# Moving Straight Ahead
## Investigation 1: Walking Rates

**Homework:  Problem 1.1**

**1.** Hoshi walks 10 meters in 3 seconds.

a. What is her walking rate in meters per second?

b. At this rate, how long does it take her to walk 100 meters?

c. Suppose she walks this same rate for 50 seconds. How far does she walk?

d. Write an equation that represents the distance d that Hoshi walks in t seconds.

**2.** Milo walks 40 meters in 15 seconds and Mira walks 30 meters in 10 seconds. Whose walking rate is faster?

**Homework: Problem 1.2**

**3.** The table below gives the distance Jose, Mario, and Melanie travel for the first 3 hours. Assume that each person cycles at a constant rate.

**Cycling Distance**

| Cycling Time (hours) | Distance (miles) | | |
|---|---|---|---|
| | Jose | Mario | Melanie |
| 0 | 0 | 0 | 0 |
| 1 | 5 | 7 | 9 |
| 2 | 10 | 14 | 18 |
| 3 | 15 | 21 | 27 |

a. Find the average rate at which each person travels during the first 3 hours.

**Jose:**                                                  **Mario:**

**Melanie:**

Explain.

b. Find the distance each person travels in 7 hours.

**Jose:**                                                  **Mario:**

**Melanie:**

c. Graph the time and distance data for all three riders on the same coordinate axes.

d. Use the graphs to find the distance each person travels in 6.5 hours.

**Jose:**                                                  **Mario:**

**Melanie:**

e. Use the graphs to find the time it takes each person to travel 70 miles.

**Jose:**                                                  **Mario:**

**Melanie:**

f. How does the rate at which each person rides affect each graph? (In other words, write a few sentences telling how the graphs compare to each other.)

g. For each rider, write an equation that can be used to calculate the distance traveled after a given number of hours.

**Jose:**                                                  **Mario:**

**Melanie:**

h. Use your equations from part (g) to calculate the distance each person travels in 6.5 hours.

**Jose:**                                                  **Mario:**

**Melanie:**

i.  How does a person's biking rate show up in his or her equation?

**4.** Mike makes the following table of the distances he travels during the first day of the trip.

| Time (hours) | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Distance (miles) | 0 | 6.5 | 13 | 19.5 | 26 | 32.5 | 39 |

a. Suppose Mike continues riding at this rate. Write an equation for the distance Mike travels after t hours.

b. Sketch a graph of the equation.
How did you choose the range of values for the time axis?   For the distance axis?

**5.** The distance Alicia travels in t hours is represented by the equation d = 7.5t.

a. At what rate does Alicia travel?

b. Suppose the graph of Alicia's distance and time is put on the same set of axes as Mike's, Jose's, Mario's, and Melanie's graphs. Where would it be located in relationship to each of the graphs? Describe the location without actually making the graph.

**Homework: Problem 1.3**

**6.** The graph below represents the walkathon pledge plans from three sponsors.
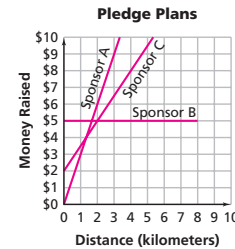
**Pledge Plans**



a. Describe each sponsor's pledge plan.

b. What is the number of dollars per kilometer each sponsor pledges?

c. What does the point where the line crosses the y-axis mean for each sponsor?

d. Write the coordinates of two points on each line. What information does each point represent for the sponsor's pledge plan?

**7.** The students in Ms. Chang's class decide to order water bottles that advertise the walkathon. Maliik obtains two different quotes for the costs of the bottles.

**Fill It Up** charges $4 per bottle.

**Bottles by Bob** charges $25 plus $3 per bottle.

a. For each company, write an equation Maliik could use to calculate the cost for any number of bottles.

**Fill It Up:**

**Bottles by Bob:**

b. On the same set of axes, graph both equations from part (a).
Which variable is the independent variable?
Which is the dependent variable?

c. Which company do you think the class should buy water bottles from? What factors influenced your decision?

d. For what number of water bottles is the cost the same for both companies?

**8.** Multiple Choice The equation C = 5n represents the cost C in dollars for n caps that advertise the walkathon. Which of the following pairs of numbers could represent a number of caps and the cost for that number of caps, (n, C)?

A. (0,5)                B. (3,15)                C. (15,60)                D. (5,1)

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## Homework: Problem 1.4

**10.** Examine the patterns in each table.

**Table 1**

| x | y |
|---|---|
| −2 | 3 |
| −1 | 3 |
| 0 | 3 |
| 1 | 3 |
| 2 | 3 |

**Table 2**

| x | y |
|---|---|
| −3 | 9 |
| −2 | 4 |
| −1 | 1 |
| 0 | 0 |
| 1 | 1 |

**Table 3**

| x | y |
|---|---|
| 0 | 10 |
| 3 | 19 |
| 5 | 25 |
| 10 | 40 |
| 12 | 46 |

**Table 4**

| x | y |
|---|---|
| 0 | −3 |
| 2 | −6 |
| 4 | −9 |
| 6 | −12 |
| 8 | −15 |

a. Describe the similarities and differences in Tables 1– 4.
b. Explain how you can use the tables to decide if the data represent a linear relationship.
c. Sketch a graph of the data in each table.
d. Write an equation for each linear relationship. Explain what information the numbers and variables represent in the relationship.

**12.** Jamal's parents give him money to spend at camp. Jamal spends the same amount of money on snacks each day. The table below shows the amount of money, in dollars, he has left at the end of each day.

### Snack Money

| Days | Money Left |
|---|---|
| 0 | $20 |
| 1 | $18 |
| 2 | $16 |
| 3 | $14 |
| 4 | $12 |
| 5 | $10 |
| 6 | $8 |

a. How much money does Jamal have at the start of camp? Explain.
b. How much money is spent each day? Explain.
c. Assume that Jamal's spending pattern continues. Is the relationship between the number of days and the amount of money left in Jamal's wallet a linear relationship? Explain.
d. Check your answer to part (c) by sketching a graph of this relationship.
e. Write an equation that represents the relationship. Explain what information the numbers and variables represent
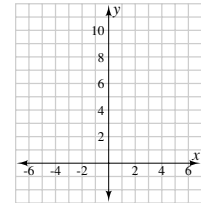
**Does the point represent a point on the graph of $y = x − 4$.**

**1.** $(0, −4)$    **2.** $(5, −1)$    **3.** $(−3, −7)$    **4.** $(−7, −3)$

**5.** You order books through a catalog. Each book costs $12 and the shipping and handling cost is $5. Write an equation and make a graph that represents your total cost.



a. What is the total cost if you buy 6 books?

b. What is the total cost if you buy 4 books?

**6.** A ride in a taxicab costs $2.50 for the first mile and $1.50 for each additional mile, or part of a mile. Write an equation and make a graph that represents the total cost.
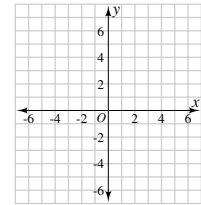


a. What is the total cost of a 10-mile ride?

b. What is the total cost of a 25-mile ride?

**7.** A tree is 3 feet tall and grows 3 inches each day. Write an equation and make a graph that represents how much the tree grows over time.
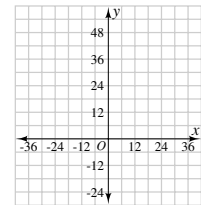


a. How tall is the tree in a week?

b. How tall is the tree in 4 weeks?

**Write an equation for each graph.**

**8.**



**9.**