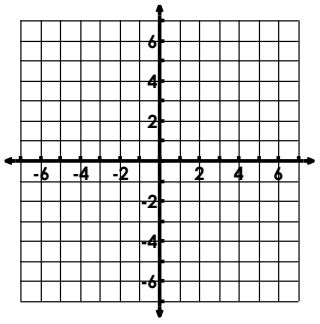
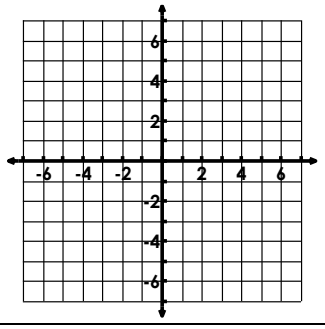
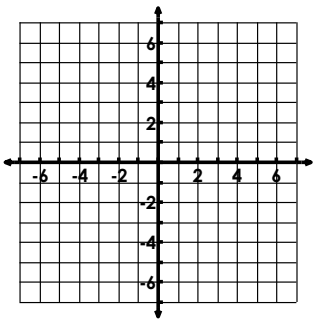
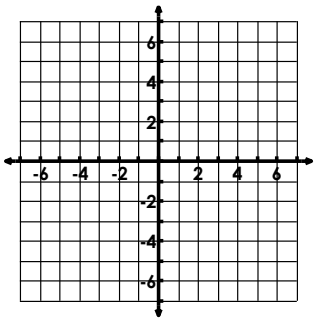
GSE Algebra I Unit 2 Final Exam Study Guide

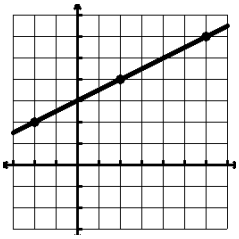
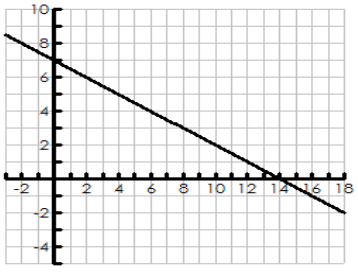
Name: _____ Date: _____

Use the following to review for you test. Work the Practice Problems on a separate sheet of paper if needed.

What you need to know & be able to do	Things to remember	Problem	Problem
Properties of Equality & Properties of Operations	Study your property sheet and algebraic proof sheets!	1. Which property is illustrated by the following: $\frac{6}{5} \cdot \frac{5}{6} = 1$	2. What is an example of the distributive property?
Linear Models	y = mx + b • m – increase or decrease • b – starting point	3. Lucy gets paid $150 a week and $10 for every computer she sells. Write an expression that represents her weekly income.	4. Andy wants to mail a package. It costs $4.99 plus $0.30 for every ounce the package weighs. Write an equation that represents the total cost of shipping the package.
Consecutive Integers	Start with x. x + (x+1) + (x+2)+...=	5. 3 consecutive integers add up to 153. Find the three integers.	6. Three ODD integers add up to 381. Find the integers.
Rectangle – Find length and width	• Draw a picture • Define your ℓ and w • Add all 4 sides • Solve for both variables	7. The width of a rectangle is 11 feet longer than the length. The perimeter of the rectangle is 70 feet. Find the length and the width.	8. The length of a rectangle is nine inches more than the width. The perimeter is 34 inches. Find the length.
Solve for 2-variable Equations	ax + by = c • Never move the variable you're solving for.	9. Tony is going to buy fruit for a smoothie. He wants raspberries, r, that are $4 a carton and strawberries, s, that are $2 a carton. Write an equation to represent all the combinations of fruit if Tony has $18 to spend.	10. Using your equation from #15, solve for s, in terms of r, the number of raspberries. 11. If he buys 2 cartons of raspberries, how many strawberries can he buy?

Solve for an indicated variable	PEMDAS • Backwards, from the ground up!	12. Solve for x: y = -4x + 16	13. Solve for L: P = 2(L + W)
Find the solution of a system of linear equations by **graphing**.	• Get "y" by itself. • Identify the slope (m) and the y-int (b) • y = mx + b • Check your answer!	14. $y = -x - 2$ $x + y = 3$ 	15. $y = x + 2$ $y = \frac{1}{4}x - 1$ 
Find the solution of a system of linear equations by **substitution**.	• Solve one of the equations for a variable (either x or y). • Substitute into the other equation. • Plug back into the ORIGINAL! • Check your answer!	16. $-7x + 8y = 6$ $x = -4y - 6$	17. $8x + 2y = 16$ $x - y = 7$
Find the solution of a system of linear equations by **elimination**.	• Decide which variable you want to get rid of. • Make sure the coefficients are opposite • Add the two equations. • Solve for the variable. • Substitute back into the original. • Check your answer!	18. $-2x - 8y = 6$ $2x + 6y = -6$	19. $12x - 8y = 12$ $6x - 7y = -12$

Find the solution of a system of linear equations by **the best method**.	• Check if a pair is already opposite for elimination. • Check to see if either equation is already solved for a variable for substitution. • Check to see if the equations are already in slope-intercept form.	20. $-3x + y = 17$ $8x + 7y = 3$	21. $3x - 3y = -3$ $-5x + 9y = 29$
Solving a System of Linear Equations Word Problem	• Define x and y. • Set up two equations. • Decide the best method. • Solve. • End with words!	22. Amy's school is selling tickets to a choral performance. A senior citizen's ticket is \$6 and a child's ticket is \$15. If they made \$810 dollars and sold a total of 72 child and senior citizen tickets, how many of each ticket did they sell?	23. The band is selling wrapping paper for a fundraiser. Customers can buy rolls of plain wrapping paper and rolls of shiny wrapping paper. The band sold a total of 55 rolls and made \$950. If a roll of plain costs \$14 and a roll of shiny costs \$20, how many rolls of each did they sell?
Graphing a system of linear inequalities.	• Make sure both equations are in slope-intercept form. • Decide if the lines will be solid or dashed. • Graph the lines. • Test a point- typically (0,0). • Shade appropriately.	24. $y > -2x - 3$ $y \le \frac{1}{2}x + 2$ 	25. $y \le x + 1$ $y < -x - 3$ 

Identify: **Function** or **Not a Funtion** **EXPLAIN!!!!**	Graphs: Must pass the Vertical Line Test! Points: Inputs cannot repeat!	3. Function or Not a Function 	4. Function or Not a Function $\{(3,3),(4,3),(4,4),(6,5)\}$
Given functions, **simplify** the expressions.	• Choose the correct functions. • Pay attention to where the number is if there is one. • Combine Like Terms.	$f(x)=x^2+3x-5$ $g(x)=2x^2-x+2$ $h(x)=3x^3$ 6. $g(x)-f(x)$ 8. $f(1)+g(-2)$	5. $f(x)+g(x)$ 7. $3h(x)-2f(x)$ 9. $3f(x)+2g(x)$
Evaluating Functions	• SHOW WORK! • Plug it in. • Use parenthesis when substituting	10. Given, $g(x)=x^2+x-4$ a. Find $g(-2)=$ _____ b. Find $g(5)=$ _____	11. $g(0)=$ _____ $g($____$)=1$ 

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<td>Find the <u>average rate of change</u></td>
<td>• Rate of Change
• Average Rate of Change
• Slope</td>
<td>12. $(2,-3)$ and $(-2,8)$</td>
<td>13. When $x_1 = 1$ and $x_2 = 3$
<table><tr><td>x</td><td>g(x)</td></tr><tr><td>-1</td><td>4</td></tr><tr><td>0</td><td>2</td></tr><tr><td>1</td><td>0</td></tr><tr><td>2</td><td>-2</td></tr><tr><td>3</td><td>-4</td></tr></table></td>
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<tr>
<td><u>Arithmetic Sequences</u></td>
<td>• <u>Adding</u> or <u>Subtracting</u> to get to the next term
• $a_n = dn + a_0$</td>
<td>14. Write the explicit rule for the following sequence and find the 50th term:
3, 6, 9, 12, 15, 18</td>
<td>15. Write the first 4 terms in the sequence:
$a_1 = 9$
$a_n = a_{n-1} - 2$</td>
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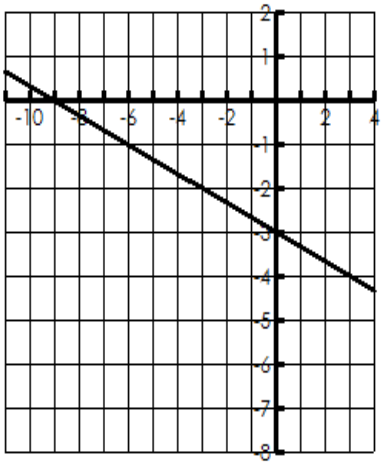
<tr>
<td><u>Characteristics of a Linear Function</u></td>
<td>• Domain
• Range
• Y-int
• X-int
• Inc/Dec
• Rate of Change
• End Behavior
• Slope</td>
<td>16.
  </td>
<td>Equation: _____
Domain: _____
Range: _____
X-Int:_____ Y-Int: _____
Increasing or Decreasing
End Behavior:
$x \to \infty$, f(x) → _____
$x \to -\infty$, f(x)→_____
RoC from $x_1 = -6$ to $x_2 = 3$:
_____</td>
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