Warm Up

(do on own paper & label it Wed. Warm Up)

Use the substitution method to solve the linear system:

1. $2x - 5y = -13$ $\longrightarrow$ $2(-3y-1)-5y=-13$

   $x + 3y = -1$

   $-3y \quad -3y$

   $x=(-3y-1)$

   $x=-3(1)-1$

   $x=-3-1$

   $x=-4$

$-6y-2-5y=-13$

$-11y-2=-13$

$+2 \quad +2$

$-11y=-11$

$\frac{-11y}{-11}=\frac{-11}{-11}$

$y=1$

$(-4,1)$ $2(-4)-5(1)=-13$

$-8-5=-13$

$-13=-13$ ✓

∴ yes, $(-4,1)$ is soln

7.1-7.2 QUIZ

Out of 20pts

A - 18

B - 16

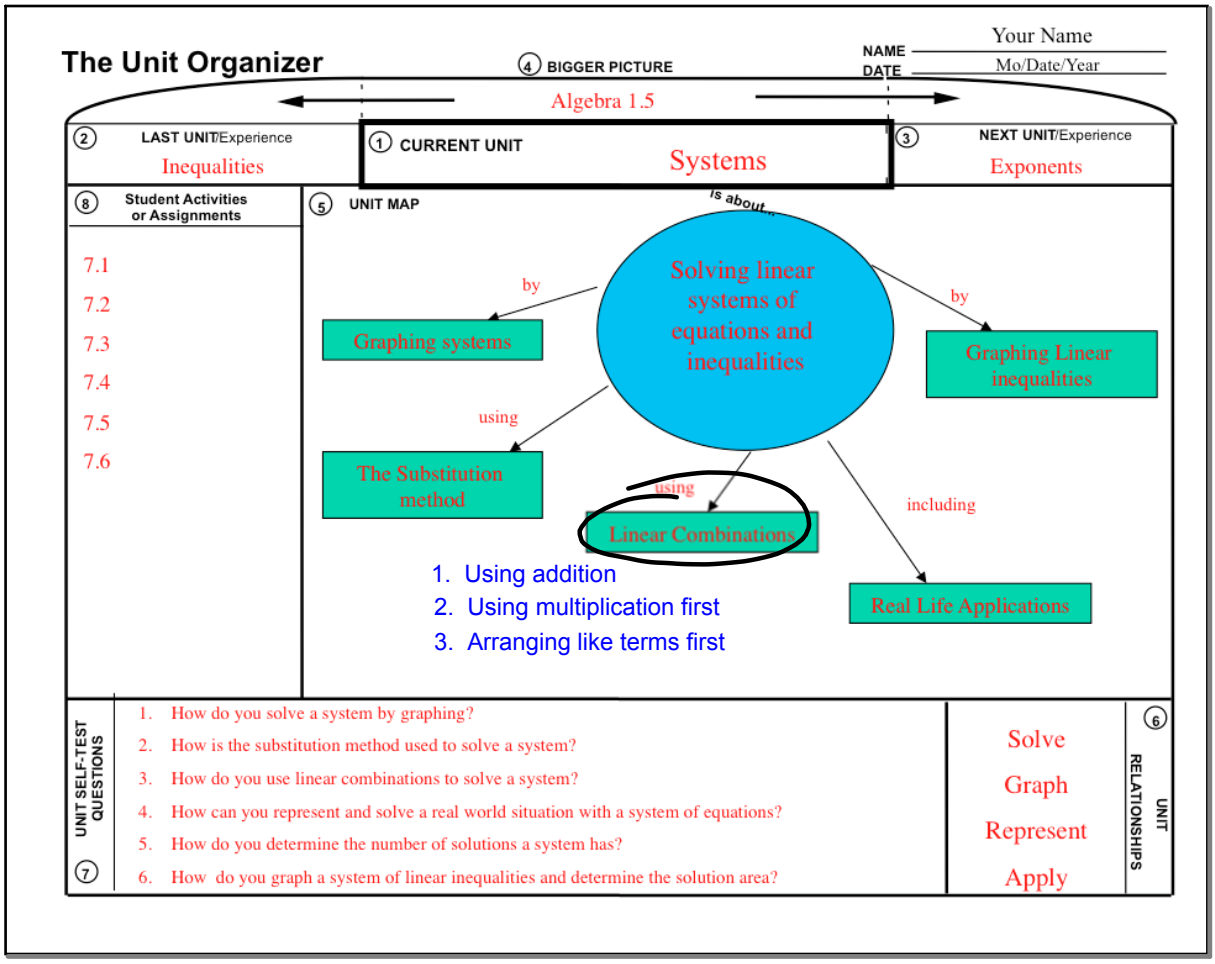
C - 14

D - 12

7.3 Solving Linear Systems by Linear Combinations

Goals:
- Solve a system of linear equations by linear combinations.

EQ: How are linear combinations different than the substitution method?



Vocabulary

Linear combinations: (Elimination)

used to solve a system by combining the equations using addition

*Add 2 eqns together

Opposite terms: $3x$, $-3x$

$\frac{1}{4}x$, $-\frac{1}{4}x$ $2y$, $-2y$

Example 1: Add the Equation

Solve the linear system.

$7x + 2y = -6$

$+ \ 5x - 2y = 6$

$12x = 0$

$\frac{12x}{12} = \frac{0}{12}$

$x = 0$

$(0, -3)$

$7(0) + 2y = -6$

$\frac{2y}{2} = \frac{-6}{2}$

$y = -3$

$5(0) - 2(-3) = 6$

$6 = 6$ ✓

∴ yes, $(0, -3)$ is soln

Try It Use linear combinations to solve the system of linear equations. Then check your solution.

1) $4x + y = -4$
$+ \quad -4x + 2y = 16$

$3y = 12$, $y = 4$

$4x + 4 = -4$
$-4 \quad -4$
$4x = -8$, $x = -2$

$(-2, 4)$ x, y

$-4(-2) + 2(4) = 16$
$8 + 8 = 16$
$16 = 16$ ✓

∴ yes, $(-2, 4)$ is soln

2) $4x + 3y = 10$
$+ \quad 12x - 3y = 6$

$16x = 16$, $x = 1$

$12(1) - 3y = 6$
$12 - 3y = 6$
$-12 \quad -12$
$-3y = -6$, $y = 2$

$(1, 2)$ $4(1) + 3(2) = 10$
$4 + 6 = 10$
$10 = 10$ ✓

∴ yes, $(1, 2)$ is soln

Summary

EQ: How are linear combinations different than the substitution method?

*Need opposite terms in Linear Comb.

*Also adding the two eqns

7.3 Homework

Solving Systems of Equations by Addition Method wkst (p.82)

*Show work on separate sheet