### Moving Straight Ahead – Investigation 2.2 ANSWER KEY

**HW: MSA p. 38-51 # 3, 4, 6**

3. **a.** The situation is like the race between Henri and Emile because the question asks when the person traveling at the greater rate will catch up to the other person. In both cases, the person traveling at the slower rate has a head start. In this situation, the head start is given as a time rather than a distance. (This distinction is blurred on the graph because the y-intercept indicates the head start as a distance rather than as a time.) Another difference is that after Ingrid catches up with Tara, they will probably start walking together, which will change Ingrid’s and maybe Tara’s graph as they adjust their walking rates to walk together.

**b.** after 4 min

**c.** 1,000 ft from Tara’s house

**d.** The intersection of Tara’s graph at 500 means that when Ingrid started walking fast, Tara was 500 ft ahead of her. The intersection of Ingrid’s line at 0 means that Ingrid was at Tara’s house when she started walking fast.

**e.** Ingrid’s line is steeper. On the graph, her line is closer to vertical. The faster the person travels, the steeper the line will be.

**f.** Answers will vary. Possible answer: Their graphs will continue as a single line. If you extend the graphs past that point, the graphs might not be linear because the girls may travel at a new rate that is different from Tara’s and Ingrid’s original walking rate. So the graphs may not exhibit a constant rate of change.

4. **a.** Yes, because in each case, as the number of people at the party increases by a constant amount, the corresponding cost of the party increases by a constant amount.

**b.** Rollaway: \( y = 5x \);  
Wheelies: \( y = 100 + 3x \)

**c.** If you continue the table of values for each plan showing Number of People and Cost, then you will look in the Cost column of each plan to see when they are equal. On the graph, you would use the y-coordinate of the point of intersection for Rollaway and Wheelies to tell you where the costs of the two plans are equal. You can decide which company to choose by looking either before the point of intersection or after it (depending on how many people will be attending) and finding the company whose line is below the other. This company will have a lesser cost.

**Note:** To graph these equations on a graphing calculator, you could use the following window: Xmin=0, Xmax=100, Ymin=0, and Ymax=350 with the X and Y scl=1 and Xres=1.

6. **a.** about 75 protein bars

**Note:** Students are reading answers from the graph, so some inaccuracy is expected.

**b.** $33.50 because 0.67(50) = 33.5; $83.75 because 0.67(125) = 83.75

**Note:** The 0.67 was derived from the points (0, 0) and (300, 200), showing that each protein bar would sell for $0.67.

**c.** For an income of $200, the band would have to sell about 300 protein bars. The cost would be $125, leaving a profit of about $75.

**Note:** Using 300 as the amount of bars and $0.34 as the cost of the bars, the answer is $73. Suggest that students try to write an equation for each line.