

4.1.3 Comparing Linear Models

Name: _____ Per: _____

Our goals for today:

- Compare linear relationships shown as equations, tables, and graphs.
- Use rate of change and starting value to explain where two models are equal.

4-31. Two bicycle shops charge by the hour. Harbor Bikes charges an 8 dollar starting fee plus 12 dollars per hour. City Wheels lists its prices in the table.

Hours	Harbor Bikes	City Wheels
1	20 dollars	18 dollars
2	32 dollars	29 dollars
3	44 dollars	40 dollars
4	56 dollars	51 dollars

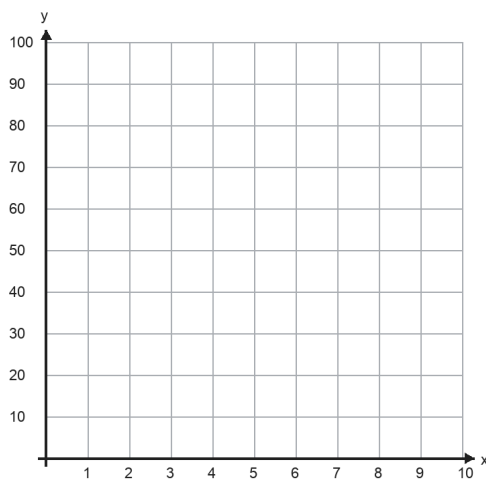
a. Write an equation for the cost of renting from Harbor Bikes. Define your variables.

b. Find the rate of change and starting value for City Wheels. Explain how you used the table.

c. Which shop costs less for a 2-hour ride? Which costs less for a 6-hour ride?

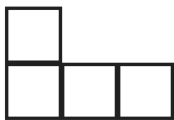
d. Graph both rental plans on the same axes. Label each line.

e. Estimate when the two shops charge the same amount. Check your estimate algebraically.

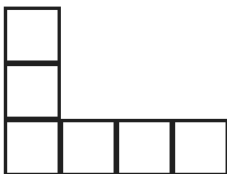


4.1.3 Comparing Linear Models

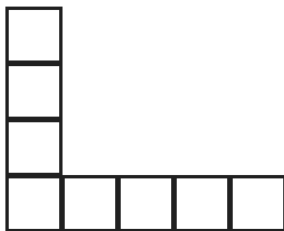
4-32. A border is built from square tiles. The first three figures are shown below.



1



2



3

Figure number	Vertical arm	Total tiles
1	2	4
2	3	6
3	4	8

- a. Describe what changes and what stays the same from one figure to the next.

- b. Write an expression for the total number of tiles in any figure. Define your variable.

- c. How many tiles are in Figure 20? Show how your expression gives the answer.

4-33. The equations below model two costs.

$y = 12x + 8$ $y = 11x + 7$

- a. Without graphing, determine where the two graphs intersect.

- b. Explain what the intersection means in the bicycle-rental situation.

EXTENSION

4-34. Create a third rental plan that is cheaper than both shops for a 1-hour ride but more expensive than both for an 8-hour ride. Give its equation and explain why it works.
