MIXED REVIEW of Problem Solving

STATE TEST PRACTICE
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Lessons 3.4–3.6

1. MULTI-STEP PROBLEM You are planning a party. You would like to have the party at a roller skating rink or bowling alley. The table shows the total cost to rent the facilities by number of hours.

Hours	Roller skating rink cost ($)	Bowling alley cost ($)
1	35	20
2	70	40
3	105	60
4	140	80
5	175	100

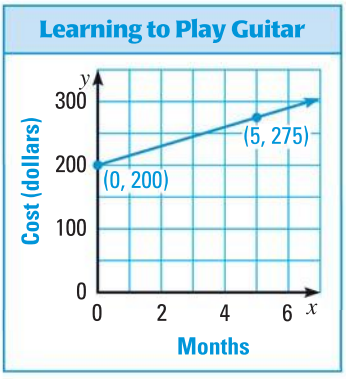
a. Use the data in the table. Write and graph two equations to represent the total cost y to rent the facilities, where x is the number of hours you rent the facility.

b. Are the lines from part (a) parallel? *Explain* why or why not.

c. What is the meaning of the slope in each equation from part (a)?

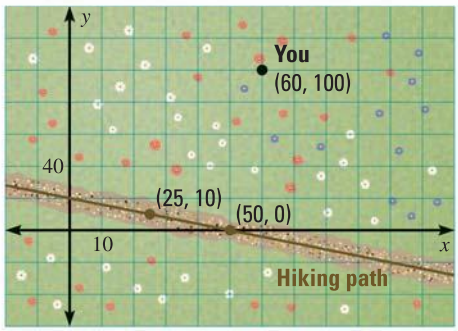
d. Suppose the bowling alley charges an extra $25 set-up fee. Write and graph an equation to represent this situation. Is this line parallel to either of the lines from part (a)? *Explain* why or why not.

2. GRIDDED ANSWER The graph models the accumulated cost of buying a used guitar and taking lessons over the first several months. Find the slope of the line.



3. OPEN-ENDED Write an equation of a line parallel to $2x + 3y = 6$. Then write an equation of a line perpendicular to your line.

4. SHORT RESPONSE You are walking across a field to get to a hiking path. Use the graph below to find the shortest distance you can walk to reach the path. *Explain* how you know you have the shortest distance.



5. EXTENDED RESPONSE The Johnstown Inclined Plane in Johnstown, Pennsylvania, is a cable car that transports people up and down the side of a hill. During the cable car's climb, you move about 17 feet upward for every 25 feet you move forward. At the top of the incline, the horizontal distance from where you started is about 500 feet.

a. How high is the car at the top of its climb compared to its starting height?

b. Find the slope of the climb.

c. Another cable car incline in Pennsylvania, the Monongahela Incline, climbs at a slope of about 0.7 for a horizontal distance of about 517 feet. *Compare* this climb to that of the Johnstown Inclined Plane. Which is steeper? *Justify* your answer.