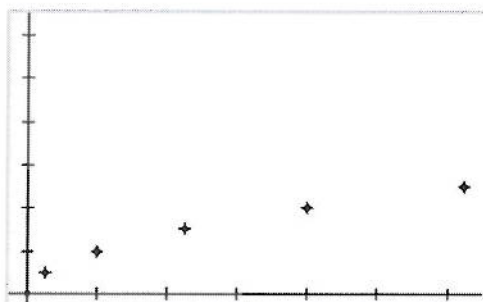


Name \_\_\_\_\_

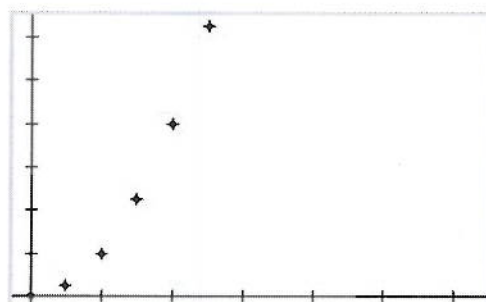
## Functions and their Inverses

Set Topic: Exploring inverse functions.

12. Students were given a set of data to graph and were asked to work independently. After they had completed their graphs, each student shared his graph with his shoulder partner. When Ethan and Emma saw each other's graphs, they exclaimed together, "Your graph is wrong!" Neither graph is wrong. Explain what Ethan and Emma have done with their data.



Ethan's graph

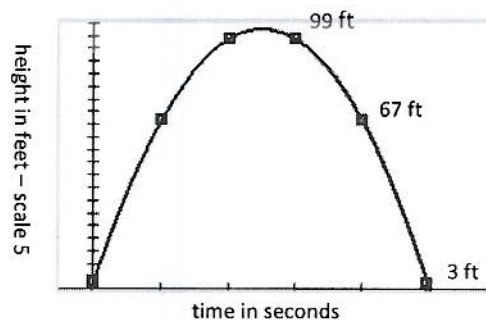


Emma's graph

13. Describe a sequence of transformations that would take Ethan's graph onto Emma's.

*switch the inputs & outputs.*

14. A baseball is hit upward from a height of 3 feet an initial velocity of 80 feet per second (about 55 mph). The graph shows the height of the ball at any second during its flight. Use the graph to answer the questions below.



- Approximate the time that the ball is at its maximum height. *2.5 sec*
- Approximate the time that the ball hits the ground. *5 sec*
- At what time is the ball 67 feet above the ground? *1 sec & 4 sec*
- Make a new graph that shows the time when the ball is at the given heights.

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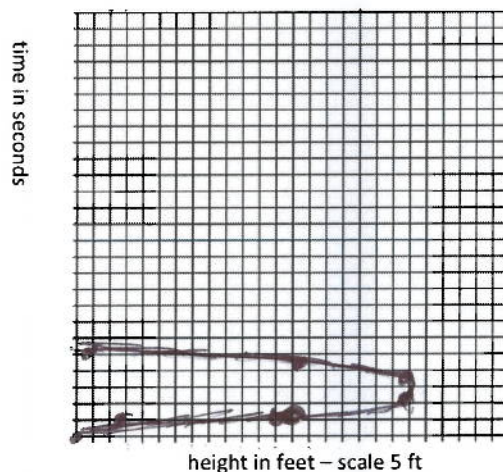


Name \_\_\_\_\_

## Functions and their Inverses

- e. Is your new graph a function?  
Explain.

NO.  
most inputs (heights)  
have multiple outputs  
(time)



Go

Topic: Using function notation to evaluate a function.

The functions  $f(x)$ ,  $g(x)$ , and  $h(x)$  are defined below. Simplify your answers.

$$f(x) = 3x$$

$$g(x) = 10x + 4$$

$$h(x) = x^2 - x$$

Calculate the indicated function values.

15.  $f(7)$

21

16.  $f(-9)$

-27

17.  $f(s)$

3s

18.  $f(s-t)$

$3(s-t)$

19.  $g(7)$

74

20.  $g(-9)$

-86

21.  $g(s)$

$10s + 4$

22.  $g(s-t)$

$10(s-t) + 4$

24.  $h(7)$

42

25.  $h(-9)$

72

26.  $h(s)$

$s^2 - s$

27.  $h(s-t)$

$(s-t)^2 - (s-t)$

$$\text{or } s^2 - 2st + t^2 - s + t$$

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