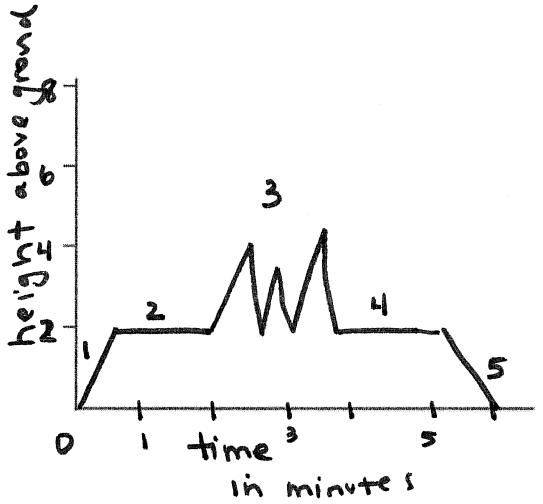
Name Key

Functions Test Review

Sketch a graph of the situation below and label each axis appropriately. Provide a written scenario that explains what your sketch is modeling.

1. Your height above ground as you mount, jump on, and dismount a trampoline.



EXPLANATION

① You get on the trampoline
② You wait for a minute
③ You jump 3 times on
④ Rest a minute
⑤ Dismount

2. Use the graph below to answer the following questions.

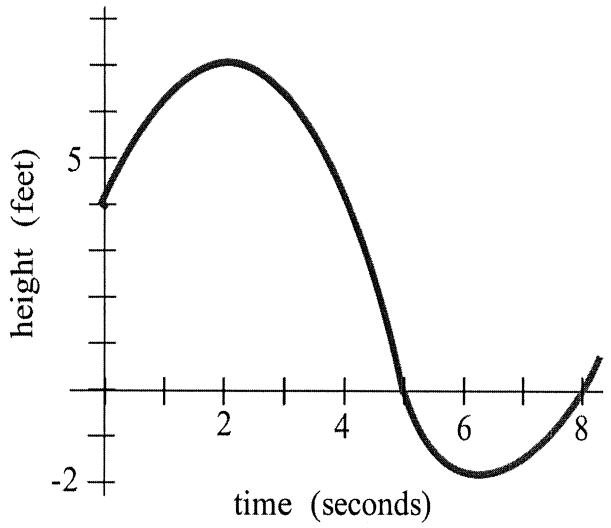


Fig. 22

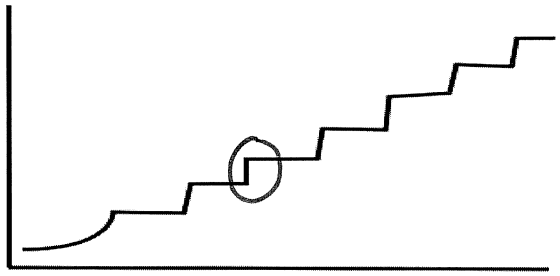
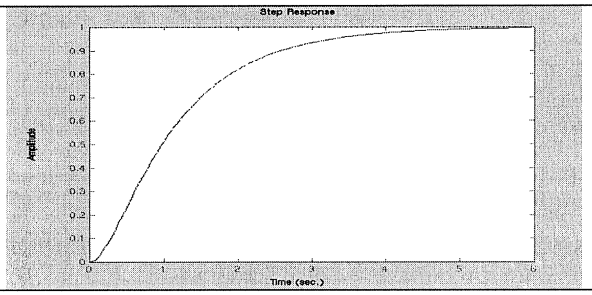
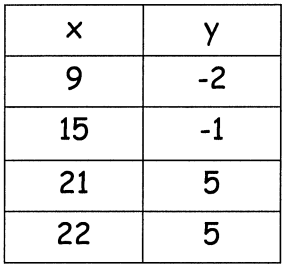
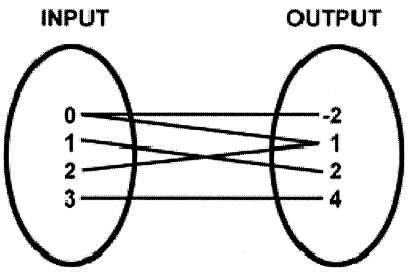
(a) What was the height of the diving board? WHY?
4 feet. That is the initial height of the diver.

(b) When did the diver hit the water? WHY?
At 5 seconds. This was when their height was 0.

(c) How deep did the diver get? WHY?
2 feet below the water, since the lowest height was -2.

(d) When did the diver return to the surface? WHY?
8 seconds. This was when the height returned to 0.

3. Are the following scenarios representing function? Make sure you provide an explanation for your reasoning.

SCENARIO	IS IT A FUNCTION?
	No. The circled portion represents when the graph fails the vertical line test.
	Yes, it passes the vertical line test.
	Yes, it is 1 to 1.
	No, the domain 0 is being sent to more than 1 range.
{(6, 3), (7, -2), (-1, 4), (6, 8)}	No, the domain 6 is being sent to 2 different ranges.

4. Evaluate the equation $y = -6x - 3$, for $x = -10$.

$y = -6(-10) - 3$
$y = 60 - 3$
$y = 57$

4. $y = 57$

5. Evaluate the function rule $f(x) = \frac{2}{7}x + 3$, for $x = \frac{1}{4}$.

$f(x) = \frac{2}{7}\left(\frac{1}{4}\right) + 3$
$f(x) = \frac{2}{28} + 3$
$f(x) = \frac{1}{14} + 3$ → $f(x) = 3\frac{1}{14}$

5. $f(x) = 3\frac{1}{14}$

6. Find the range of the function rule $y = 3x^2$, for the domain = {-2, -1, 0, 6}. Show work.

$y = 3(-2)^2$ | $y = 3(-1)^2$ | $y = 3(0)^2$ | $y = 3(6)^2$
$y = 3(4)$ | $y = 3(1)$ | $y = 3(0)$ | $y = 3(36)$
$y = 12$ | $y = 3$ | $y = 0$ | $y = 108$

6. $\{0, 3, 12, 108\}$

7. List the domain and the range of the following relation.

{(1, -6), (-4, 2), (-7, 1), (1, -9), (-8, 0), (5, 4)}

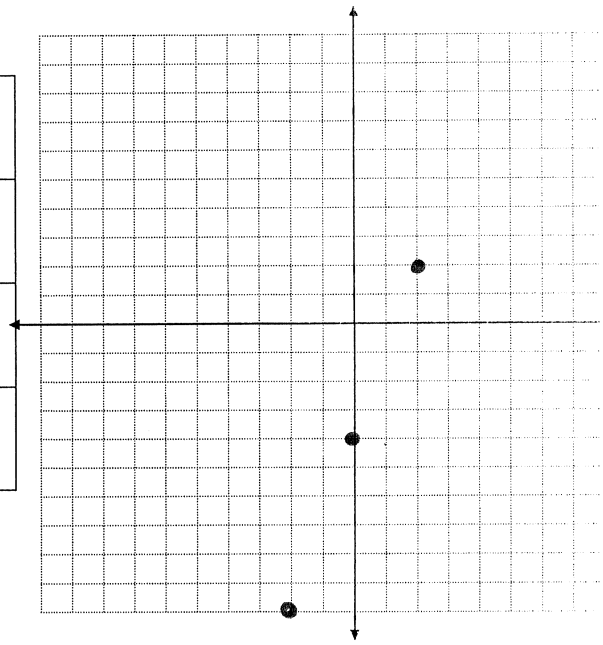
7. Domain = $\{-8, -7, -4, 1, 5\}$

Range = $\{-9, -6, 0, 1, 2, 4\}$

8. Model the rule $y = 3x - 4$ with a table of values and a graph.

$y = 3x - 4$

x	~~$y = 2x + 6$~~	(x, y)
-2	$y = 3(-2) - 4$ $y = -6 - 4 = -10$	$(-2, -10)$
0	$y = 3(0) - 4$ $y = 0 - 4$ $y = -4$	$(0, -4)$
2	$y = 3(2) - 4$ $y = 6 - 4 = 2$	$(2, 2)$



9. You really want the newest version of Black Ops for your PS3. You have $30 in your wallet and you receive a $7.00 allowance each week. If the game costs, C dollars ~~$59.99~~, write a rule below to describe total cost of the game as a function of the number of weeks you must save your money in order to purchase the game.

Define variables:

Let c = total cost of game

Let w = # of weeks to save

Relate:

cost = # of weeks x allowance + money you already have

Function Rule:

$C = 7w + 30$

Enrichment 5-1

1–8. Answers will vary. Samples:
1. the temperature during the day **2.** a car accelerating, going at a constant speed, decelerating, and then continuing at a constant speed **3.** amount of an element undergoing decay **4.** height of a growing child over the year **5.** amount of money in an investment account compounded **6.** height of a person when riding a ferris wheel **7.** the closing prices of the stock market **8.** the rate of postage to mail letters by the ounce

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