From HW

6. ① $3x-2y+5z=-17$

② $2x+4y-3z=29$

③ $5x-6y-7z=7$

Combine ① + ② to eliminate y:

$2(3x-2y+5z=-17) \Rightarrow 6x-4y+10z=-34$

$2x+4y-3z=29 \Rightarrow +(2x+4y-3z=29)$

④ $8x+7z=-5$

Combine ① + ③ to eliminate y:

$-3(3x-2y+5z=-17) \Rightarrow -9x+6y-15z=51$

$5x-6y-7z=7 \Rightarrow +(5x-6y-7z=7)$

⑤ $-4x-22z=58$

Now solve the system of ④ and ⑤:

④ $8x+7z=-5 \Rightarrow 8x+7z=-5$

⑤ $2(-4x-22z=58) \Rightarrow +(-8x-44z=116)$

$-37z=111$

$\boxed{z=-3}$

Sub $z=-3$ into ④

$8x+7z=-5$

$8x+7(-3)=-5$

$8x-21=-5$

$8x=16$

$\boxed{x=2}$

Sub $x=2, z=-3$ into ③

$5x-6y-7z=7$

$5(2)-6y-7(-3)=7$

$10-6y+21=7$

$-6y+31=7$

$-6y=-24$

$\boxed{y=4}$

$x=2$
$y=4$
$z=-3$

Dec 6-10:20 AM

Applications of Systems of Equations (3x3)

The Natural Remedy Company makes 3 different essential oil blends:

Blend A: 2mL of peppermint oil; 3mL of geranium oil (5mL)
Blend B: 4mL of geranium oil; 1mL of citrus oil (5mL)
Blend C: 3mL of peppermint oil; 2mL of citrus oil (5mL)

The company has received a supply of 38mL of peppermint oil; 110mL of geranium oil and 32mL of citrus oil.

How many 5mL bottles of each bleand can they make in order to use up all the supplie?

① Define your variables:

Let A be the number of bottles of blend A
B be the number of bottles of blend B
C be the number of bottles of blend C

② Organize into in a table / make up equations:

	Peppermint	Geranium	Citrus
Blend A	2mL	3mL	0
Blend B	0	4mL	1mL
Blend C	3mL	0	2mL
TOTAL	38mL	110mL	32mL

Peppermint: ① $2A + 0B + 3C = 38$
Geranium: ② $3A + 4B + 0C = 110$
Citrus: ③ $0A + 1B + 2C = 32$

Eliminate A from ① and ②

$3(2A + 3C = 38) \Rightarrow 6A + 9C = 114$
$-2(3A + 4B = 110) \Rightarrow -6A - 8B = -220$
④ $9C - 8B = -106$

Solve the system of ③ and ④

④ $-8B + 9C = -106 \Rightarrow -8B + 9C = -106$
③ $8(B + 2C = 32) \Rightarrow +(8B + 16C = 256)$
$25C = 150$
$C = 6$

Sub C=6 into ③:
$B + 2C = 32$
$B + 2(6) = 32$
$B + 12 = 32$
$B = 20$

Sub C=6, B=20 into ①
$2A + 3C = 38$
$2A + 3(6) = 38$
$2A + 18 = 38$
$2A = 20$
$A = 10$

6 bottles of C
10 bottles of A
20 bottles of B

Dec 6-10:36 AM

To Do

① Group Work - Applications of 3x3

② p34|38+39 (OLD - from last class)

③ p38|6, p42|15, 19a+c (NEW! Do for Hw)