

## GUIDED PRACTICE **1. Vocabulary** Explain the reason for the shape of the graph of an *absolute-value* function. **SEE EXAMPLE** Let g(x) be the indicated transformation of f(x) = |x|. Write the rule for g(x) and graph the function. p. 158 **2.** 5 units down **3.** 4 units left **SEE EXAMPLE** Translate f(x) = |x| so that the vertex is at the given point. Then graph. **4.** (-4, -5) p. 159 **5.** (1, 6) Perform each transformation. Then graph. **SEE EXAMPLE** p. 159 **6.** Reflect the graph of f(x) = |2x + 3| - 4 across the *y*-axis. **7.** Stretch f(x) = |x + 3| vertically by a factor of 2.

8. Compress f(x) = |x + 3| horizontally by a factor of  $\frac{2}{3}$ .

## PRACTICE AND PROBLEM SOLVING

t Practice	Let $g(x)$ be the indicate	d transformation of $f(x) =  x $	. Write the rule for $g(x)$ and
See Example	graph the function.		_
1	<b>9.</b> 2 units right	<b>10.</b> 1 unit down	<b>11.</b> 4 units left

Translate f(x) = |x| so that the vertex is at the given point. Then graph. **12.** (8, 0.5) **13.** (1.5, 4.5) **14.** (-2.5, 3)

Extra Practice						
Skills Practice p. S7						
Application Practice p. S33						

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For Exercises

> 9-11 12 - 14

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2-9

## Perform each transformation. Then graph.

- **15.** Reflect f(x) = |x 5| + 2 across the *x*-axis.
- **16.** Compress f(x) = |2x| 3 vertically by a factor of  $\frac{1}{4}$ .
- **17.** Stretch f(x) = |2x| 3 horizontally by a factor of  $\frac{3}{2}$ .
- **18.** Football Yard lines of a football field have the relationship shown in the table below (0 yard lines are the goal lines).

Football Field Yard Lines										-	
Distance from One End Zone (yd)	0	10	20	30	40	50	60	70	80	90	100
Marked Yard Line	0	10	20	30	40	50	40	30	20	10	0

- a. Write an absolute-value function to find the marked yard line for a given distance from the end zone. (Hint: Graph the ordered pairs to find the transformation from f(x) = |x|.)
- b. What yard line is 195 feet from the end zone?
- c. What if...? Suppose the absolute-value function is based on the distance from the end zone *in feet*. How would this relationship affect the function?