Lesson 9-1: Multiple Representations of Functions.....Page #

GOAL: Translate,solve, and interpret different representations of functions.

Jan 25-8:01 AM

An amusement park manager estimates daily profits by multiplying the number of tickets sold by 20. This verbal description is useful, but other representations of the function may be more useful.

Equation

$p = 20n$

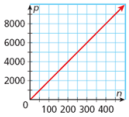
or

$p(n) = 20n$

Table

n	p
50	1000
100	2000
150	3000
200	4000

Graph



These different representations can help the manager set, compare, and predict prices.

Jan 25-9:49 AM

Sketch a possible graph to represent the following.

Ticket sales were good until a massive power outage happened on Saturday that was not repaired until late Sunday.

The graph will show decreased sales until Sunday.

Jan 25-9:50 AM

What if ...? Sketch a possible graph to represent the following.

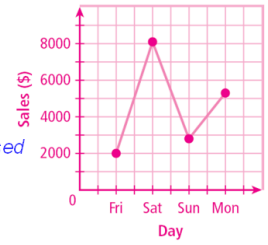
The weather was beautiful on Friday and Saturday, but it rained all day on Sunday and Monday.

The graph will show decreased sales on Sunday and Monday.

Jan 25-9:51 AM

Sketch a possible graph to represent the following.

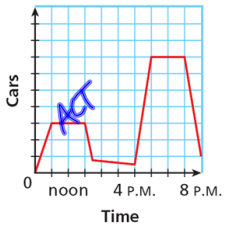
Only $\frac{1}{2}$ of the rides were running on Friday and Sunday.



The graph will show decreased sales on Friday and Sunday.

Jan 25-9:52 AM

The graph shows the number of cars in the high school parking lot on a Saturday, beginning at 10 am and ending at 8 pm. Give a possible interpretation for this graph.



Jan 28-9:49 AM

Because each representation of a function (words, equation, table, or graph) describes the same relationship, you can often use any representation to generate the others.

Jan 25-9:52 AM

Janet is rowing across an 80-meter-wide river at a rate of 3 meters per second. Create a table, an equation, and a graph of the distance that Janet has remaining before she reaches the other side. When will Janet reach the shore?

Step 1 Create a table.

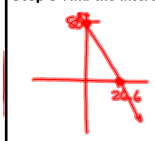
Let t be the time in seconds and d be Janet's distance, in meters, from reaching the shore.

Janet begins at a distance of 80 meters, and the distance decreases by 3 meters each second.

Time (s)	Distance (m)
0	80
1	77
2	74
3	71
4	68

Step 2 Write an equation. $f(x) = -3x + 80$

Step 3 Find the intercepts and graph the equation.



$f(x) = 80 - 3x$

x	y
0	80
26.6	0

$0 = -3x + 80$, $-80 = -80$, $\frac{-80}{-3} = \frac{-3x}{-3}$

26.6 sec reach the shore!

Jan 25-9:52 AM

An investor buys a property for $100,000. Experts expect the property to increase in value by about 6% per year. Use a table, a graph and an equation to predict the number of years it will take for the property to be worth more than $150,000.

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$F(x) = 100{,}000(1.06)^x$

x	y
0	100,000
1	106,000

$\frac{150{,}000}{100{,}000} = \frac{100{,}000(1.06)^x}{100{,}000}$

$\log 1.5 = \log 1.06^x$

$\frac{\log 1.5}{\log 1.06} = x \cdot \frac{\log 1.06}{\log 1.06}$

6.95

7 years

Jan 25-9:54 AM

Assignment: Lesson 9-1 Worksheet

Jan 27-10:34 AM