Marion High School
Student Instructional Packet Assignments
September 8th - September 21st

Student: _____ Period: 4th Teacher(s): Circle your teacher's name, if more than one teacher is listed below. Teacher 1: Mr. A. McIntosh Email: amcintosh@marion.k12.sc.us Teacher 2: Email: Teacher 3: Email: Teacher 4: Email: Course: ALGEBRA 3 Teacher Planning Period: 2 **School Number: 843-423-2571**	**Student:** **Please put your name and class period on this sheet.** **You will need to return this sheet and any assignments attached.** **Circle your teacher's name**
	Tuesday – September 8th Parents and students will: • Read and sign Parents Letter • Peruse Classroom rules/procedures • View/discuss Syllabus • Check-ins
Wednesday – September 9th • Diagnostic Test • Question & Answer	Thursday – September 10th Literal Equations lesson & Activity

Marion High School
Student Instructional Packet Assignments
September 8th - September 21st

Friday – September 11th Literal Equations	Monday – September 14th Literal Equations Quiz
Tuesday – September 15Th Inverse Functions Lesson, examples and practice	Wednesday – September 16th Inverse Functions Notation
Thursday – September 17th Inverse Functions Graphs	Friday- September 18th Inverse Functions Quiz
Monday – September 21st Intro to Functions Practice/Make-up Quiz	

DAY 2: Sept 9, 2020

Algebra 3 – Diagnostic Test

1. Solve for x: $\frac{25x-1}{7} = 2x + 3$

2. Find the values of x that satisfy the equation: $2x^2 + 9x - 5 = 0$

3. Simplify each of the following radical expressions:

   a) $\sqrt{10}$ b) $\sqrt[3]{54}$ c) $\sqrt[4]{\frac{16}{81}}$

4. Find the solution point for the system of equations:

$$\begin{cases} 4x - y = 9 \\ 2x + 3y = 1 \end{cases}$$

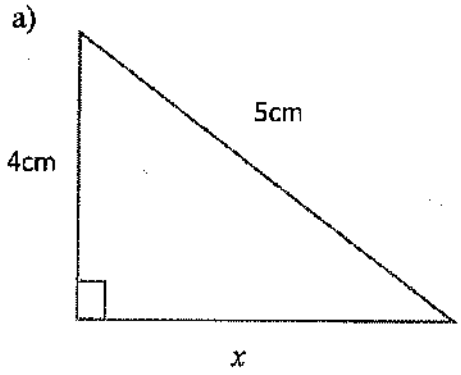
5. Solve each of the following for the variable indicated:

a) $P = 5q + cq$, for q

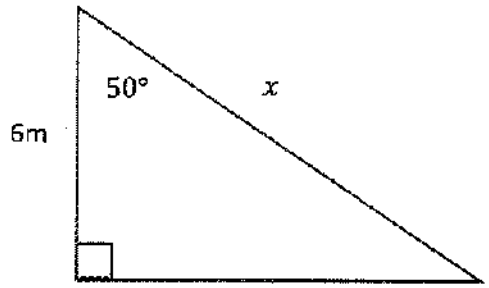
b) $\frac{x}{4x-3y} = 3$, for y

6. Solve for x in each of the following:

a)



b)



DAY 3: SEPT 10, 2020

REVIEW TOPIC: Literal Equations

CONCEPTS

1. To solve a literal equation you must ISOLATE THE TARGET VARIABLE
2. If the variable is distributed among terms on either sides, COLLECT all terms having that variable on the SAME SIDE by SWITCHING SIDES; remember to CHANGE THE SIGNS AS WELL.

Example: Solve $3xy - 4 = 2x + 7y$ for [y]

By switching sides we get: $3xy - 7y = 2x + 4$

3. If the variable is distributed, FACTOR IT OUT as shown below:

$$y(3x - 7) = 2x + 4$$

4. We the DIVIDE both sides by the unwanted factor because it is MULTIPLYING or target variable:

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

The unwanted factor will cancel and your final equation will be:

$$y = \frac{2x + 4}{3x - 7}$$

5. Remember to GET YOU VARIABLE OUT OF PARENTHESES BY DISTRIBUTING when necessary.

DAY 2 ACTIVITY

Solve each of the following equations for the variable shown:

1. Solve: $3xy - 2yz = 12 - 5z$ for [z]

2. Solve: $\frac{12xy^2 - 3}{4} = x$ for [x]

3. Solve: $2pqr - 3p = pq + 2$ for [q]

4. $v^2 = u^2 - 2as$ for [s]

5. $S = 2(lw + lh + wh)$ for [w]

6. Solve: $A = p(1 + rt)$ for [t]

7. Solve: $S = R - rR$ for [R]

8. Solve: $A = S(1 - DN)$ for [N]

DAY 4: SEPT 11, 2020

REVIEW TOPIC: Literal Equations

CONCEPT:

To eliminate all DENOMINATORS by MULTIPLY BY THE LOWEST COMMON MULTIPLE (LCM)

Example: Given: $\frac{1}{2} - \frac{2}{x} = \frac{3}{y} + \frac{4}{z}$

The lowest Common Multiple (LCM) of the denominator will be $2xyz$

Therefore multiplying by $2xyz$ will give: $\frac{2xyz}{2} - \frac{4xyz}{x} = \frac{6xyz}{y} + \frac{8xyz}{z}$

After cancelling like terms we get: $xyz - 4yz = 6xz + 8xy$

You can then switch sides, factor and solve as required as was done on day1.

DAY 3 ACTIVITY

1. $A = \frac{a+b+c+d}{4}$ for $[c]$	2. $m = \frac{y_2 - y_1}{x_2 - x_1}$ for$[y_2]$

3. $\frac{1}{f}=\frac{1}{a}+\frac{1}{b}$ for [f]	4. $\frac{1}{R}=\frac{1}{R_1}+\frac{1}{R_2}$ for [R]
5. $\frac{P_1V_1}{T_1}=\frac{P_2V_2}{T_2}$ for [T_1]	6. $V=\frac{1}{3}\pi h^2(3r\text{-}h)$ for [r]

DAY 5: SEPT 14, 2020

REVIEW TOPIC: Literal Equations

Solve each of the following equations for the variable indicated:

1. $A = 2(L + W)$ [W]

2. $ax + by = c$ [y]

3. $2(a - c) = 4a$ [a]

4. $cx - d = a(x - y)$ [y]

5. $\frac{x - 8a}{6} = 3a - 2x$ [x]

6. $\frac{x}{4x - 3y} = 3$ [y]

7. $5w = \frac{1}{4}(3v - 4u)$ $[u]$

8. $A = 2\pi r^2 + 2\pi rh$ $[\pi]$

9. $\frac{2}{7z} + \frac{2}{3x} = \frac{4}{w}$ $[w]$

10. $UV^3 - W = V^3 + UW$ $[V]$ Hint! Collect, factor the Find cube root of both sides!

11. $a\sqrt{x} + b = \sqrt{x} + c$ $[x]$ HINT! Collect, Factor, Divide then Square both sides.

DAY 6 SEPT 15, 2020

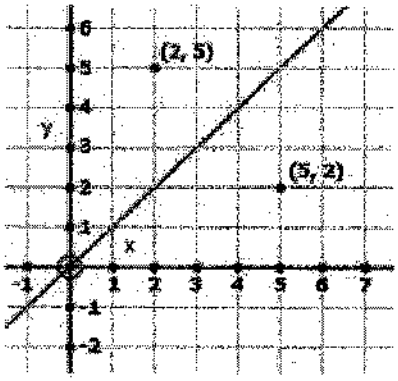
TOPIC: INVERSE FUNCTIONS

- In the graph below, the line that bisects the x and y axes is the line **y = x**
- The point (2, 5) is standing in front of the mirror (y = x) and its reflection is the point (5, 2)
- We say the (5, 2) is the inverse of (2, 5) also (2, 5) is the inverse of (5, 2). The inverse of a point is found simply by swapping x and y values.

Reflections over the line y = x

When we reflect a point in the x-y plane over the line y = x, the image has the x- and y-coordinates switched.

Here, (2, 5) and (5, 2) are reflected images of each other.



Similarly,
(2, – 4) & (– 4, 2)
(– 1, 7) & (7, – 1)
(– 3, – 5) & (– 5, – 3)

- The set of X values called "Domain", the set of Y values is the "Range"
- You obtain the inverse of any point, shape or equation by swapping x and y values.

EXAMPLE 1

Find the inverse R/ of the relation R = {(2, 1), (3, – 1), (4, 7), (5, 0)}

SOLUTION: R/ = {(1, 2), (– 1, 3), (7, 4), (0, 5)}

NOTICE!

1. The inverse of the set of points was found by swapping x and y values
2. Since the relation is R we denoted the inverse R/

EXAMPLE 2

Find the inverse of the linear equation $y = 2x + 3$

SOLUTION

STEP 1: Exchange (swap) x and y.

This gives us: $x = 2y + 3$

STEP 2: Solve for *y*.

By using our skills in solving literal equations we get: $y = \frac{x-3}{2}$

- The inverse of $y = 2x + 3$ is $y = \frac{x-3}{2}$

REVIEW

To find the inverse of an equation,

1. Swap x and y
2. Then solve for y.
3. The given equation is the OBJECT, the inverse is the IMAGE, and the mirror is the line y = x

ACTIVITY

Find the inverse of each of the following

1. If $Z = \{(-1, 2), (0, 7), (3, -2), (4, 5)\}$ Find the inverse Z'	2. $y = 3x - 1$
3. $y = \frac{4x-1}{2}$	4. $y = x^3 - 17$

DAY 7 SEPT 17, 2020

NOTATION!

If a function is denoted $f(x)$ then its inverse is denoted $f^{-1}(x)$

EXAMPLE 1

Find the inverse of the function $f(x) = \frac{2x}{7} + 3$

Solution

STEP 1: Replace $f(x)$ with y

Hence we write $y = \frac{2x}{7} + 3$

STEP 2: Swap x and y

The result is $x = \frac{2y}{7} + 3$

STEP 3: Solve for y **Use you skills in solving literal equations!**

The result is $y = \frac{7x-21}{2}$

STEP 4: Replace y with $f^{-1}(x)$

The inverse function is $f^{-1}(x) = \frac{7x-21}{2}$ **ANSWER**

Hence, the inverse of $f(x) = \frac{2x}{7} + 3$ is $f^{-1}(x) = \frac{7x-21}{2}$

ACTIVITY

Find the inverse for each of the following functions by following the steps shown above.

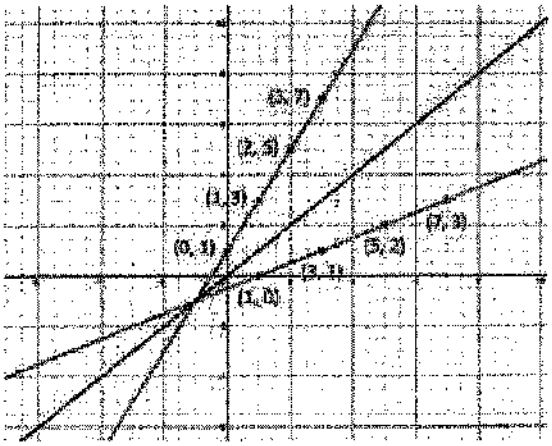
1. $f(x) = \frac{3x-5}{2}$	2. $g(x) = \frac{\sqrt{2x}}{3} + 5$
3. $h(x) = \frac{1}{x+5}$	4. $k(x) = \frac{x+1}{x-1}$

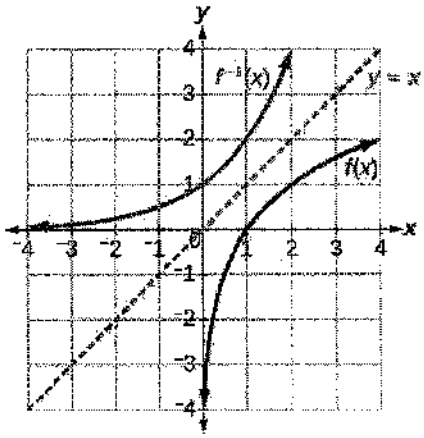
DAY 8 SEPT 19, 2020

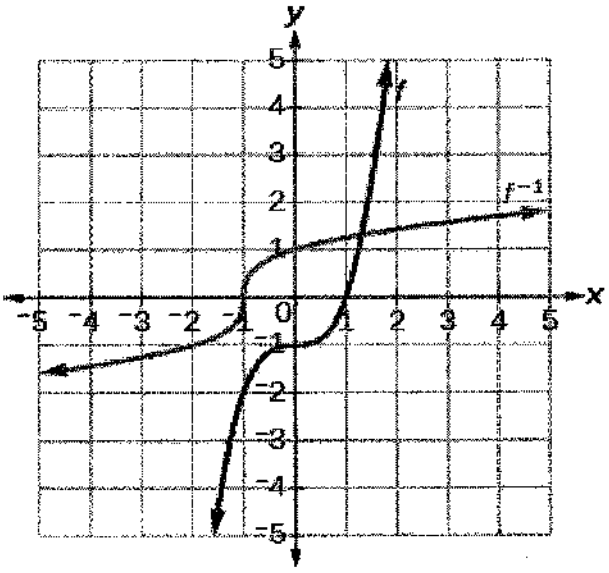
RECALL! The inverse of a point is found by swapping the x and y coordinates.

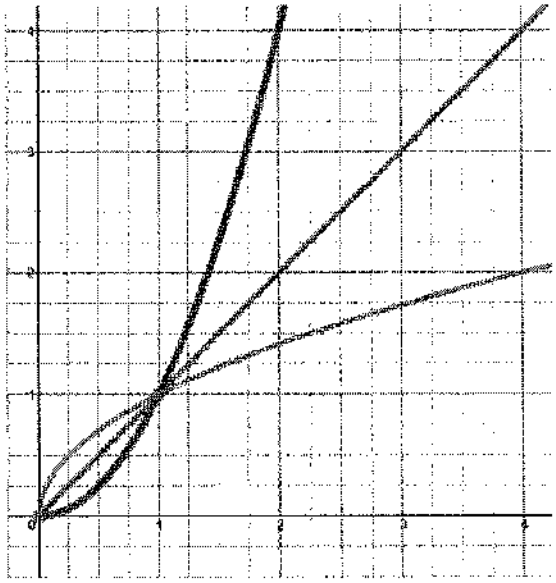
For example: (2, 1) is the inverse of (1, 2) also (-3, 7) is the inverse of (7, -3)

- **Take some time to study the examples of graphs and their inverses shown below, then do the activity that follows.**





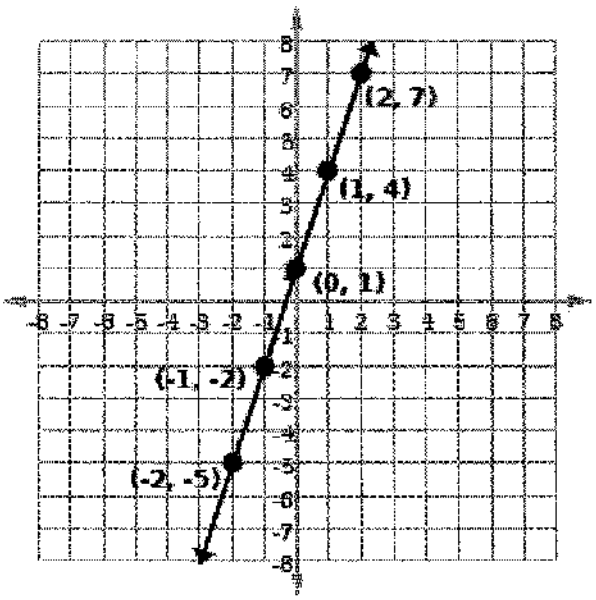


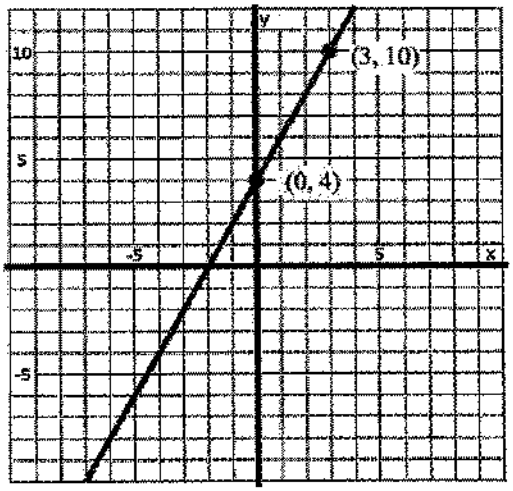


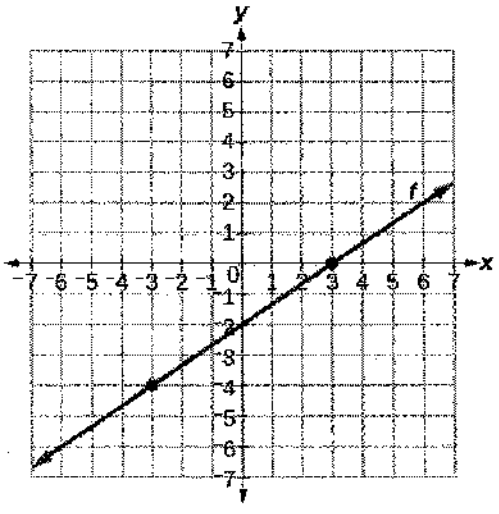
ACTVITY

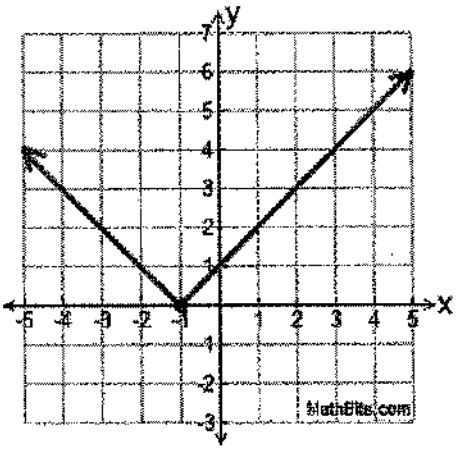
In each of the following graphs, plot the inverse of each point that can be identified and hence draw the respective inverse.

Remember to draw the mirror line $y = x$ for each graph.

1. 

2. 

3, 

4. 

DAY 10, SEPT 21, 2020 – QUIZ

1. Find the inverse of

   a) $y = 4 - 3x$

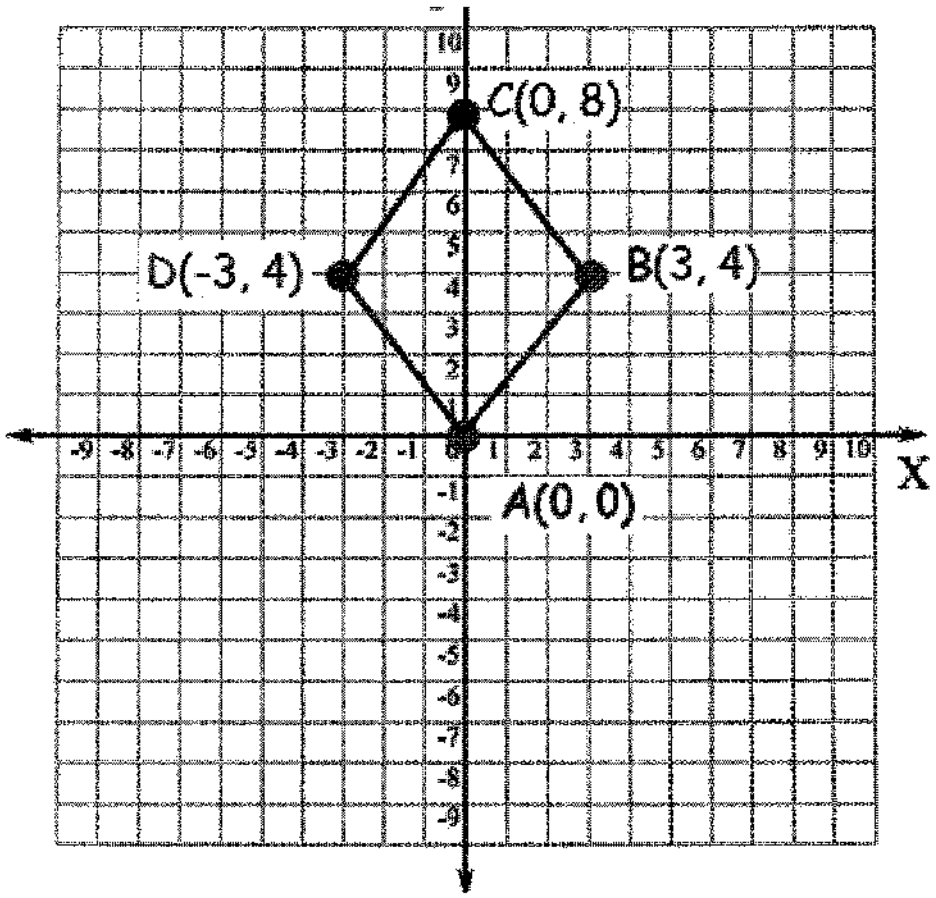
   b) $y = \frac{2x-1}{3} - 6$

   c) $y = (7x + 1)^2$

   d) $y = \frac{\sqrt{5x}}{2} - 3$

   e) $y = \frac{x-2}{x+3}$

2. Draw the inverse for the shape shown below



3. Given that $f(x) = \sqrt[3]{x} - 2$ find the inverse function $f^{-1}(x)$

END OF QUIZ

DAY 9 SEPT 17, 2020