Name _____ Date _____ Period ____

Graphing f(x) = |x| and Key Attributes

Algebra II | Unit 2 | Day 1 | TEK A2.2.A

Objective: I can graph f(x) = |x| from a table and identify its domain, range, intercepts, symmetry, and minimum value.

Vocabulary

Absolute value: the distance a number is from _____, always _____ (≥ 0).

Vertex: the point where the two straight-line pieces of f(x) = |x| meet: _____.

Symmetric about the y-axis: the left and right halves of the graph are _____.

KEY IDEA

f(x) = |x| graphs as a V-shape with its corner (the vertex) at _____.

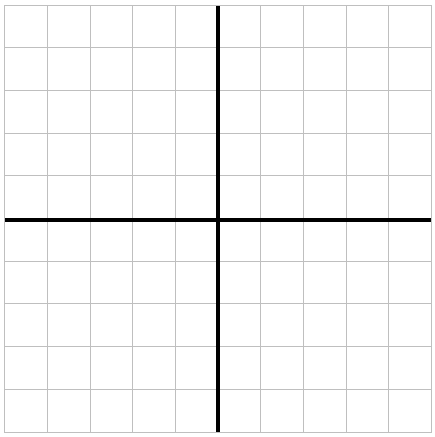
Domain: _____ **Range:** _____

Symmetric about the y-axis, minimum value _____, no maximum.

Let's Work Through It

Example 1 — Complete the table for f(x) = |x|, then graph the seven points. Each square is 1 unit.

x	-3	-2	-1	0	1	2	3
f(x)							



Example 2 — Use your graph to fill in the key attributes.

Domain: _____ Range: _____

Vertex: _____ Symmetric about: _____

Minimum value: _____ Maximum value: _____

Example 3 — Evaluate each.

|-8| = _____ |6| = _____ |-2.5| = _____ f(-10) = _____

Example 4 — A hiking trail runs both directions from a trailhead at position 0. A hiker's distance from the trailhead is d(x) = |x| miles.

Distance for a hiker at x = -3.5: _____ at x = 6: _____

Example 5 — Compare f(x) = |x| to the line y = x.

Both have domain _____ and both pass through _____

f(x) = |x| has range _____ and minimum _____

y = x has range _____ and minimum value _____

Your Turn

You Try 1 — A different trail also has its trailhead at 0. Find the distance from the trailhead for a hiker at x = -9 and a hiker at x = 7.

x = -9: _____ x = 7: _____

You Try 2 — True or False: the graph of f(x) = |x| is symmetric about the x-axis. Explain in one sentence.

_____

_____

_____