

Algebra 1

Unit 2: Creating Linear Functions

Summative Assessment - KEY

1. What is the effect on the parent function $f(x)=x$ when $f(x)$ is replaced by: $g(x)=f(x+3)$ ignore f
- a. The x-intercept is translated left 3 units Correct answer
↳ because ()s *↳ because it was +* *()s means left to right ↔*
this has *x-intercept*
 - b. The y-intercept is translated right 3 units
 - c. The x-intercept is translated right 3 units
 - d. The y-intercept is translated left 3 units
2. What is the effect on the parent function $f(x)=x$ when $f(x)$ is replaced by: $g(x)=f(x-4.5)$
- a. The x-intercept is translated left 4.5 units
 - b. The y-intercept is translated right 4.5 units
 - c. The x-intercept is translated right 4.5 units Correct answer
**if n ()s do opposite signs* *()s so ↔*
negative so go right
 - d. The y-intercept is translated left 4.5 units
3. What is the effect on the parent function $f(x)=x$ when $f(x)$ is replaced by: $g(x)=f(x)-2.3$
- a. The x-intercept is translated up 2.3 units *no ()s so up/down y-intercept*
 - b. The y-intercept is translated up 2.3 units *down a.3*

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c. The x-intercept is translated down 2.3 units

d. The y-intercept is translated down 2.3 units Correct answer
↳ because negative

4. What is the effect on the **parent function** $f(x)=x$ when $f(x)$ is replaced by: $g(x)=f(x)+7$ — no ()s so up/down
↳ follow sign

a. The x-intercept is translated down 7 units

b. The y-intercept is translated down 7 units

c. The x-intercept is translated up 7 units

d. The y-intercept is translated up 7 units Correct answer
↳ because positive

5. What is the effect on the $f(x)=2x+6$ when $f(x)$ is replaced by: $g(x)=f(3x)$

a. The graph is steeper and rotated about the y-intercept Correct answer

b. The graph is flatter and rotated about the y-intercept

c. The graph is translated (shifted) up 3 units

d. The graph is a reflection

rotation = slope changes

** larger slope value; steeper the graph*

$$y = 2x + 6 \qquad y = 3x$$

$$m = 2 \qquad m = 3$$

$$b = 6 \qquad b = 0$$

rotation = slope became steeper; translated down 6

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6. What is the effect on the parent function $f(x) = x$ when $f(x)$ is replaced by: $g(x) = 3f(x)$

- a. The graph is translated (shifted) up 3 unit
- b.** The graph is steeper and rotated about the origin Correct answer
- c. The graph is flatter and rotated about the origin
- d. The graph is translated (shifted) down 3 units

$y = x$	$y = 3x$
$m = 1$	$m = 3$
$b = 0$	$b = 0$

Only slope changed -
rotations (steeper)

7. What is the effect on the parent function $f(x) = x$ when $f(x)$ is replaced by: $g(x) = -f(x)$

- a.** The graph is a reflection across the y-axis Correct answer
- b. The graph is steeper and rotated about the origin
- c. The graph is flatter and rotated about the origin
- d. The graph is translated (shifted) down -1 units

$y = x$ $y = -x$

reflection - sign of
slope changed

8. What is the effect on the parent function $f(x) = x$ when $f(x)$ is replaced by: $g(x) = -f(x)$

- a. The graph is steeper and rotated about the origin
- b.** The graph is flatter and rotated about the origin

$y = x$ $y = -(x)$
reflection still

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c. The graph is translated (shifted) down -1 units

d. The graph is a reflection across the x-axis. Correct answer

9. Linear function $f(x) = x$ is graphed on a coordinate plane. The graph of a new line is formed by changing the slope of the original line to $\frac{5}{8}$ and the y-intercept to 2. Which statement about the relationship between these two graphs is true?

a. The graph of the new line is steeper than the graph of the original line, and the y-intercept has been translated down.

b. The graph of the new line is less steep than the graph of the original line, and the y-intercept has been translated up. Correct answer

c. The graph of the new line is steeper than the graph of the original line, and the y-intercept has been translated up.

d. The graph of the new line is less steep than the graph of the original line, and the y-intercept has been translated down.

$$y = 1x \qquad y = \frac{5}{8}x + 2$$

$$m = 1$$

$$m = \frac{5}{8}$$

$$b = 0$$

$$b = 2$$

rotation - slope changed (less steep)
translation - up 2 - y-intercept changed