

Solving Word Problem Systems Graphically

1. The Yellow Cab Company charges \$0.25 a mile, but it costs \$5 to get in the cab. Express cab charges no fee to get in the cab but \$1.50 a mile for the ride.

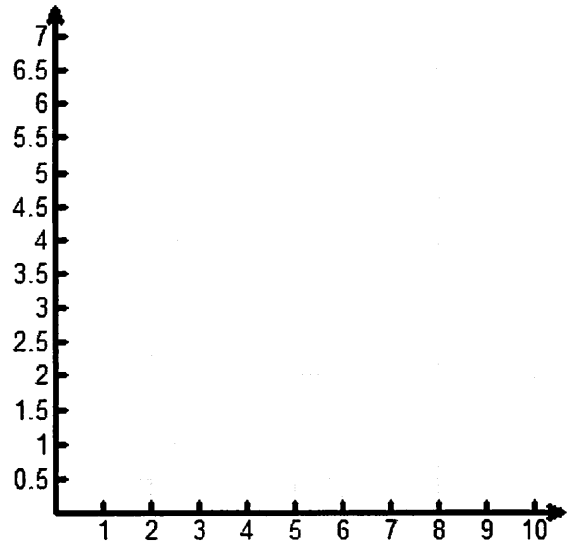
Yellow Cab Company Equation:

Express Cab Company Equation:

For What Length of the Drive is the Cost Equal?

If you are going 3 miles which cab company should you call?

If you are going 7 miles which cab company should you call?



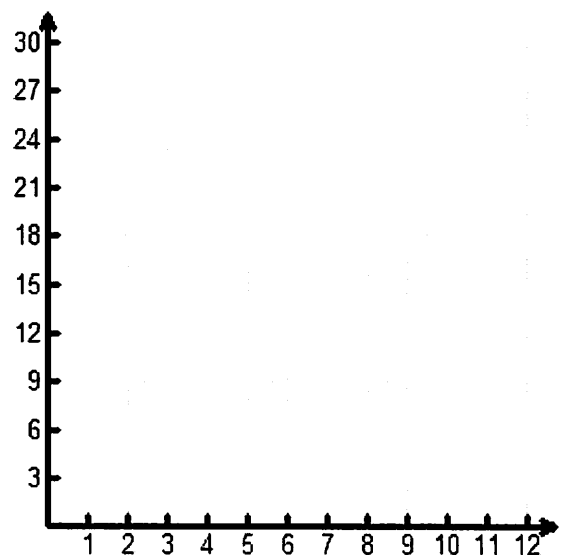
2. Jared can make one Christmas ornament a minute, and he already has 5 made. Marissa can make three ornaments every two minutes but does not have any made.

Jared's Equation:

Marissa's Equation:

How many minutes will it take for Marissa and Jared to have the same number of ornament made?

How many ornaments does each have made when they are tied?



3. Mary, unfortunately, got into a car accident and has three options to call for a tow company to tow her car.

Auto Shop Towing:

\$15 to come pick you up, \$2.50 a mile for the tow

Benny’s Wrecker Service:

Nothing to come pick you up but \$4 a mile for the tow

Cary Automotive:

A flat fee of \$35 for the tow.

Complete the table to calculate the money it would cost to be towed a number of miles.

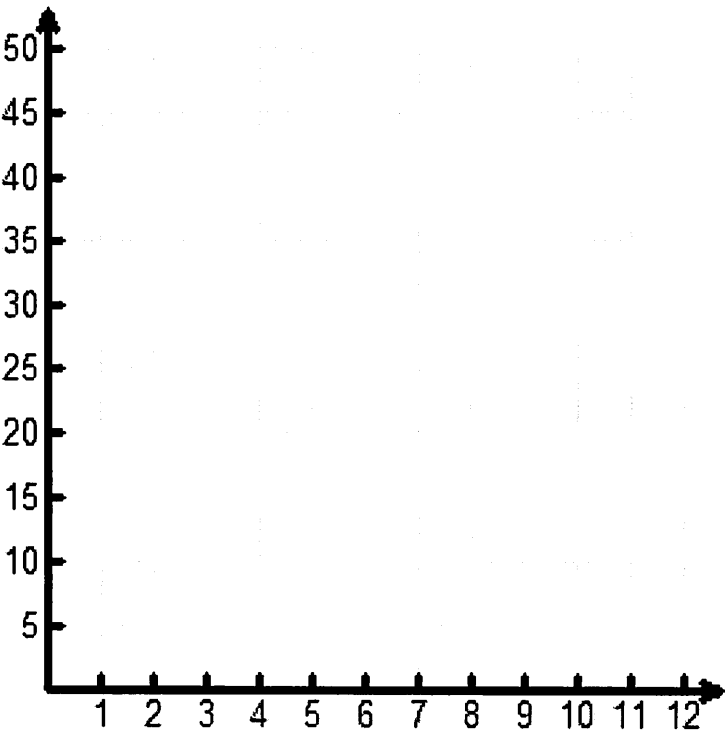
	Miles								
	2	4	6	8	10	12	14	16	18
Auto Shop Towing									
Benny’s Wrecker Service									
Cary Automotive									

Auto Shop Towing Equation:

Benny’s Wrecker Service Equation:

Cary Automotive Equation:

Give Mary Some Advice:



Santa's Elves

Santa's elves are hard at work, and December is of course their busiest month. Four of Santa's elves are competing for the 'elf of the year' award, which is given to the elf who has the most completed toys by Christmas Eve.

Write an equation to represent each Elf below. Graph each equation for each elf below and answer the questions that follow.

Alex 'slow and steady' McElf

Had 12 toys made to begin the month, and makes 2 new toy every six days.

Equation_____

Bob 'the procrastinator' Elfington

After 3 days had only four toys made, but after nine days had 10 toys made

Equation_____

Cramden 'up all night' Elfman

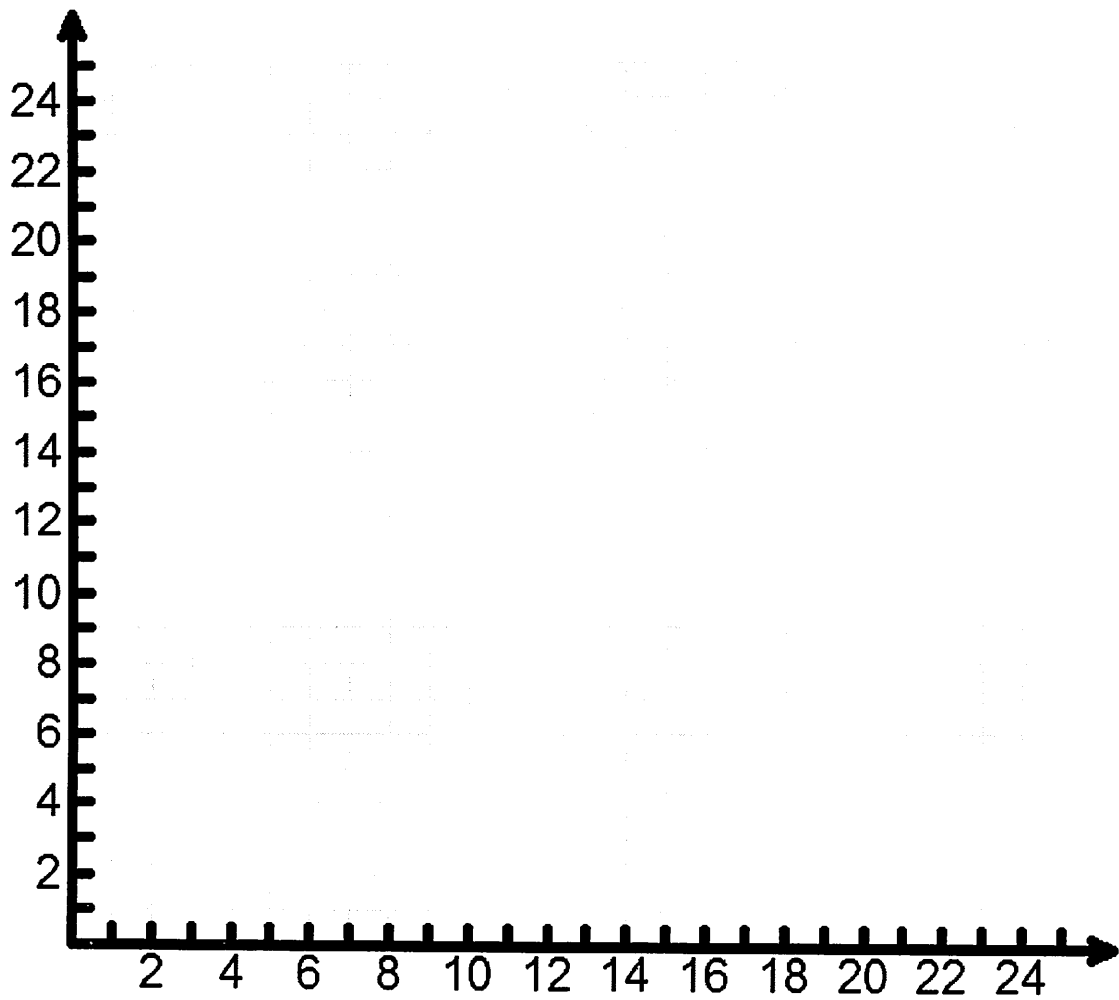
Works 24 hours, all day and night, and manages to make one toy every 36 hours. He began the month in 3rd place with 8 toys made.

Equation_____

Duke 'the maniac' S'elfish

Started the month with the most toys made (17) but the evil elf has been smuggling them out of the shop to sell on Ebay and a rate of one every 3 days.

Equation_____



1. On which days is Cramden in the lead, or tied for the lead?
2. On what days is Alex in the lead or tied for the lead?
3. When are Bob and Cramden tied?
4. How many days does it take Bob to get out of last place?
5. Think carefully: On what day does Duke lose the lead?
6. Which elf should win the award (on the 24th)?

Solving Word Problem Systems Graphically

1. The Yellow Cab Company charges \$0.25 a mile, but it costs \$5 to get in the cab. Express Cab charges no fee to get in the cab but \$1.50 a mile for the ride.

Yellow Cab Company Equation:

$$Y = 0.25x + 5$$

Express Cab Company Equation:

$$Y = 1.50x$$

For What Length of the Drive is the Cost Equal?

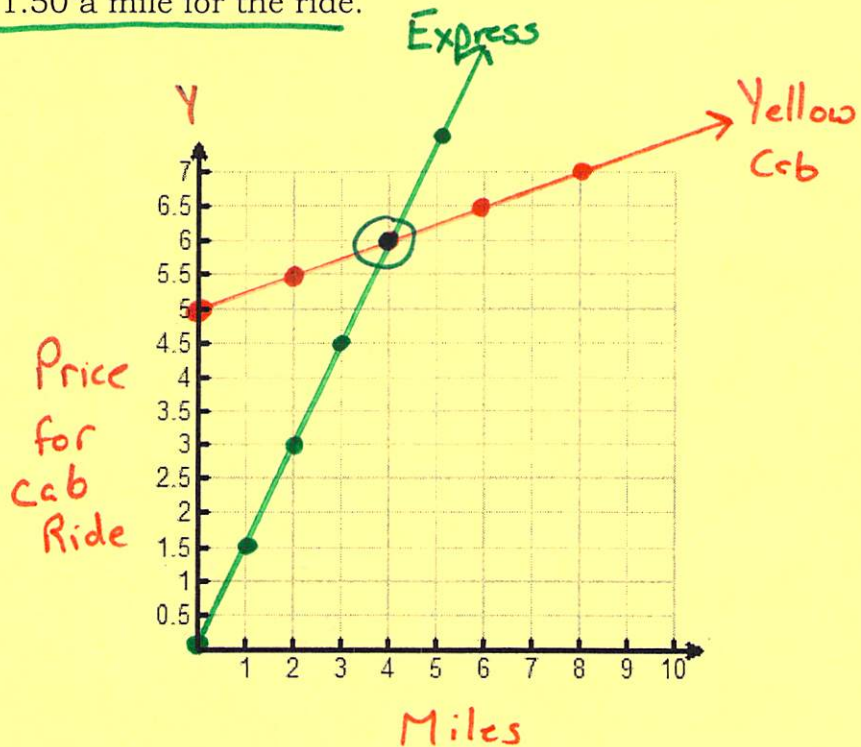
4 miles → \$6

If you are going 3 miles which cab company should you call?

Express

If you are going 7 miles which cab company should you call?

Yellow Cab



2. Jared can make one Christmas ornament a minute, and he already has 5 made. Marissa can make three ornaments every two minutes but does not have any made.

Jared's Equation:

$$Y = x + 5$$

Marissa's Equation:

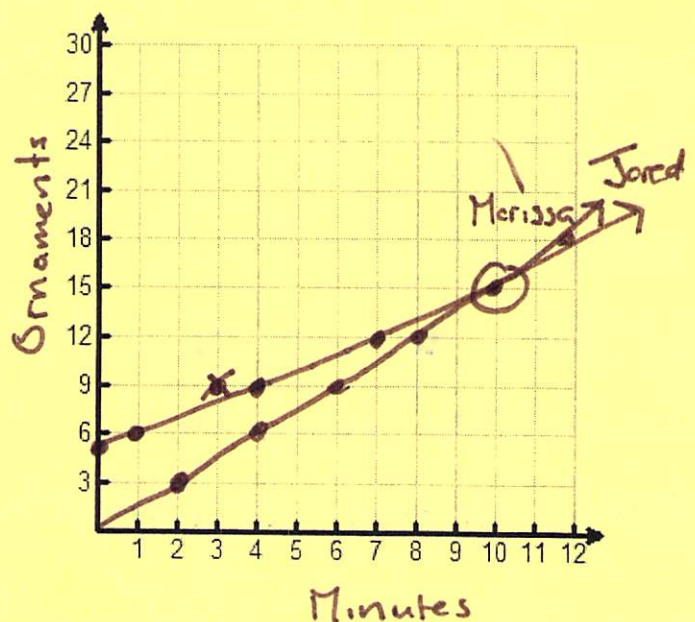
$$Y = \frac{3}{2}x$$

How many minutes will it take for Marissa and Jared to have the same number of ornament made?

10 minutes

How many ornaments does each have made when they are tied?

15 ornaments



3. Mary, unfortunately, got into a car accident and has three options to call for a tow company to tow her car.

Auto Shop Towing:

\$15 to come pick you up, \$2.50 a mile for the tow

Benny's Wrecker Service:

Nothing to come pick you up but \$4 a mile for the tow

Cary Automotive:

A flat fee of \$35 for the tow.

Complete the table to calculate the money it would cost to be towed a number of miles.

	Miles								
	2	4	6	8	10	12	14	16	18
Auto Shop Towing	20	25	30	35	40	45	50	55	60
Benny's Wrecker Service	8	16	24	32	40	48	56	64	72
Cary Automotive	35	35	35	35	35	35	35	35	35

Auto Shop Towing Equation:

$$y = 15 + 2.50x$$

Benny's Wrecker Service Equation:

$$y = 4x$$

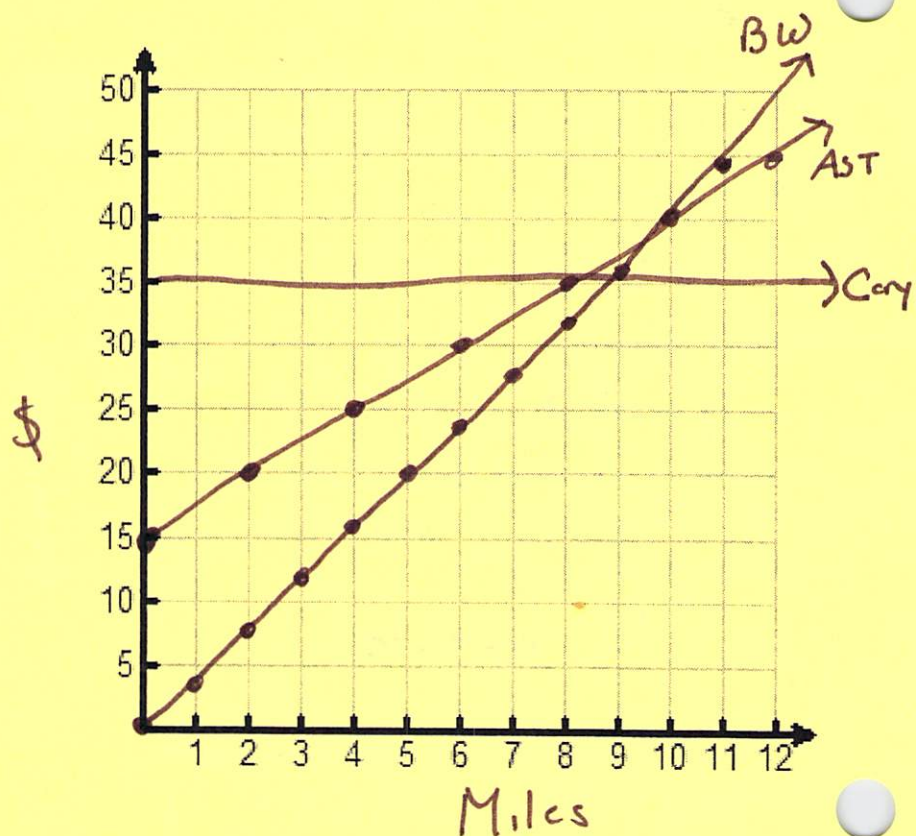
Cary Automotive Equation:

$$y = 35$$

Give Mary Some Advice:

If Mary ~~do~~ needs to tow less than 9 miles choose Benny's

More than 9 miles choose Cary's.



Santa's Elves

Santa's elves are hard at work, and December is of course their busiest month. Four of Santa's elves are competing for the 'elf of the year' award, which is given to the elf who has the most completed toys by Christmas Eve.

Write an equation to represent each Elf below. Graph each equation for each elf below and answer the questions that follow.

Alex 'slow and steady' McElf

Had 12 toys made to begin the month, and makes 2 new toy every six days.

y-int: 12 slope: $\frac{2 \text{ toys}}{6 \text{ days}} = \frac{1}{3}$ Equation $y = \frac{1}{3}x + 12$

Bob 'the procrastinator' Elfington

After 3 days had only four toys made, but after nine days had 10 toys made

$(3, 4)$ $(9, 10)$

$$m = \frac{10 - 4}{9 - 3} = \frac{6}{6} = 1$$

$$y = mx + b$$

$$4 = 1(3) + b$$

$$4 = 3 + b$$

$$1 = b$$

Equation $y = x + 1$

Cramden 'up all night' Elfman

Works 24 hours, all day and night, and manages to make one toy every 36 hours. He began the month in 3rd place with 8 toys made.

y-int: 8

slope $\frac{1 \text{ toy}}{36 \text{ hrs}} = \frac{\frac{2}{3} \text{ toys}}{24 \text{ hrs}} = \frac{2}{3}$ (1 day)

Equation $y = \frac{2}{3}x + 8$

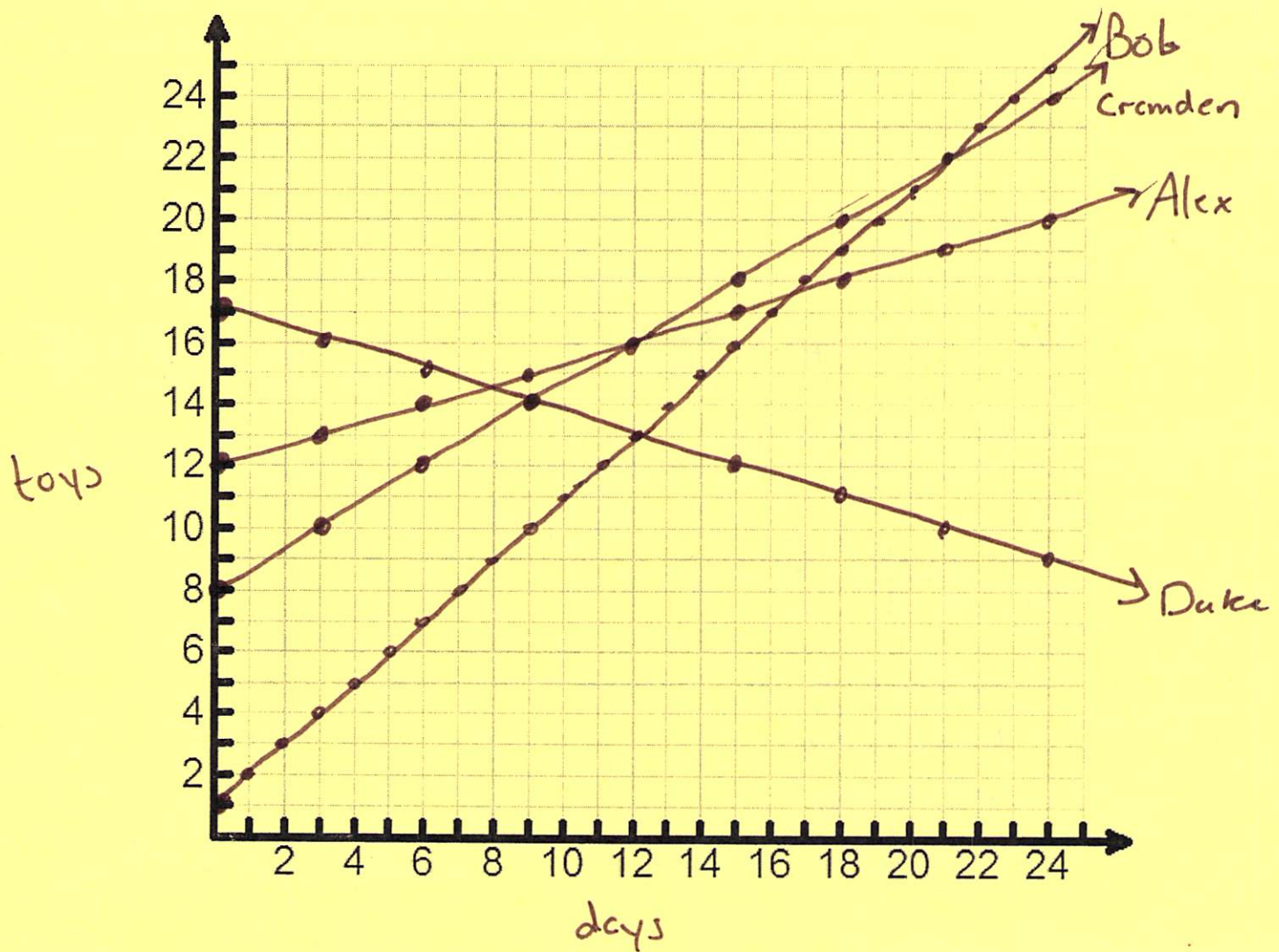
Duke 'the maniac' S'elfish

Started the month with the most toys made (17) but the evil elf has been smuggling them out of the shop to sell on Ebay and a rate of one every 3 days.

y-int: 17

slope: $\frac{-1 \text{ toy}}{3 \text{ days}} = -\frac{1}{3}$

Equation $y = -\frac{1}{3}x + 17$



1. On which days is Cramden in the lead, or tied for the lead? Days 12-21
2. On what days is Alex in the lead or tied for the lead? Days 8-12
3. When are Bob and Cramden tied? Day 21
4. How many days does it take Bob to get out of last place? 12 Days
5. Think carefully: On what day does Duke lose the lead? Day 8
6. Which elf should win the award (on the 24th)? Bob