

March 22, 2011

8 days and counting!  
starts in

Class



Today's Agenda ~  
MCA ??'s  
Homework  
Finish 8.2.1  
Begin 8.2.2

Please be ready.

Homework: p. 407 (21-25)

# MCA ??'s



We've done 5, 11, 12.

4

$$5+7+2=14$$

13.

$$240-90=150$$

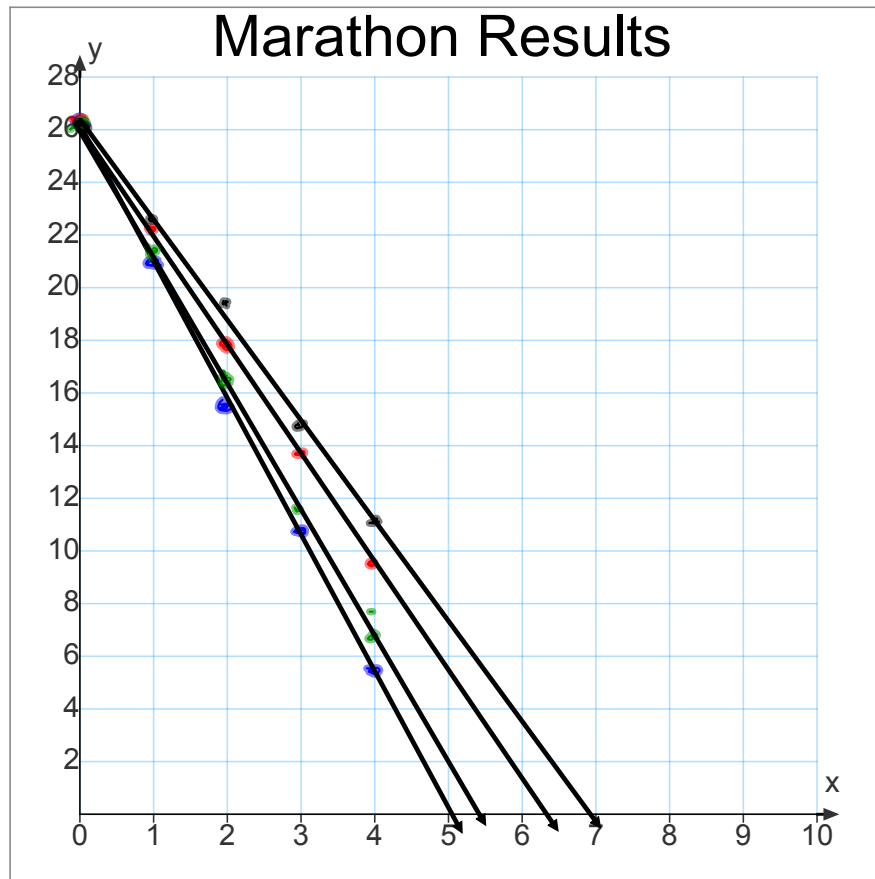
4a)

**Marathon Results**

Time (hours), $t$	0	1	2	3	4
Nadia's Distance from Finish, $N$	26.2	21	15.8	10.6	5.4
Helena's Distance from Finish, $H$	26.2	22.1	18	13.9	9.8
Bryson's Distance from Finish, $B$	26.2	21.35	16.5	11.65	6.8
Mark's Distance from Finish, $M$	26.2	22.4	18.6	14.8	11

4b)

Distance in miles



Time in hours

c) Similar → all downhill, all linear  
diff → different slopes

### Slopes

$$\text{Nadia} = -5.2$$

$$\text{Bryson} = -4.85$$

$$\text{Helena} = -4.1$$

$$\text{Mark} = -3.8$$

d) Time to finish?

$$\text{Nadia} = \text{about } 5 \text{ hours}$$

$$\text{Bryson} = \text{about } 5 \frac{1}{2} \text{ hrs}$$

$$\text{Helena} = \text{about } 6 \text{ hours}$$

$$\text{Mark} = \text{about } 7 \text{ hours}$$

e) Equations

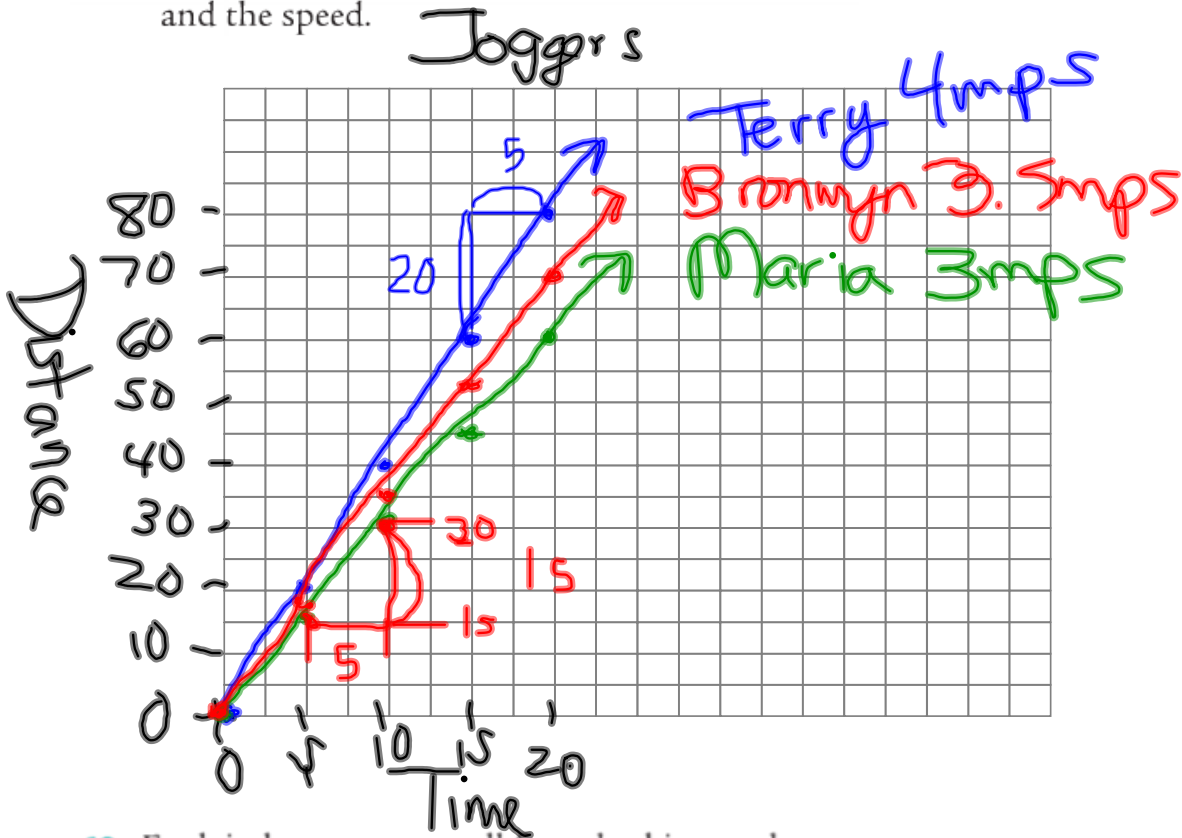
$$\text{Nadia} \rightarrow N = 26.2 - 5.2h$$

$$\text{Helena} \rightarrow H = 26.2 - 4.1h$$

$$\text{Bryson} \rightarrow B = 26.2 - 4.85h$$

$$\text{Mark} \rightarrow M = 26.2 - 3.8h$$

11. On one grid, draw graphs for Terry, Maria, and Bronwyn. Put time on the horizontal axis. Label each graph with the name of the person and the speed.



12. Explain how you can tell from looking at the graph who jogs most quickly and who jogs most slowly.

Terry fast ↗
↘ Maria slow

All the points on each graph you drew are on a line through the point (0, 0). The steepest line is the one for which distance changes the most in a given amount of time, that is, when the speed is the fastest. The line that is the least steep is the one for which distance changes the least in a given amount of time, that is, when the speed is the slowest.

**Think & Discuss**

Look at your graphs for Maria and Bronwyn. What are the slopes of Maria's and Bronwyn's lines? What does the slope mean in Terry's, Maria's, and Bronwyn's graphs?

Slopes:

Maria  $\frac{15}{5} = 3$

Terry  $\frac{20}{5} = 4$

What does the slope mean?

Terry 4mps - his speed

Maria 3ps - her speed

Bronwyn her speed is 3.5mps

**Share & Summarize**

1. Javier walks at a speed of 5 feet per second. If you graphed ~~the distance he walks over time, with time in seconds on the horizontal axis and distance in feet on the vertical axis,~~ what would be the slope of the line?

5

2. Dulce walks at a speed of 7 feet per second. Suppose you graphed the distance she walks over time on the same grid as Javier's line. How would the steepness of her line compare to the steepness of Javier's line? Explain.

$s \rightarrow$   $\nearrow D$

## Investigation 2 Distance and Time

An airplane flies from New York to Los Angeles. There are two distances that are changing, the distance between the airplane and the New York airport and the distance between the airplane and the Los Angeles airport.



### Think & Discuss

- Which of the two distances described above is decreasing over time?
- Think of other situations in which distance decreases over time.

### Develop & Understand: A

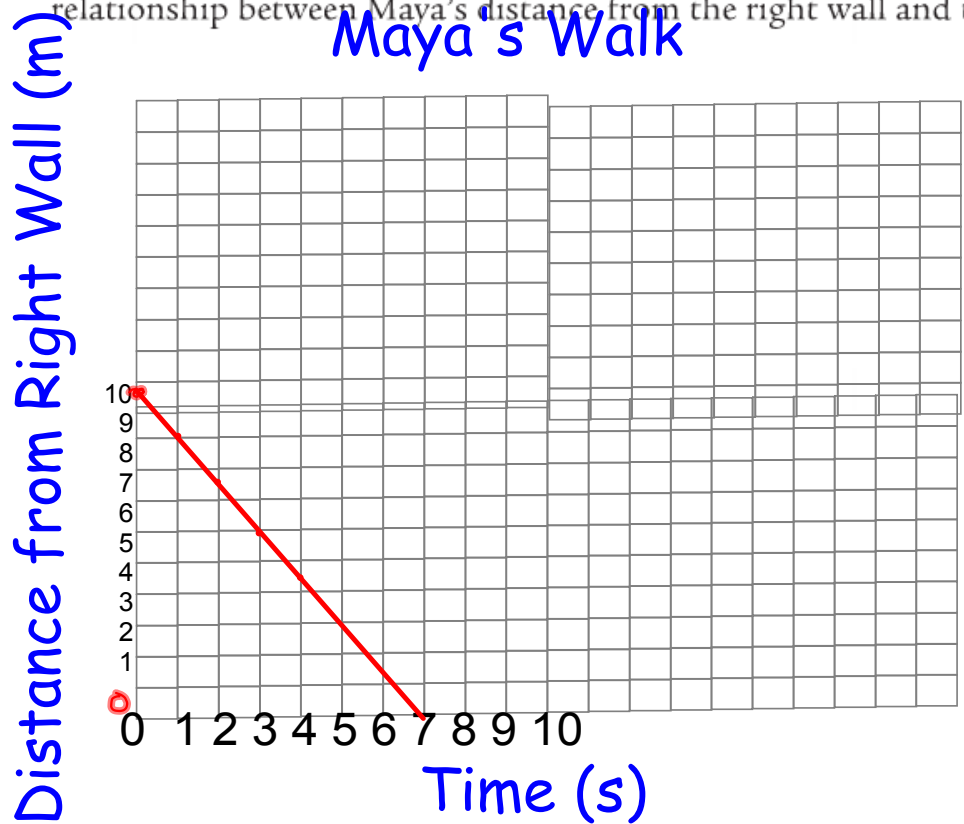
On pages 390 and 391, Zach and Maya were walking from the left wall of a room to the right wall. You figured out how far each person was from the left wall at different points in time. Suppose instead you want to know how far the person is from the *right* wall at each point in time.

- Is the person closest to the right wall at the beginning of the walk or at the end of the walk?
- Suppose Maya walks at 1.5 meters per second across a room that is 10 meters wide. Copy and complete this table.

Maya's Walk

Time (seconds), $t$	0	1	2	3	4
Distance from Right Wall (meters), $d$	10	8.5	7	5.5	4

3. Use the data in Exercise 2 to draw a graph that shows the relationship between Maya's distance from the right wall and time.



4. What is the slope of the line that you drew?
5. Use your graph to estimate when Maya would reach the right wall.
6. Explain how you can find the distance from the right wall if you know the time.
7. Write a symbolic rule that relates  $d$  to  $t$ .



