

Objective: BROWN PACKET PAGE 16

Today I can determine how many solutions a system of linear equations can have and what the "solution" to a system of linear equations really is

WARM UP

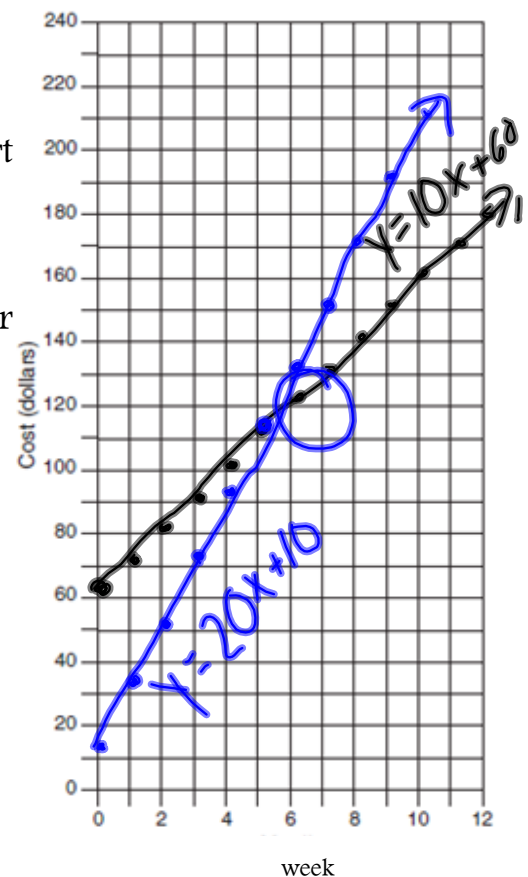
You and your friend are saving money to buy concert tickets. Suppose you already have \$60 and save \$10 each week. Your friend has \$10 and is saving \$20 each week. After how many weeks will you and your friend have the same amount? Write a systems of equations that represents this scenario.

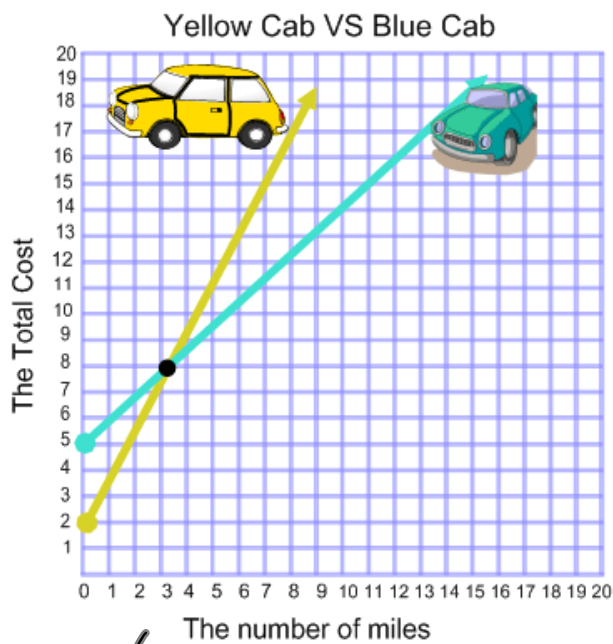
$$y = 10x + 60$$

$$y = 10 + 20x$$

$$y = 20x + 10$$

5 weeks





$$\frac{6}{3} = \frac{2}{1}$$

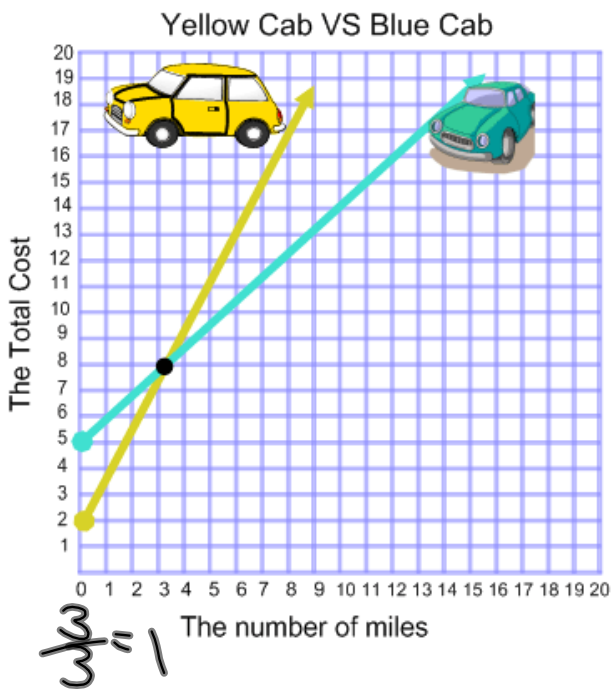
What is the fee for taking yellow cab?

\$2

What is the charge per mile for yellow cab?

\$2

$$y = 2x + 2$$

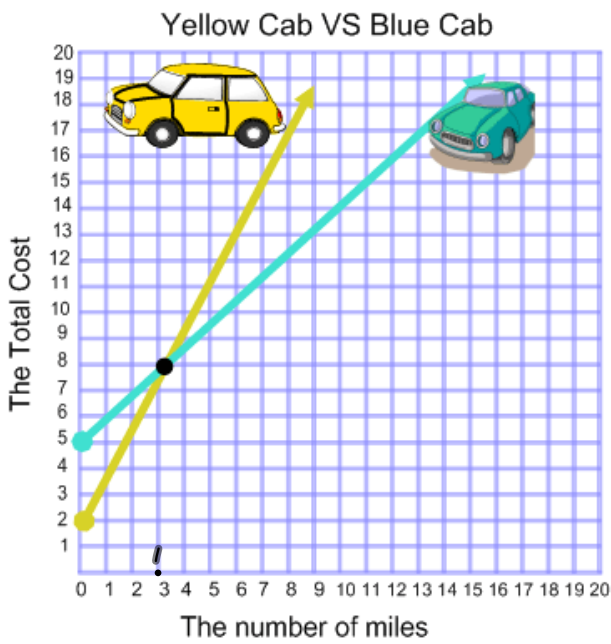


What is the fee for taking blue cab? \$5

What is the charge per mile for blue cab? \$1

$$y = 1x + 5$$

$$y = x + 5$$



What is the number of miles when the total cost is the same for both companies?

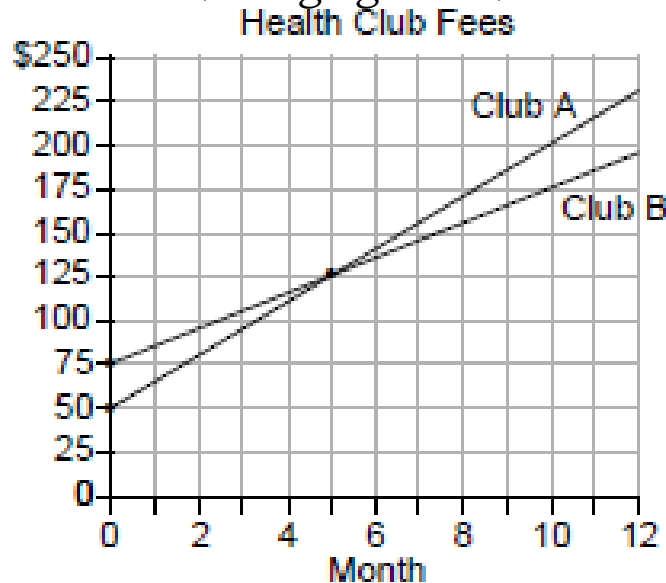
3

What is the total cost when you drive the same miles for both companies?

8

Solving Word Problems by Graphing Systems

Two health clubs offer different membership plans. The graph below represents the total cost of belonging to Club A and Club B for one year.



a) If the yearly cost includes a membership fee plus a monthly charge, what is the membership fee for Club A? $\$50$

b) What is the number of the month when the total cost is the same for both clubs? 5 months

c) What is the total cost for Club A when both plans are the same? $\$125$

d) What is the monthly charge for Club B? $\$10$

Two video rental clubs offer two different rental fee plans:

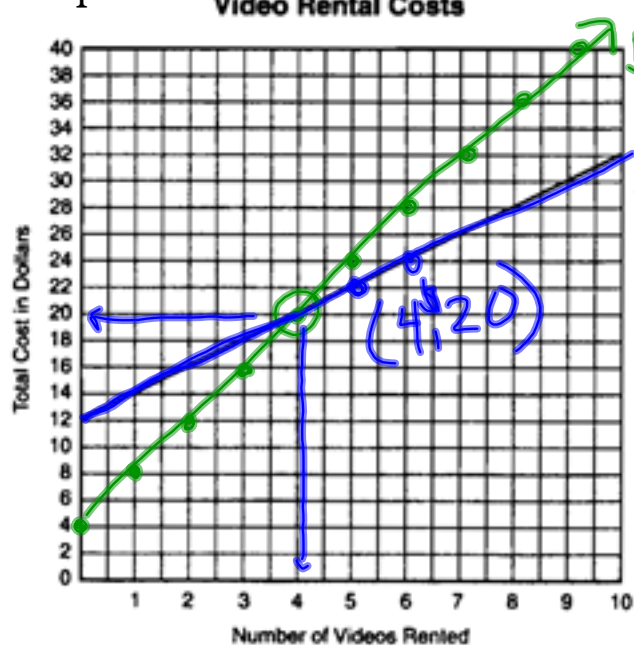
Club A charges \$12 for membership and \$2 for each rented video

$$y = 12 + 2x$$

Club B has a \$4 membership fee and charges \$4 for each rented video

$$y = 4x + 4$$

The graph below represents the total cost of renting videos from Club A



(a) On the same set of xy-axes, draw a line to represent the total cost of renting videos from Club B.

(b) For what number of video rentals is it less expensive to belong to Club A? Explain how you arrived at your answer.

5 OR MORE
line is lower

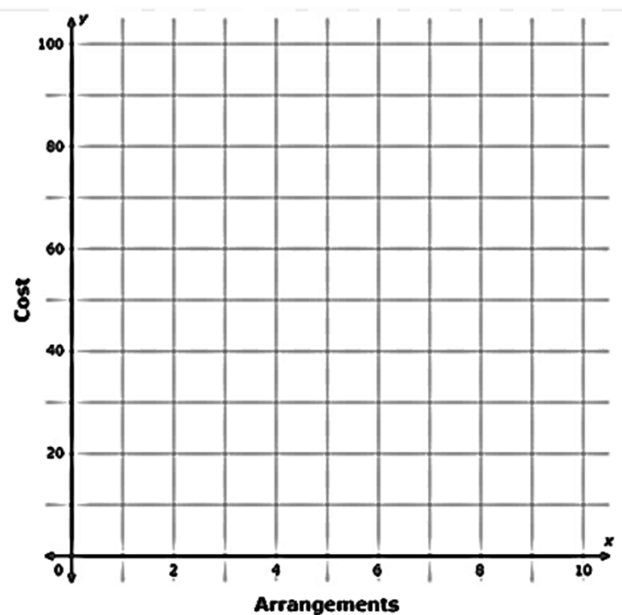
Mrs. Robinson is researching what it would cost to order flower arrangements for a fancy party. She wants one large centerpiece for the head table, and smaller arrangements for the smaller tables.

Fairfax Florist charges \$15 for each smaller arrangement, plus \$30 for the large centerpiece.

Emily's Flowers, in contrast, charges \$40 for the large centerpiece and \$10 per arrangement for the rest.

If Mrs. Robinson orders a certain number of small arrangements, the cost will be the same at either flower shop. How many small arrangements would that be?

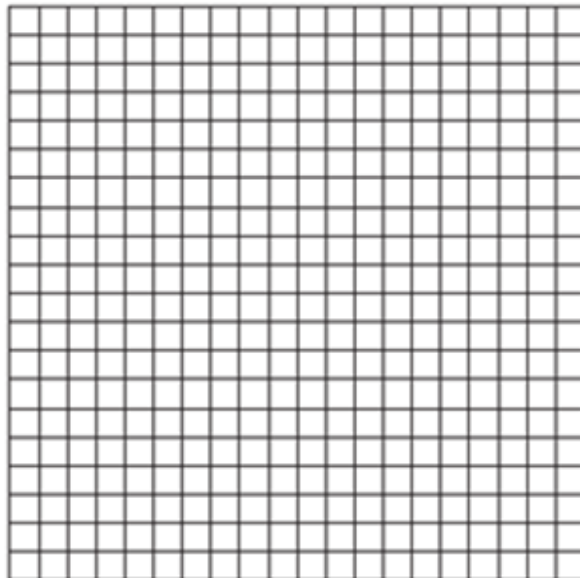
Write a system of equations, graph them, and type the solution.



Next weekend Marnie wants to attend either carnival A or carnival B. Carnival A charges \$6 for admission and an additional \$1.50 per ride. Carnival B charges \$2.50 for admission and an addition \$2 per ride.

(a) In function notation, write $A(x)$ to represent the total cost of attending carnival A and going on x rides. Repeat the same for $B(x)$, carnival B.

(b) Determine the number of rides Marnie can go on such that the total cost of attending each carnival is the same. [Use of the set of axes below is optional.]



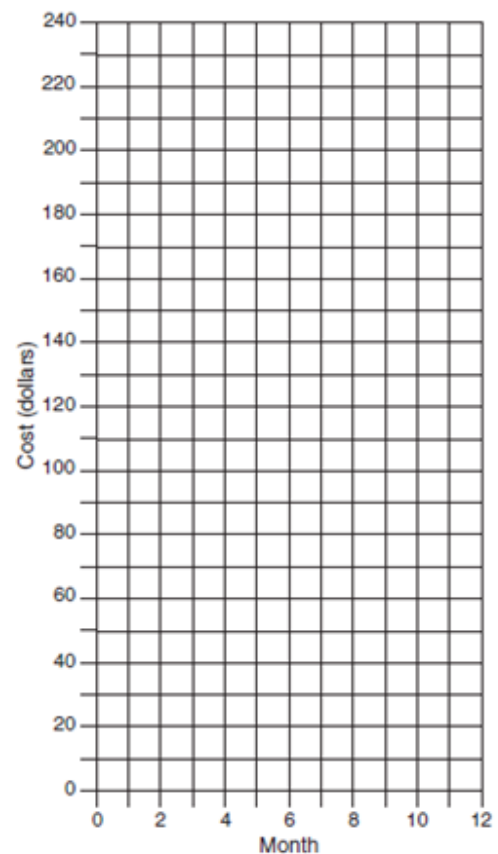
(c) Marnie wants to go on five rides. Determine which carnival would have the lower total cost. Justify your answer.

At Ron's Rental, a person can rent a big-screen TV for \$10 a month plus a one-time "wear-and-tear" fee of \$100. At Josie's Rental, the charge is \$20 a month with an additional charge of \$20 for delivery with no "wear-and-tear" fee.

(a) If c equals the cost, write one equation representing the cost of renting for m months at Ron's Rental and one equation representing the cost of the rental for m months at Josie's Rental.

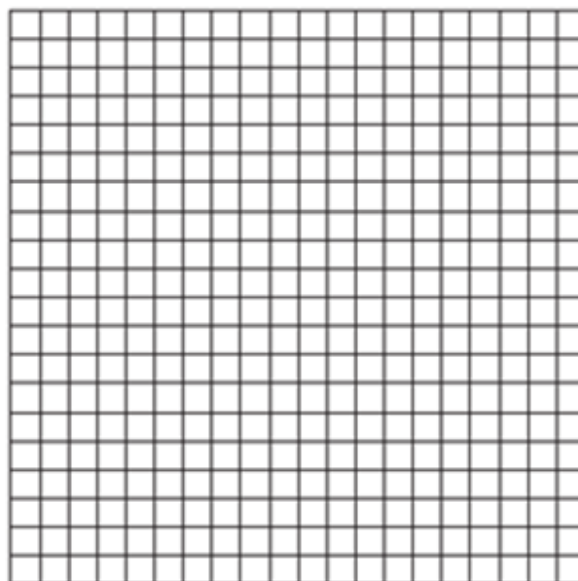
(b) On the accompanying grid, graph and label each equation.

(c) From your graph, determine in which month Josie's cost will equal Ron's cost.



Island Rent-a-Car charges a car rental fee of \$40 plus \$5 per hour or fraction of an hour.
Wayne's Wheels charges a car rental fee of \$25 plus \$7.50 per hour or fraction of an hour.

Under what condition does it cost less to rent from Island Rent-a-Car? [Use of the accompanying grid is optional.]



Name: _____

Score: ____/6



EXIT TICKET

(Solving Linear Systems Graphically)

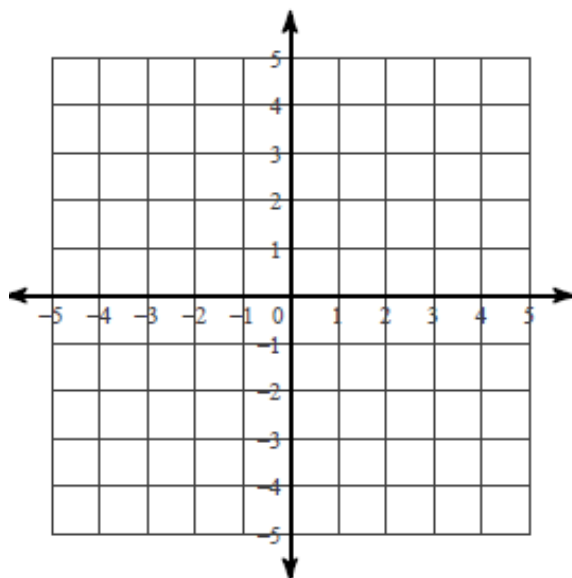
*tear this page off and
turn it in before you
leave class today*

Solve the following system of equations graphically

(i.e. find the point of intersection)

$$y = 4x + 1$$

$$y = x - 2$$



Solution:

(____, ____)