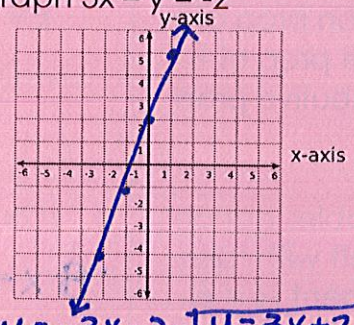
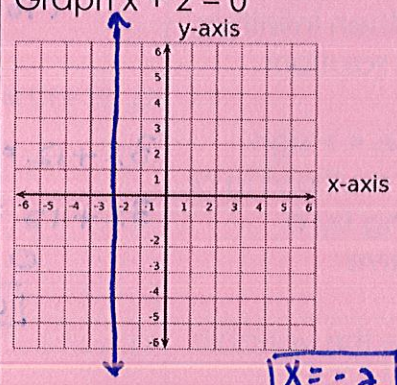
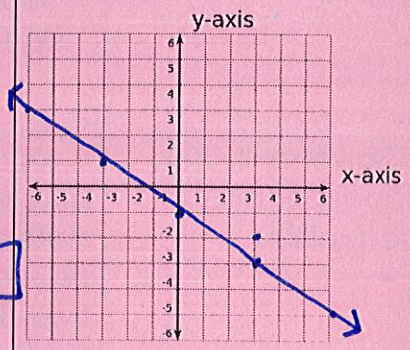
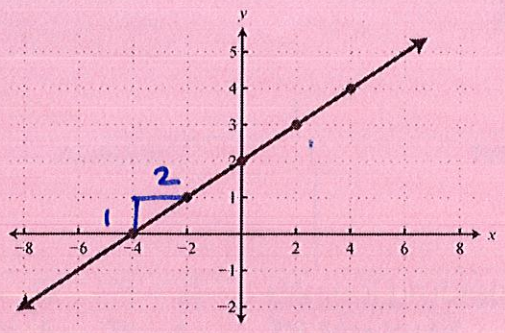
Unit 2a Study Guide
GSE Algebra I H

Name: Key

What you need to know and be able to do	Things to Remember	Problem	Problem
1. Justify steps using properties	Associative prop Commutative prop Symmetric prop Add property of = Subtract prop of = Division prop of = Mult prop of = Distributive prop	14 = 5x – (2x + 4) 14 = 5x – 2x – 4 14 = 3x – 4 18 = 3x 6 = x X = 6	original problem Distribute combine like (Assoc.) Add POE Div. POE Symm. POE
2. Solve multi-step equations and inequalities	If variables cancel and left with false statement (4 = 6), then no solution. If true statement (4=6) then infinitely many solutions. Flip the < > sign when multiplying or dividing by a negative	a. -4(2x- 3) = -6x – 2x - 12 $-8x+12=-8x-12$ $12=-12$ No Solution b. 3x +12 = -4(-6x – 3) + 3x $3x+12=24x+12+3x$ $3x+12=27x+12$ $0=24x$ $\boxed{0=x}$	c. -4x – (2x + 12) > 3x + 6 $-4x-2x-12>3x+6$ $-6x-12>3x+6$ $-9x>18$ $\boxed{x<-2}$ d. $\frac{2}{3}x-4\geq\frac{1}{2}(6x+10)$ $\frac{2}{3}x-4\geq 3x+5$ $\frac{2}{3}x-\frac{9}{3}x\geq 9$ $-\frac{7}{3}x\geq 9$ $\boxed{x\leq -\frac{27}{7}}$
3. Solve literal equations (rearrange formulas)	Isolate the variable Multiply by the denominator when there is a fraction	a. solve for p if $N=\frac{p}{m}$ $Nm=p$	b. solve for W if P = 2(L + W) $\frac{P}{2}=L+W$ $\frac{P}{2}-L=W$
4. Combining functions and function notation	Add: combine like terms Subtract: distribute negative Multiply: add exponents Evaluate: substitute a number for x	$f(x)=x^2+3x-5$ $g(x)=2x^2-x+2$ $h(x)=3x^3$ a. f(x) + 3g(x) $x^2+3x-5+6x^2-3x+6$ $7x^2+1$	b. f(x) – g(x) $x^2+3x-5-2x^2+x-2$ $-x^2+4x-7$ c. h(x) · f(x) $3x^3(x^2+3x-5)$ $3x^5+9x^4-15x^3$ d. f(2) + h(2) $f(2)=2^2+3(2)-5=5$ $h(2)=3(2)^3=24$

5. Arithmetic Sequences	Adding or Subtracting to get to the next term mx+b f(n) = dn + z Recursive → $a_n = a_{n-1} + d$ Explicit → $a_n = a_1 + d(n-1)$	a. Write the rule for the following sequence and find the 50th term: 3, 6, 9, 12, 15, 18 $a_n = 3 + 3(n-1)$ $a_n = 3n$ $a_{50} = 3(50) = 150$	b. Write the first 4 term in the sequence: $a_n = -2n + 7$ 5, 3, 1, -1 c. write an explicit formula for the table: x: 1, 2, 3, 4 y: 2, 5, 8, 11 $a_n = 2 + 3(n-1)$ $= 3n - 1$
6. Graph linear functions (lines)	Write equation in slope intercept form by solving for y Y = mx + b b is y-intercept and m is slope (rise over run) vertical lines: x = a number and undefined slope horizontal lines: y = a number and has a slope of zero	graph 3x – y = -2  $-y = -3x - 2$ $\boxed{y = 3x + 2}$ Graph x + 2 = 0  $\boxed{x = -2}$	Graph y + 2 = -2/3 x + 1  $y = -\frac{2}{3}x - 1$
7. solve word problems	Consecutive integer: use x, x + 1, x + 2, etc Consecutive even **AND** odd: use x, x + 2, x + 4, etc Perimeter: draw rectangle and label sides (let x equal shortest side) Average: add all numbers plus x and divide by number you have	a. find 3 consecutive odd integers that add up to 309. Find the integers. $x + x+2 + x+4 = 309$ $3x + 6 = 309$ $3x = 303$ $x = 101$ 101 103 105 b. find 4 consecutive integers that add up to 130. 31 32 33 34 $x + x+1 + x+2 + x+3 =$ $4x + 6 = 130$ $4x = 124$ $x = 31$	c. The length of a rectangle is 3 more than twice the width. Find length and width if the perimeter is 48. $l = 3 + 2w$ $48 = 3 + 2w + w + 3 + 2w + w$ $48 = 6 + 6w$ $42 = 6w$ $7 = w$ $l = 3 + 2(7)$ $l = 17$ d. Bentley chased tennis balls for 13 minutes Mon, 45 min Tues, and 60 min Wed. How many hours should he chase tennis balls Thursday to average 50 min per day? $\frac{13 + 45 + 60 + x}{4} = 50$ $118 + x = 200$ $x = 82$ $x = 1.4$ hr

describe haracteristics f linear nctions	Domain: all x values Range: all y values X intercept: where line crosses x axis; where y = 0 Y intercept: where line crosses y axis; where x = 0 End behavior: As x→∞, f(x) →___ As x→-∞, f(x)→___	 Eqn of line: $y = \frac{1}{2}x + 2$ Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$ Y intercept: $(0, 2)$ X intercept: $(-4, 0)$ F(2) = 3 If f(x) = 5, then x = 6 End behavior: As x $\to \infty$ $f(x) \to \infty$ As x $\to -\infty$ $f(x) \to -\infty$