

BE-1B Monday 5-19-08

- Possible Exam 3 Friday if...
those students that passed AHSBE
do not work this last week.

① On the same X-Y graph, graph
the following lines: $y = 4x - 7$
 $y = -x + 8$

② Where do the lines in ① intersect?
 $\{ (x, y) \text{ coordinates?} \}$

③ Solve using EBA or EBS: Elimination by
Addition or Substitution

$$\begin{cases} y = 4x - 7 \\ y = -x + 8 \end{cases}$$

EBA $\Rightarrow$ get x, y , numbers lined up

$$\begin{cases} y = 4x - 7 \\ y = -x + 8 \end{cases} \quad \text{They are!}$$

Look at the y 's, what is the smallest number you can multiply one of the y 's by to get "equal and opposite" y 's?

Yes, -1 How about the x 's, yes, +4 by bottom by either

$$\begin{cases} y = 4x - 7 \xrightarrow{(-1)} -y = -4x + 7 \\ y = -x + 8 \longrightarrow y = -x + 8 \end{cases}$$

$$0 = -5x + 15$$
$$+5x \quad +5x$$

* y 's eliminated

$$5x = 15 \therefore \boxed{x = 3}$$

$$\boxed{y = 5}$$

(x, y)

$(3, 5)$

Lines cross here

Let's try the x 's:

$$\begin{cases} y = 4x - 7 \longrightarrow y = 4x - 7 \\ y = -x + 8 \xrightarrow{(4)} 4y = -4x + 32 \end{cases}$$

$$5y = 25$$

$$\boxed{y = 5} \quad \checkmark$$

$$\boxed{x = 3} \quad \checkmark$$

EBS $\Rightarrow$ solve ONE EQUATION for X or Y
(four possible choices)

$$\begin{cases} Y = 4X - 7 \\ Y = -X + 8 \end{cases}$$

Two are Already
Solved for Y, use either.

Now, substitute from the one that is solved to the other. This will eliminate ONE variable.

$$\begin{cases} Y = 4X - 7 \\ Y = -X + 8 \end{cases}$$

$$\therefore 4X - 7 = -X + 8$$

$$\begin{array}{rcl} + X & & + X \\ 5X - 7 & = & 8 \\ + 7 & & + 7 \end{array}$$

$$5X = 15$$

$$\boxed{X = 3} \quad \checkmark$$

$$\boxed{Y = 5} \quad \checkmark$$

Try THE OTHER WAY:

$$\begin{cases} Y = 4X - 7 \\ Y = -X + 8 \end{cases}$$

$$\therefore -X + 8 = 4X - 7$$

$$\begin{array}{rcl} + 8 & + 7 & + X + 7 \end{array}$$

$$15 = 5X$$

$$\boxed{3 = X} \quad \checkmark$$

$$\boxed{Y = 5} \quad \checkmark$$

$$\textcircled{\text{Ex}} \begin{cases} x + y = -3 \\ x - y = 1 \end{cases}$$

$$\textcircled{\text{Ex}} \begin{cases} 4x + 3y = 19 \\ 3x - 4y = 8 \end{cases}$$

$$\textcircled{\text{Ex}} \begin{cases} y = 3x \\ 3x + 4y = 30 \end{cases}$$

What are the 2 special cases?

Variable "goes away", false statement left $\Rightarrow$ NO SOLUTION
(parallel lines)

, true statement left $\Rightarrow$ All Real Numbers
(same lines)

$$\textcircled{\text{Ex}} \begin{cases} y = 2x + 9 \\ 2x - y = -9 \end{cases}$$

4.

Solving problems with systems of linear equations:

- (Ex) Restaurant, enough servers for 17 tables.
Fire Marshall: 56 customers total.
How many 2 seat and 4 seat tables
should owner purchase?

Let f = number of four-seat tables
 t = number of two-seat tables

Variables for what you want to find

Look for a "total" equation to start

$$\begin{cases} 2t + 4f = 56 \longrightarrow 2t + 4f = 56 \\ t + f = 17 \xrightarrow{(-2)} -2t - 2f = -34 \end{cases}$$

$$2f = 22$$

$$\boxed{f = 11}$$

$$\boxed{t = 6}$$

Ⓔ Brenda is 4 times as old as Trina.

The sum of their ages is 40.

How old is Brenda?

Let B = Brenda's age

T = Trina's age

$$\begin{cases} B = 4T \\ B + T = 40 \end{cases}$$

$$4T + T = 40$$

$$5T = 40$$

$$T = 8$$

$$\therefore B = 32 \leftarrow \text{Brenda's Age.}$$

• Homework: Pg 391 # 25, 26, 27, 28, 30, 31,

Bonus # 39