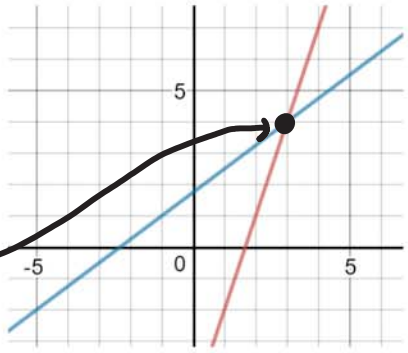
Chapter 7 Final Review

Solving Systems of Linear Equations

A: Graphically

- rewrite each equation in slope-intercept form (if necessary)
- find the intersection point (that's your answer)



B. Substitution

$2x + y = 4$ ①
$-3x - 4y = 6$ ②

- look for a variable with a coefficient of 1 or -1 (easiest to rewrite)

rewrite ① $2x + y = 4$
$-2x \quad -2x$
$y = 4 - 2x$ } sub into ②

$-3x - 4(4 - 2x) = 6$
$-3x - 16 + 8x = 6$
$5x - 16 = 6$
$+16 \quad +16$
$\frac{5x}{5} = \frac{22}{5}$
$x = \frac{22}{5}$

Solve for y
$y = 4 - 2x$
$y = 4 - \frac{2}{1}\left(\frac{22}{5}\right)$
$y = \frac{4}{1}\cdot\frac{5}{5} - \frac{44}{5}$
$y = \frac{20}{5} - \frac{44}{5}$
$y = -\frac{24}{5}$

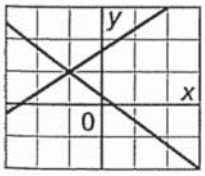
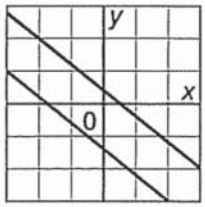
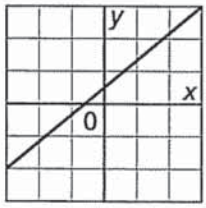
C. Elimination

$4x + 2y = 7$
$-2x + 5y = 13$

- rewrite equations to line up like terms (if necessary)
- choose a variable to eliminate
- multiply equation(s) by necessary factors to make coefficients match.
- add/subtract equations from each other.

Number of Solutions

- do not solve
- rewrite equations in slope-intercept form and compare slopes and y-intercepts

Possible Solutions for a Linear System		
Intersecting Lines	**Parallel Lines**	**Coincident Lines**
One Solution	No Solution	Infinite Solutions
		
different slopes	same slope diff y-intercept	same slope same y-intercept

Word Problems

- write "let" statements (so you know what your variables represent)
- write 2 equations
- solve (method of choice)
- write a concluding sentence.