

Phone Bill Worksheet Key

Use the handout of the I Love Math Phone Company Bill and graph paper to answer the following questions.

1. Using the calling card data, you will notice that 7 calls are listed. Should we use all 7 calls for data? Why or why not?

No. The call made on 4-21 has a different code than the others, so we do not include that call.

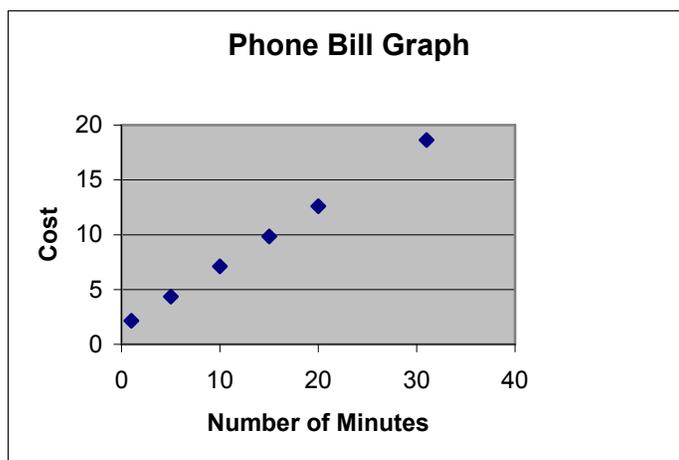
2. Write the domain and range for the calling card data.

Domain: { 1, 5, 10, 15, 20, 31 } Range: { 2.15, 4.35, 7.10, 9.85, 12.60, 18.65 }

3. Complete the table using the calling card data. Label your x-coordinates and your y-coordinates. Write the values in ascending order by the number of minutes.

# of minutes	cost
<u>x-coordinates</u>	<u>y-coordinates</u>
1	2.15
5	4.35
10	7.10
15	9.85
20	12.60
31	18.65

4. Plot the data on the graph paper given. Pay special attention to your units on the x-axis and y-axis. What type of mathematical relationship do you notice? Write it below.

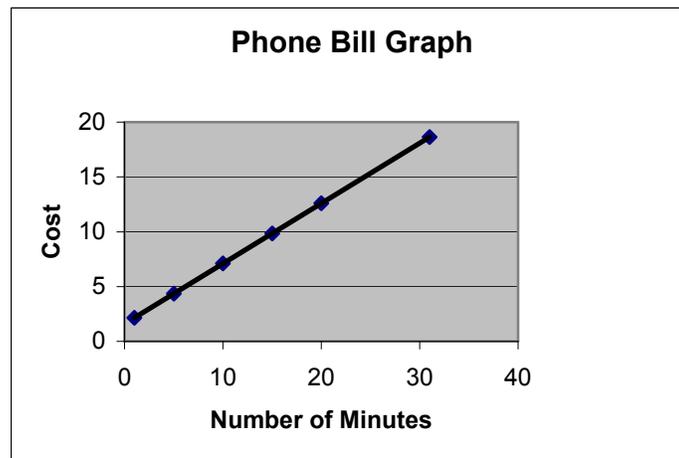


The graph represents a linear function.

- Find the slope using $x = 5$ with $y = \$4.35$ and $x = 20$ with $y = \$12.60$. $m = 0.55$
- Find the y -intercept and create an equation in slope intercept form using the slope found in question five and the y -intercept.

y -intercept $(0, 1.60)$ equation $f(x) = 0.55x + 1.60$

- Graph the line you just found on the same coordinate plane as your points. What do you notice? Write your observation below.



The graph of the equation of the line overlaps the ordered pairs plotted earlier. Therefore, our equation is a good representation of the relationship between the number of minutes and cost of the calling card data.

- What does the slope of your equation found in question six mean? What does the y -intercept mean in terms of phone calls? Write their meanings below.

slope means For each minute we use the calling card, there is a \$0.55 charge.

y -intercept means We must pay \$1.60 to make a call with the calling card (connection fee).

Use the equation you found from question six and your graph to answer the following questions.

- How much should a call cost if the call lasts: 12 min? 45 min? an hour?

12 min \$8.20 45 min \$26.35 1 hour \$34.60

- If a call costs \$11.50, how long was the call? 18 minutes

- If a call costs \$20, how long was the call? 33.5 minutes