

LESSON **5.4** Assignment

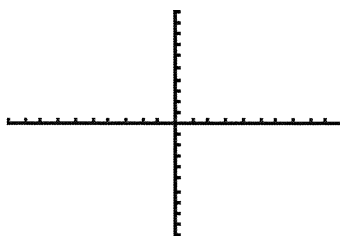
Name _____ Date _____

Take Some Time to Reflect
Reflections of Linear and Exponential Functions

1. The Haverston Daily News had 20,000 subscribers in 2005. They determined that over the past 5 years the number of subscribers decreased steadily by 10% each year.
 - a. Determine the function, $f(x)$, for the number of subscribers based on x , the number of years past 2005.
 - b. Write the equation of a function $g(x)$ that is a reflection of $f(x)$ about the horizontal line $y = 0$. Then write the equation of a function $h(x)$ that is a reflection of $f(x)$ about the vertical line $x = 0$.
 - c. Without graphing, describe how the graphs of $g(x)$ and $h(x)$ will compare to the graph of their basic function $f(x)$. Explain your reasoning.

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- d. Use a graphing calculator to graph the functions $f(x)$, $g(x)$, and $h(x)$. Then sketch and label the graph of each function.



2. The city of Springfield has determined that their newspaper subscribers have declined at a steady rate of about 3250 readers each year since 2005 when they had 24,000 subscribers.
 - a. Determine the linear function, $m(x)$, for the number of subscribers based on x , the number of years past 2005.
 - b. The function $m(x)$ has been transformed three different ways. The results are $n(x)$, $p(x)$, and $r(x)$. Describe how $m(x)$ was transformed to produce the other functions. Then, write an equation for each of those functions.

