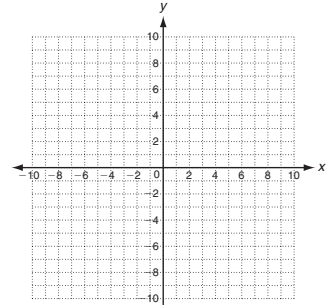Name _____ Date _____ Class _____
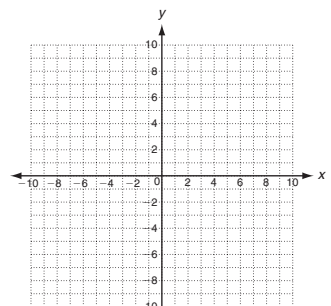

Practice B
LESSON 5-9
Transforming Linear Functions

Graph $f(x)$ and $g(x)$. Then describe the transformation from the graph of $f(x)$ to the graph of $g(x)$.

1. $f(x) = x$; $g(x) = x + 3$

_____

_____

_____

2. $f(x) = \frac{1}{3}x - 4$; $g(x) = \frac{1}{4}x - 4$

_____

_____

_____

3. $f(x) = x$; $g(x) = 2x - 5$
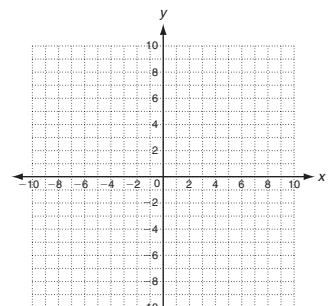
_____

_____

_____

4. Graph $f(x) = -3x + 1$. Then reflect the graph of $f(x)$ across the y-axis. Write a function $g(x)$ to describe the new graph.

_____

5. The cost of hosting a party at a horse farm is a flat fee of $250, plus $5 per person. The total charge for a party of x people is $f(x) = 5x + 250$. How will the graph of this function change if the flat fee is lowered to $200? if the per-person rate is raised to $8?

_____

_____

_____

Holt Algebra 1

Name _____ Date _____ Class _____

Practice B
Transforming Linear Functions

Graph $f(x)$ and $g(x)$. Then describe the transformation from the graph of $f(x)$ to the graph of $g(x)$.
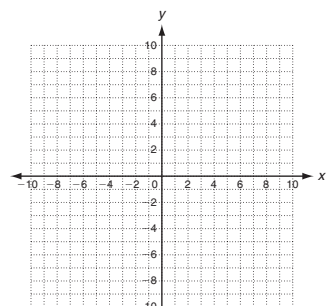
1. $f(x) = x$; $g(x) = x + 3$

　　　translation 3 units up
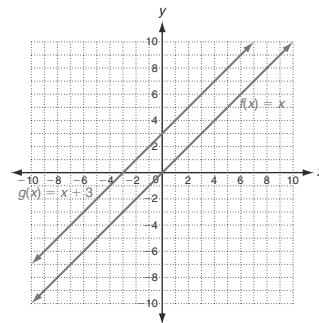
2. $f(x) = \frac{1}{3}x - 4$; $g(x) = \frac{1}{4}x - 4$

　　　rotation (less steep)

　　　about $(0, -4)$

3. $f(x) = x$; $g(x) = 2x - 5$

　　　rotation (steeper) about

　　　$(0, 0)$ and translation

　　　5 units down

4. Graph $f(x) = -3x + 1$. Then reflect the graph of $f(x)$ across the *y*-axis. Write a function $g(x)$ to describe the new graph.

　　　$g(x) = 3x + 1$

5. The cost of hosting a party at a horse farm is a flat fee of $250, plus $5 per person. The total charge for a party of *x* people is $f(x) = 5x + 250$. How will the graph of this function change if the flat fee is lowered to $200? if the per-person rate is raised to $8?

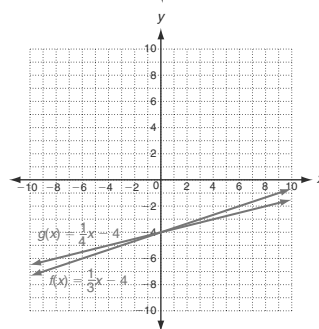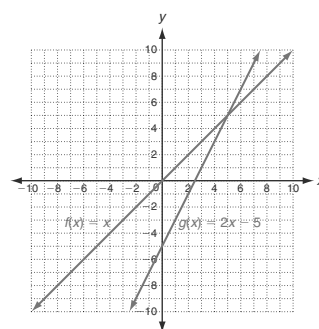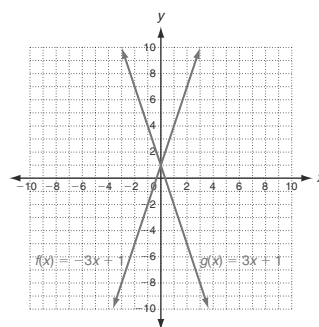　　**The graph will be translated 50 units down.**

　　The graph will be rotated about $(0, 250)$ and

　　　　　　　become steeper.

Holt Algebra 1

Name _____ Date _____ Class _____

Problem Solving
Transforming Linear Functions

Write the correct answer.

1. The number of camp counselors at a day camp must include 1 counselor for every 8 campers, plus 3 camp directors. The function describing the number of counselors is $f(x) = \frac{1}{8}x + 3$ where x is the number of campers. How will the graph change if the number of camp directors is reduced to 2?

_____

2. A city water service has a base cost of $12 per month plus $1.50 per hundred cubic feet (HCF) of water. Write a function $f(x)$ to represent the cost of water as a function of x, amount used. Then write a second function $g(x)$ to represent the cost if the rate rises to $1.60 per HCF.

_____

3. Owen earns a base salary plus a commission that is a percent of his total sales. His total weekly pay is described by $f(x) = 0.15x + 325$, where x is his total sales in dollars. What is the change in Owen's salary plan if his total weekly pay function changes to $g(x) = 0.20x + 325$?

_____

_____

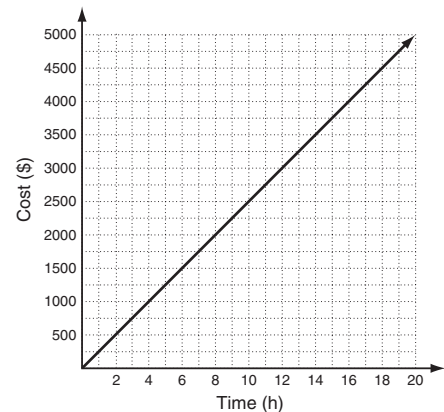How would the graph of $g(x)$ compare to the graph of $f(x)$?

_____

_____

An attorney charges $250 per hour. The graph represents the cost of the attorney as a function of time. Select the best answer.

4. When a traveling fee is added to the attorney's rate for cases outside the city limits, the graph is translated up 50 units. What function $h(x)$ would describe the attorney's rate with the traveling fee?

  A $h(x) = 250x - 50$

  B $h(x) = 250x + 50$

  C $h(x) = 200x$

  D $h(x) = 300x$

5. The attorney's paralegal has an hourly rate of $150. How would you transform the graph of $f(x)$ into a graph for the paralegal's rate?

  F Reflect it over the y-axis.

  G Translate it down 100 units.

  H Translate it to the left 100 units.

  J Rotate it clockwise about $(0, 0)$.

6. Which hourly rate would NOT make the attorney's graph steeper?

  A $225   **C** $300

  B $275   **D** $325

Holt Algebra 1

Name _____ Date _____ Class _____

Problem Solving
Transforming Linear Functions

Write the correct answer.

1. The number of camp counselors at a day camp must include 1 counselor for every 8 campers, plus 3 camp directors. The function describing the number of counselors is $f(x) = \frac{1}{8}x + 3$ where x is the number of campers. How will the graph change if the number of camp directors is reduced to 2?

translation 1 unit down

3. Owen earns a base salary plus a commission that is a percent of his total sales. His total weekly pay is described by $f(x) = 0.15x + 325$, where x is his total sales in dollars. What is the change in Owen's salary plan if his total weekly pay function changes to $g(x) = 0.20x + 325$?

His commission is

raised to 20%.

2. A city water service has a base cost of $12 per month plus $1.50 per hundred cubic feet (HCF) of water. Write a function $f(x)$ to represent the cost of water as a function of x, amount used. Then write a second function $g(x)$ to represent the cost if the rate rises to $1.60 per HCF.

$f(x) = 1.50x + 12$

$g(x) = 1.60x + 12$

How would the graph of $g(x)$ compare to the graph of $f(x)$?

it would be rotated
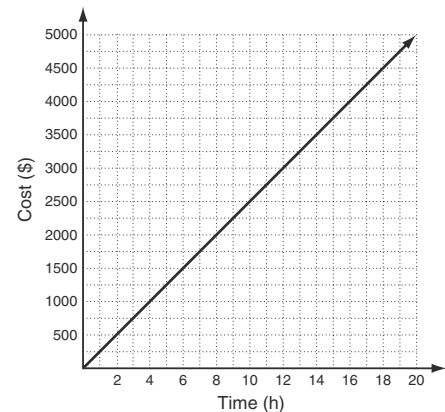
about (0, 12), steeper.

An attorney charges $250 per hour. The graph represents the cost of the attorney as a function of time. Select the best answer.

4. When a traveling fee is added to the attorney's rate for cases outside the city limits, the graph is translated up 50 units. What function $h(x)$ would describe the attorney's rate with the traveling fee?

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  F Reflect it over the y-axis.
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  H Translate it to the left 100 units.
  J Rotate it clockwise about (0, 0).

6. Which hourly rate would NOT make the attorney's graph steeper?

  A $225   **C** $300
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Holt Algebra 1