Name: Key

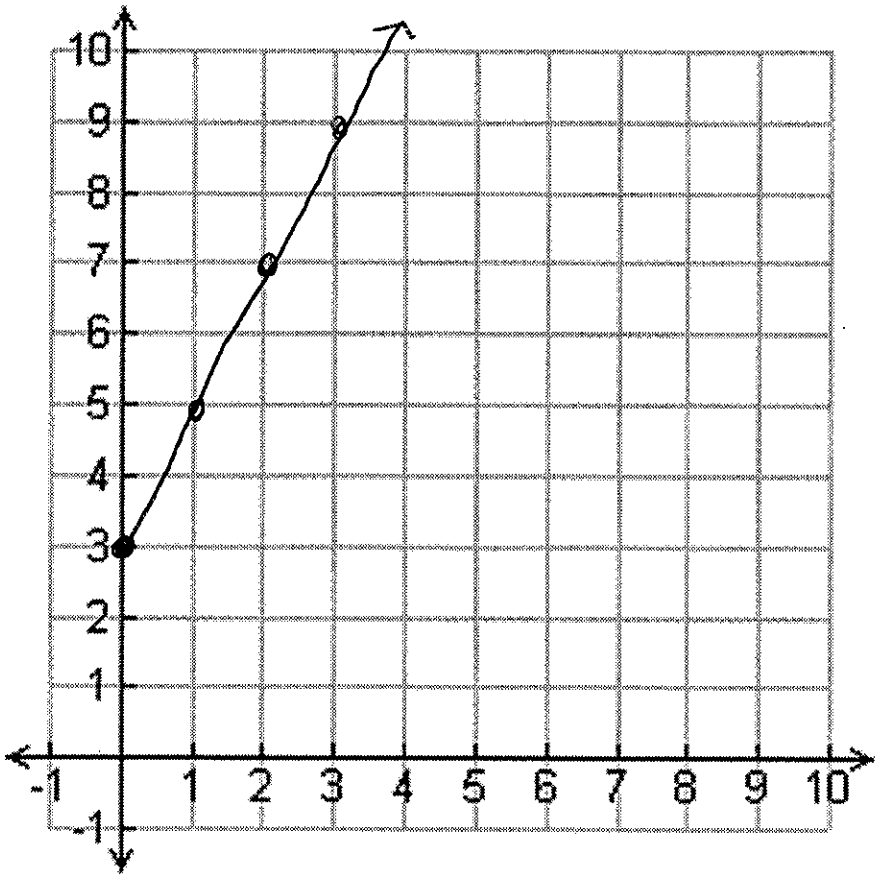
ALGEBRA 2 CC

Date: 11/13/17

TROICI

LESSON #1: SYSTEMS OF EQUATIONS (WITH 2 VARIABLES)

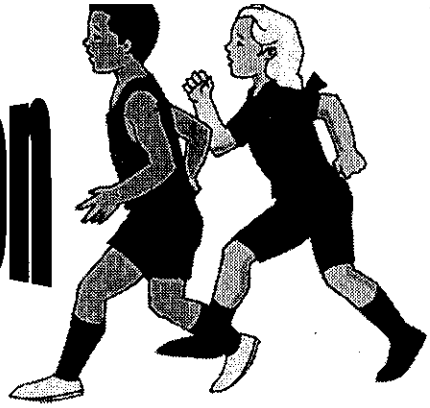
Do Now: Graph the equation of line that begins at 3 and increases by a slope of two



Write the equation of the line graphed above ***<u>HINT</u>: y = mx +b***

$y = 3x + 2$

Participate in a Walk-A-Thon



Suppose you are participating in a Walk-A-Thon for charity.

Companies A, B, and C want to make donations, but under different rules, as follows:

Company A:
Will donate $20 for each participant it sponsors, plus an additional $3 for each mile walked by the participant.

$y = 3x + 20$

Company B:
Will donate $5 for each mile walked by the participant is sponsors.

$y = 5x$

Company C:
Will donate $40 for each participant it sponsors, plus $2.50 for each mile walked by the participant.

$y = 2.50x + 40$

As Companies A, B, and C are competitors, each participant can choose only one company for his or her sponsor. Based on the number of miles you plan to walk, you to need to decide which is the "best sponsor" to choose.

TEAM GRAPHING PROBLEM

1. Using the supplied graph paper and markers, work with your team members to graph the expected donations from each company:

   Label the *x*-axis "Miles Walked." Mark off in units of <u>5 each</u>.

   Label the *y*-axis "$ Donated for Charity." Mark off in units of <u>10 each</u>.

Use the tables below as a guide to help you graph each company.

Company A	
x	*y*
0	20
5	35
10	50
15	65
20	80
25	~~145~~ 95
30	110
35	125
40	140
45	155

Company B	
x	*y*
0	0
5	25
10	50
15	75
20	100
25	125
30	150
35	175
40	200
45	225

Company C	
x	*y*
0	40
5	52.50
10	65
15	77.50
20	90
25	102.50
30	115
35	127.50
40	140
45	152.50

Each team member should plot the points for a different company and then connect the points to make a line.

Note: First draw the line in pencil, in case of mistakes. Then trace each line in color as described above.

Use a different color for each company.
(Included this information in a legend beneath the graph.)

Ex. *Red: Company A* *Blue: Company B* *Green: Company C*

2. If you walk exactly 20 miles, which company should you choose as a sponsor? Why?

you should choose company B b/c you make the most $

3. Create an equation that relates the miles walked with the amount of the donation For each company.

Company A: $y = 3x + 20$

Company B: $y = 5x$

Company C: $y = 2.5x + 40$

4. How long must you walk to earn the same amount of money from Companies A and B? Explain using your graph.

10 miles b/c that is where they intersect

At 10 miles you will make $50

5. How long must you walk to earn the same amount of money from Companies A and C? Explain using your graph.

40 miles b/c that is where they intersect

At 40 miles you will make $140

6. How long must you walk to earn the same amount of money from Companies B and C? Explain using your graph.

Between 15 and 20 miles

At ≈ 16 miles, you will make ≈ $82

7. Which Company would you chose to sponsor you during your walk-a-thon? Why? → Answer varies

Company C b/c I don't have to walk as far to make more $

Name: _____ Date: _____

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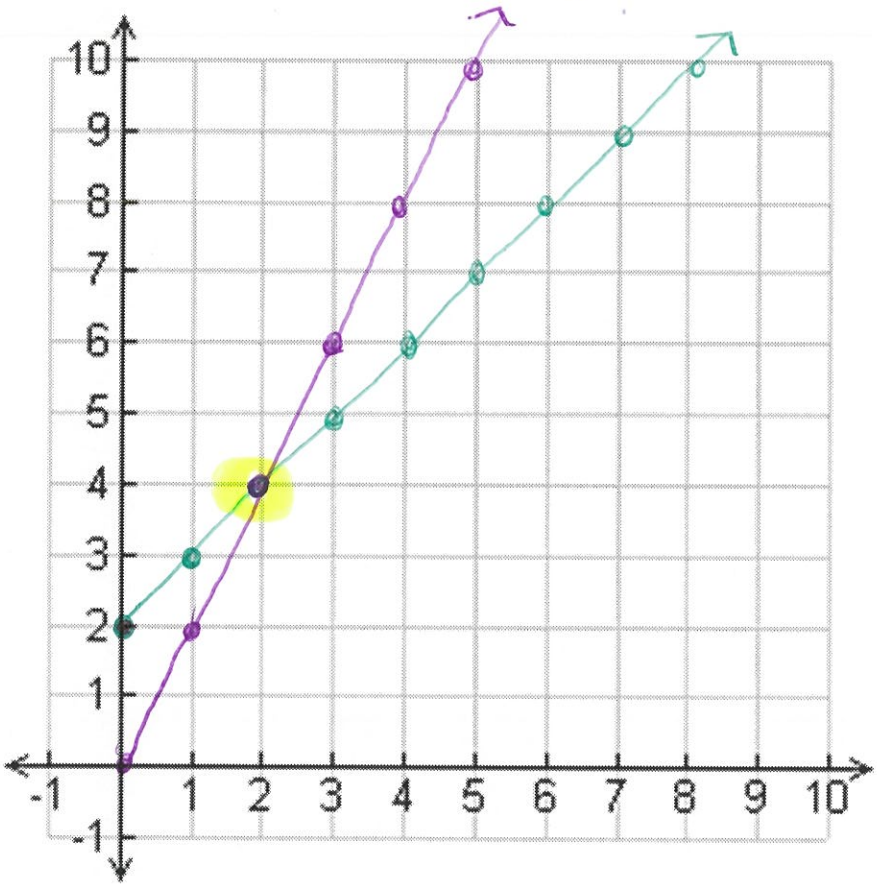
EXIT TICKET

Rob and John are mechanics who work in the same car shop. They are racing to see who can complete more oil changes before the end of the day.

- Rob has already completed two oil changes today and can complete them at a rate of 1 oil change per hour. $y = 3 + x$
- John has not made any oil changes yet today but can compete two oil changes per hour. $y = 2x$

After how many hours will they have completed the same amount of oil changes? Use the graph below to represent your answer.



After 2 hours, they have completed the same amount of oil changes.