1. For your birthday your father gives you 110 baseball cards. Your friend has the same birthday as you was given 20 cards for his birthday. You plan on buying 5 new cards each week. Your friend plans on buying 8 cards each week.
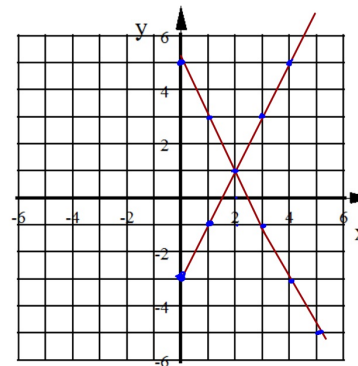
you
$$T = 110 + 5w$$

friend
$$T = 20 + 8w$$

In how many weeks will the two of you have the same number of baseball cards?

They will have the same # of cards in 30 weeks

$$110 + 5w = 20 + 8w$$
$$-5w \qquad -5w$$
$$110 = 20 + 3w$$
$$-20 \quad -20$$
$$\frac{90}{3} = \frac{3w}{3}$$
$$30 = w$$

---

2. Graph these two lines on the same graph below. $y = -2x + 5$ and $y = 2x - 3$
What is their point of intersection? What does this point represent?

$$(2, 1)$$

- where the lines are =
- It's the only pt. that's on both lines at the same.
- Solution to this system of Linear eq's

Chapter 7

Systems of Equations and Inequalities

Two or more equations/inequalities with the same variables

System of linear equations:

Two or more linear equations together.

Solution to a system of linear equations:

1. Numbers that make BOTH equations true at the same time.

2. The point where the two lines intersect.

Is each ordered pair a solution to the system of equations?

1. $(2, 1)$

$$4(2) + (1) = 14 \checkmark$$

$$4x + 6y = 14$$
$$y = 2x - 3$$

$$1 = 2(2) - 3$$
$$1 = 4 - 3$$
$$1 = 1 \checkmark$$

Since (2,1) makes both equations true then it IS a solution to this system of linear equations.

2. $(-3, 7)$

$$b = a - 4 \rightarrow 7 = -3 - 4$$
$$b = 2a + 1 \qquad 7 \neq -7 \quad \times$$

$(-3, 7)$ is NOT a solution to the system because it doesn't make make both eq's true.

Solving systems of linear equations.

Methods we will use:
- Graphing
- Algebra
  - Substitution
  - Elimination