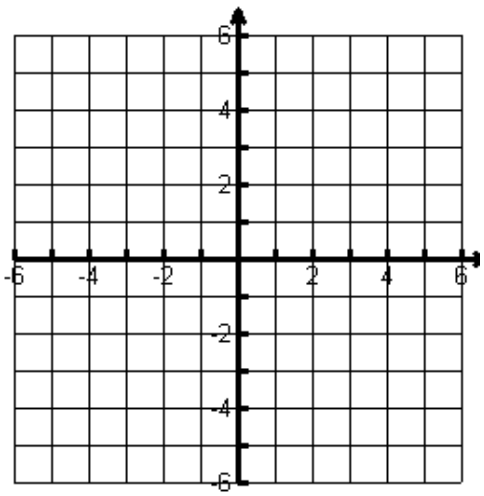
   y-int: _____

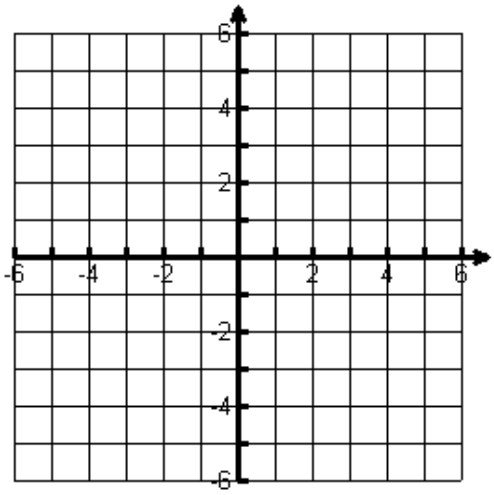
3. $16x+2y=8$

   x-int: _____

   y-int: _____







GRAPHS OF LINEAR EQUATIONS

Objective: To use slope-intercept form of a line to sketch a quick graph of a line

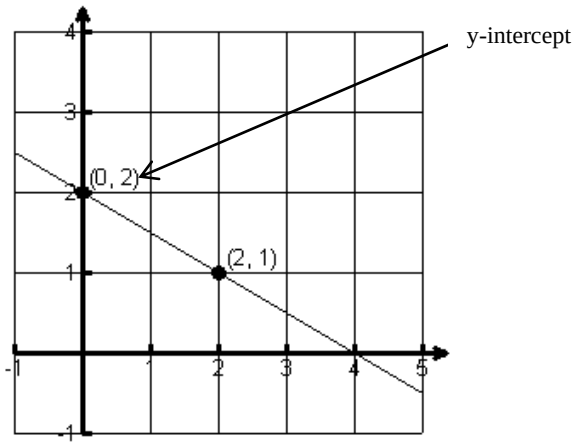
Example

Sketch the graph of the line $x + 2y = 4$.

Begin by solving the equation for y

$x + 2y = 4$	Original problem
$2y = -x + 4$	Subtract x from both sides
$y = -\frac{1}{2}x + 2$	Divide both sides by 2
$m = -\frac{1}{2},\ b = 2$	List the slope(m) and the y-intercept(b)

To sketch the line, first plot the y-intercept (0, 2) then locate the second point by moving 1 unit down and 2 units to the right. Finally, draw the line through the two points.



Sketch the graph of each line using the slope and the y-intercept. Show all work.

1. $x - 2y = 4$

   m = _____

   y-int: _____

2. $2x + 3y = 9$

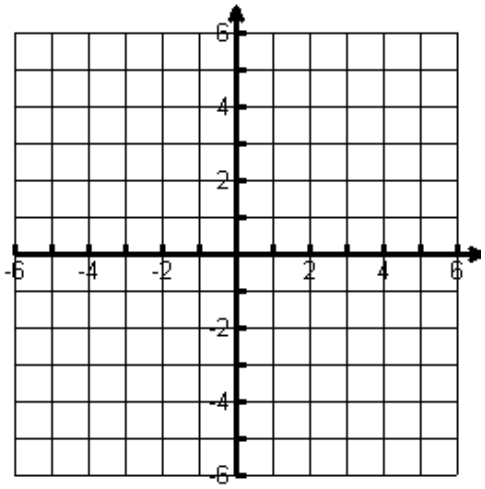
   m = _____

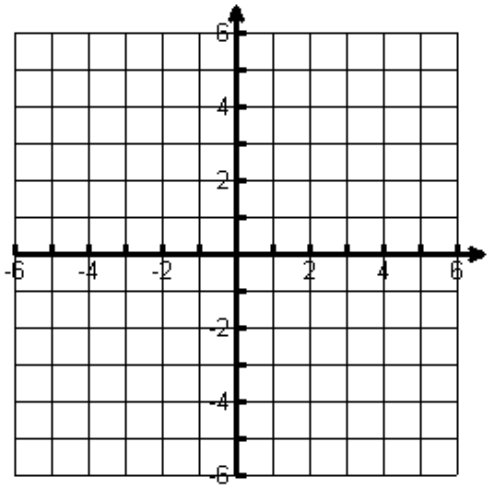
   y-int: _____

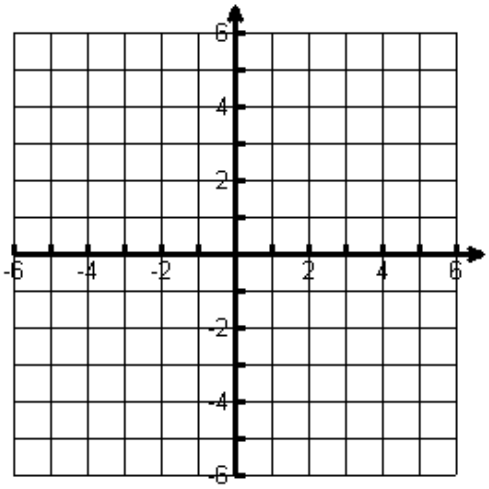
3. $-4x + 2y = -1$

   m = _____

   y-int: _____







SYSTEMS OF EQUATIONS (SUBSTITUTION)

Objective: To solve a system of equations using substitution

Example

Hint: Pick the equation that has a variable with a coefficient of 1.

$3x - y = 9$
$2x + 5y = -11$

Original system of equations

$3x - y = 9$
$-y = -3x + 9$
$y = 3x - 9$

Solve one of the equations in terms of a variable

$2x + 5y = -11$
$2x + 5(3x - 9) = -11$

Substitute $3x - 9$ in for y in the other equation

$2x + 15x - 45 = -11$
$17x - 45 = -11$
$17x = 34$
$x = 2$

Solve for x

$3x - y = 9$
$3(2) - y = 9$

Substitute the value for x in to the other given equation to find y

$6 - y = 9$
$y = -3$

Solve for y

$(2, -3)$

Write your answer as an ordered pair

Use the substitution method to solve the system of equations. Show all work.

1. $\begin{aligned} x - 2y &= -1 \\ 5x - 7y &= 4 \end{aligned}$

2. $\begin{aligned} 4x + 3y &= 3 \\ 2x + y &= -3 \end{aligned}$

3. $\begin{aligned} 10x - 16y &= 17 \\ x + y &= 3 \end{aligned}$

4. $\begin{aligned} 2x - y &= 6 \\ 2x + 2y &= -9 \end{aligned}$

5. $\begin{aligned} 2x + 3y &= 7 \\ x - 2y &= -7 \end{aligned}$

6. $\begin{aligned} 3x - y &= -2 \\ -4x + 2y &= 5 \end{aligned}$

SYSTEMS OF EQUATIONS (LINEAR COMBINATION)

Objective: To solve a system of equations using linear combination

Example 1

$2x+7y=-1$ $-x-2y=2$	Original system of equations
$2x+7y=-1$ $2(-x-2y=2)$	Multiply the second equation by 2 so that x will cancel out
$\cancel{2x}+7y=-1$ $\underline{-\cancel{2x}-4y=4}$ $3y=3$ $y=1$	Add the two equations together Solve for y
$2x+7y=-1$ $2x+7(1)=-1$	To find x substitute the value of y (found in the last step) into one of the original equations
$2x+7=-1$ $2x=-8$ $x=-4$	Simplify Solve for x
$(-4,1)$	Write your answer as an ordered pair

If no variable in either equation has a coefficient of 1 then use this method.

Example 2

$3x+5y=6$ $-4x+2y=5$	Original system of equations
$4(3x+5y=6)$ $3(-4x+2y=5)$	Multiply the first equation by 4 Multiply the second equation by 3
$\cancel{12x}+20y=24$ $\underline{-\cancel{12x}+6y=15}$ $26y=39$ $y=\frac{3}{2}$	Add the two equations together Solve for y
$-4x+2y=5$ $-4x+2\left(\frac{3}{2}\right)=5$	To find x substitute the value of y into one of the original equations
$-4x+3=5$ $-4x=2$ $x=-\frac{1}{2}$	Simplify Solve for x
$\left(-\frac{1}{2},\frac{3}{2}\right)$	Write your answer as an ordered pair

Use the linear combination method to solve the system of equations. Show all work.

1. $\begin{aligned} 5x - 7y &= 4 \\ x - 2y &= -1 \end{aligned}$

2. $\begin{aligned} 4x + 5y &= -3 \\ -x + y &= 3 \end{aligned}$

3. $\begin{aligned} 3x - 4y &= 12 \\ 6x + 2y &= -11 \end{aligned}$

4. $\begin{aligned} 3x - 8y &= 1 \\ 6x + 2y &= 11 \end{aligned}$

5. $\begin{aligned} 5x - 2y &= -15 \\ 7x + 5y &= 18 \end{aligned}$

6. $\begin{aligned} 2x - 5y &= -4 \\ 4x + 3y &= 5 \end{aligned}$

Objective 1: To create a box and whisker plot given a set of data

Example

Draw the box-and-whisker plot for the following data set:

79 77 87 86 99 87 80 94

You will need to find the following values:

a) the minimum and maximum values
b) Q_1, Q_2, and Q_3

Solution:

Start by putting the data in numerical order.

77 79 80 86 87 87 94 99

Find the median, or the middle number. Since there are eight data points, the median will be the average of the two middle values: (86 + 87) ÷ 2 = 86.5

The median is also called quartile 2 or Q_2

Next split the list of numbers into two halves:

77 79 80 86 | 87 87 94 99

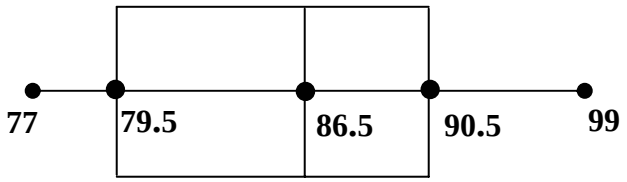
Find the median, or middle number of each half. Since the halves of the data set each contain an even number of values, the sub-medians will be the average of the middle two values.

Q_1 = (79 + 80) ÷ 2 = 79.5
Q_3 = (87 + 94) ÷ 2 = 90.5

The minimum value of the data set is 77 and the maximum value is 99, so you have:

min = 77, Q_1 = 79.5, Q_2 = 86.5, Q_3 = 90.5, max = 99

Plot each of these five numbers on a number line. The "box" part of the plot goes from Q_1 to Q_3.



The "whiskers" part of the graph are drawn to the endpoints.

Objective 2: To find the mean, median, mode, and range of a stem-and-leaf plot

Example

Find the mean, median, mode, and range of the following stem-and-leaf plot:

The number 38 would be represented as

Stem	Leaf
3	8

Math Test Scores (out of 50 pts)

Stem	Leaf
3	4 6 8
4	0 2 2 4 5 5 7 8 9
5	0 0 0

Therefore the scores represented in this stem-and-leaf are:

34, 36, 38, 40, 42, 42, 44, 45, 45, 47, 48, 49, 50, 50, 50

Solution

$$Mean = \frac{34+36+38+40+42+42+44+45+45+47+48+49+50+50+50}{15} = \frac{660}{15} = 44$$

$Median = 45$

$Mode = 50$

$Range = 50 - 34 = 16$

Definitions:

Mean – the average of all the numbers
Median – the middle number of a set of numbers in order from smallest to largest
Mode – the number that appears most often (there can be more than one mode)
Range – the difference between the largest and smallest numbers
Quartile 1 (Q_1) – the median of the first half of the set of numbers
Quartile 3 (Q_3) – the median of the second half of the set of numbers
Interquartile range – the difference between Q_1 and Q_3

Use the space provided to create a box and whisker plot for the set of data and answer the questions that follow. **Show all work.**

3.5 5 7 4.5 2 5 3 4 3.5 7.5 8 6 4 5.5 6.5

1. *mean =*
2. *median =*
3. *range =*
4. *interquartile range =*

Hint: First put the numbers in order from least to greatest.

Construct a Stem and Leaf Plot with the following temperatures for May. **Show all work.**

76, 80, 70, 82, 68, 58, 57, 62, 70, 64, 67, 64, 65, 74, 72, 83, 55, 79, 78

Find the mean, median, mode, and range for stem-and-leaf plot:

1. *Mean =*
2. *Median =*
3. *Mode =*
4. *Range =*