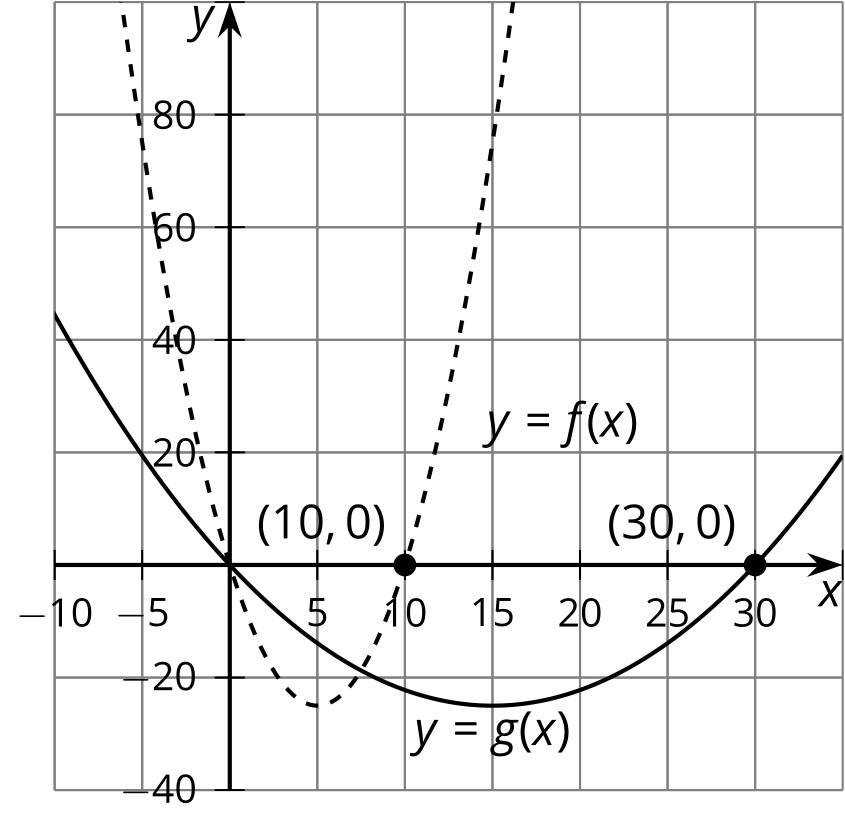
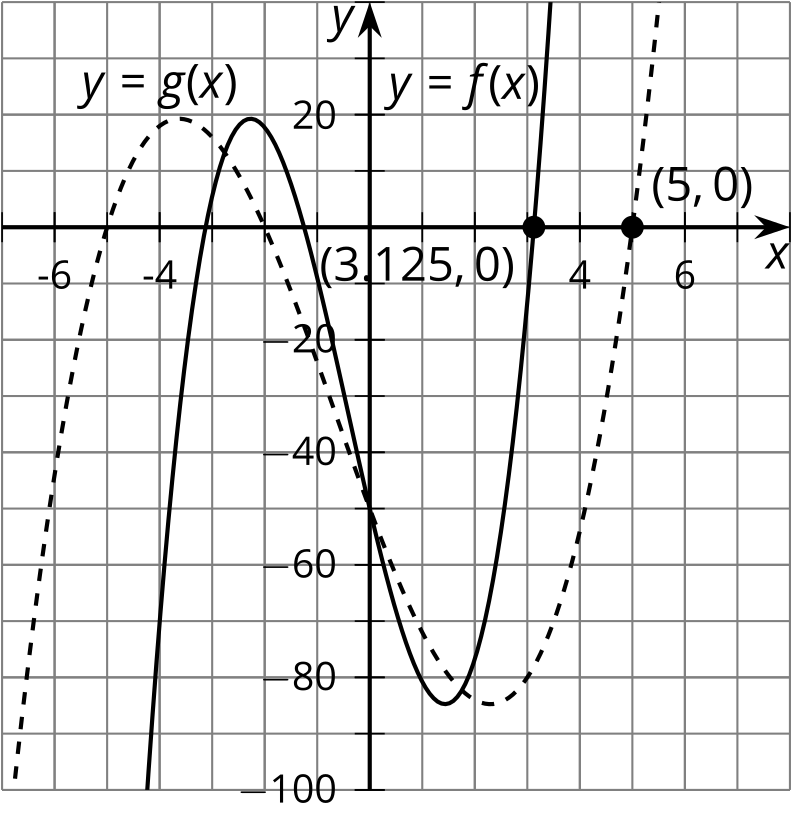
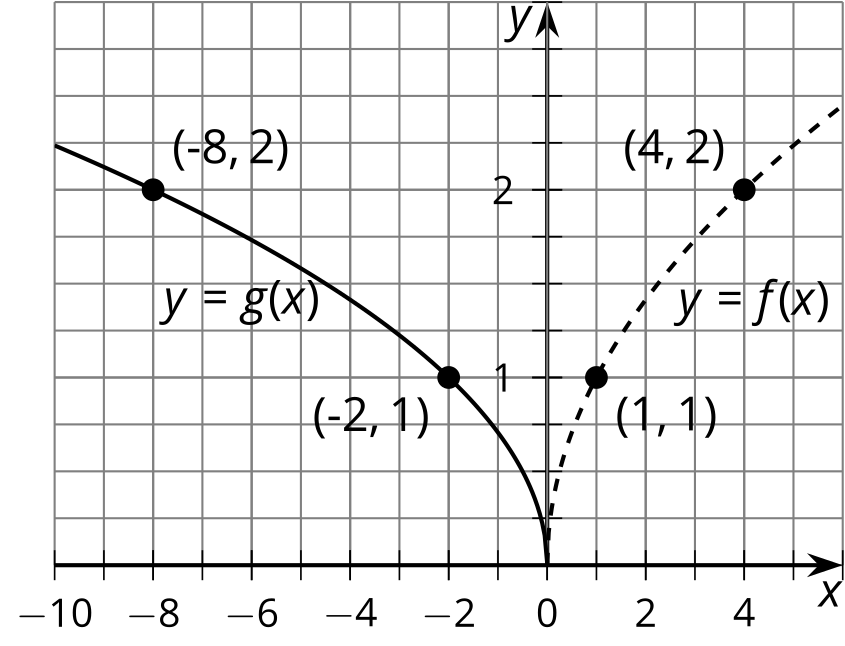
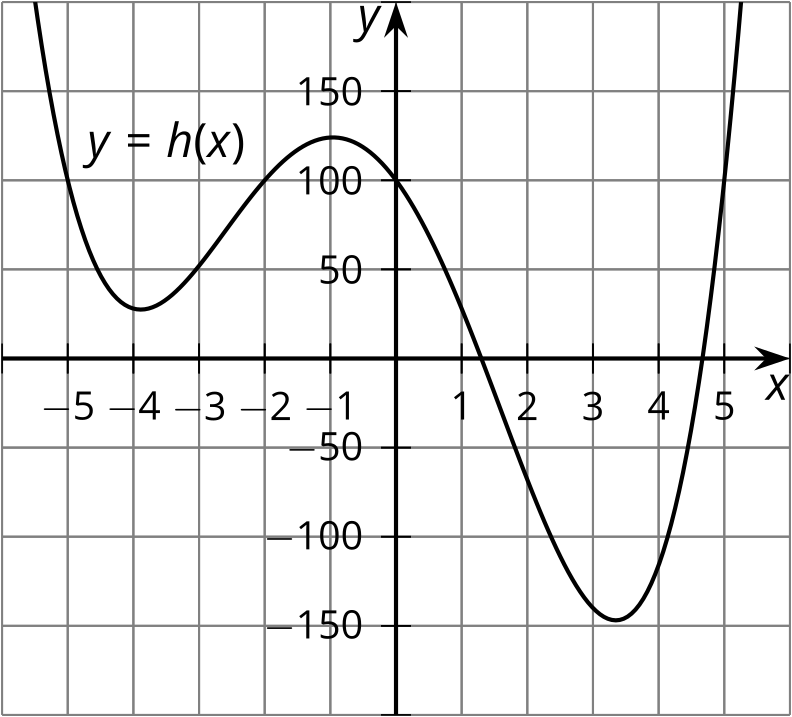
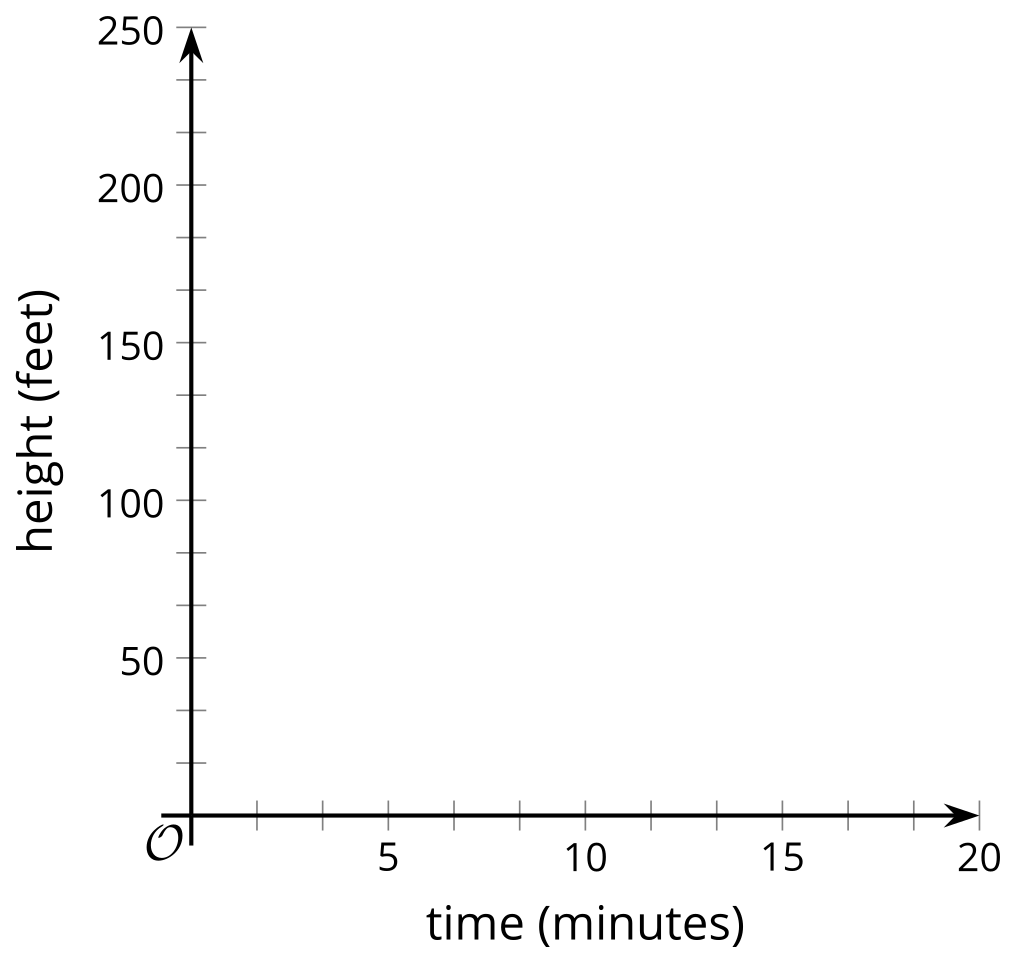
### Lesson 9 Practice Problems

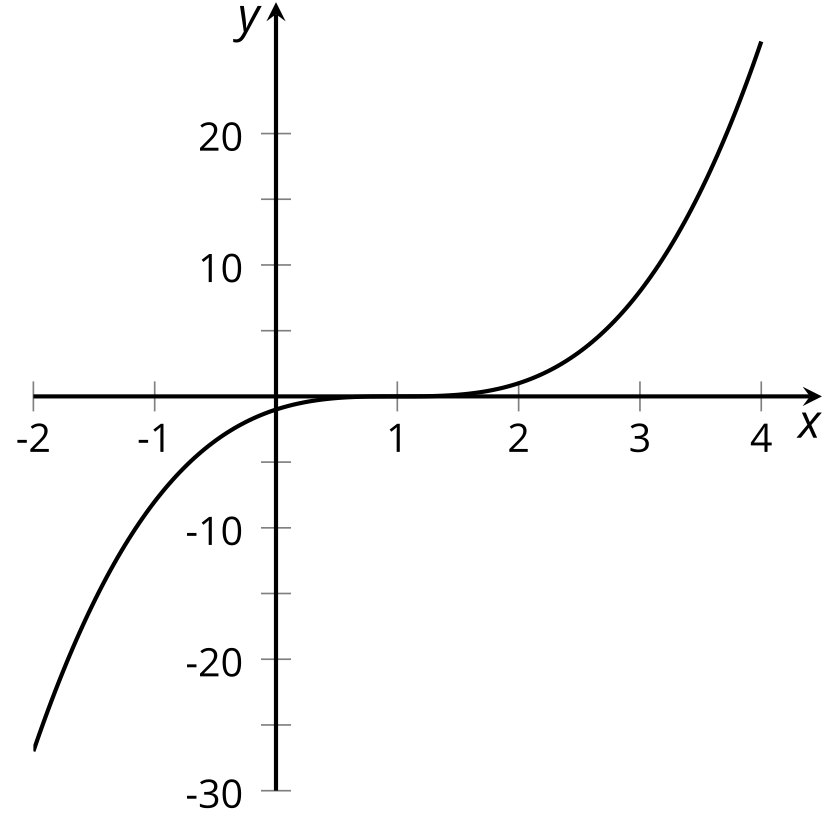
1. Here are graphs of functions and . For each, determine the value of so that .

* 
* 
* 
* 

1. Let . Decide if the reasoning about each of the following functions is correct. Explain your reasoning.
   1. Andre says that is obtained from by scaling the inputs by a factor of 0.1.
   2. Clare says this graph is a vertical shift of the graph of down 100 units.
   * 
   1. Diego says the graph of is the reflection of the graph of over the -axis.
2. A bacteria population, in thousands, is modeled by the function where is the number of days since it was first measured. The function gives the bacteria population, in thousands, weeks after it was first measured. Express in terms of . Explain your reasoning.
3. The height of a hot air balloon, in feet, minutes after takeoff is modeled by the function .
   1. How many minutes does it take for the balloon to reach 200 feet?
   2. Another balloon takes off 5 minutes later and rises at the same speed. Write an equation for the function , where is the height, in feet, of this balloon in terms of . Explain your reasoning.
   3. Sketch graphs of the two functions and .
   * 

* (From Unit 5, Lesson 3.)

1. Here is the graph of a function .

* 
* Reflecting across the -axis and then across the vertical line takes the graph of back to itself. Tyler says that this means is an odd function. Do you agree with Tyler? Explain your reasoning.
* (From Unit 5, Lesson 5.)

1. The population of sloths in an area has been increasing by 5% each year since 2000. Let model the population , in thousands, of sloths years after the year 2000. The graph of has a general shape that fits the data. Find a scale factor so that fits the data.

| * years (since 2000) | * population (in thousands) |
| --- | --- |
| * 5 | * 15.7 |
| * 8 | * 18.2 |
| * 10 | * 20.0 |
| * 12 | * 22.1 |
| * 15 | * 25.6 |
| * 19 | * 33.1 |

* (From Unit 5, Lesson 8.)



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