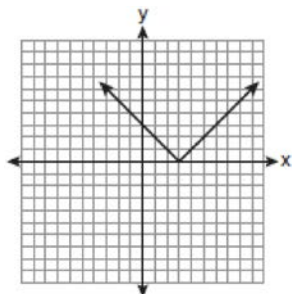
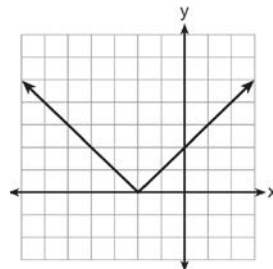


**A.G.5: Graphing Absolute Value Functions: Investigate and generalize how changing the coefficients of a function affects its graph**

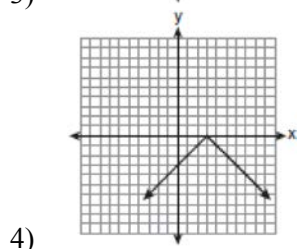
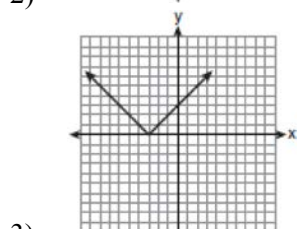
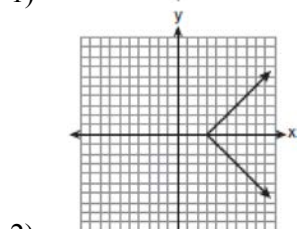
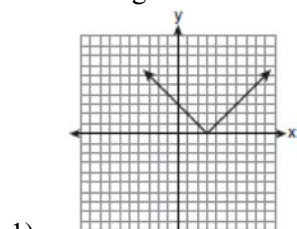
1 The diagram below shows the graph of  $y = |x - 3|$ .



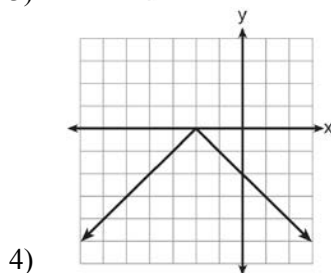
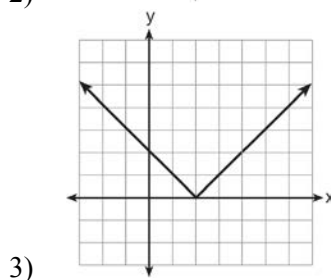
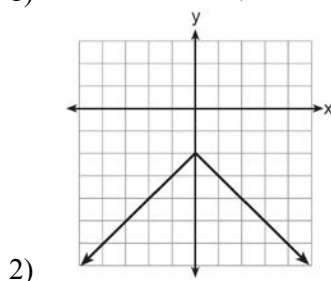
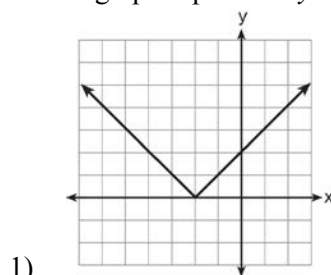
2 The graph of  $y = |x + 2|$  is shown below.



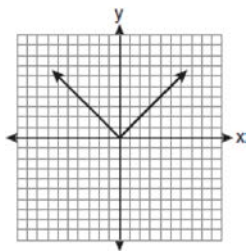
Which diagram shows the graph of  $y = -|x - 3|$ ?



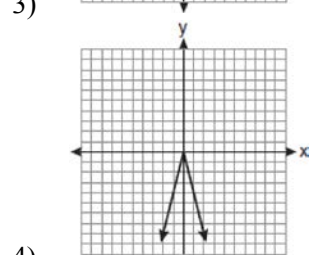
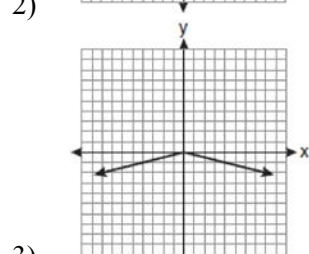
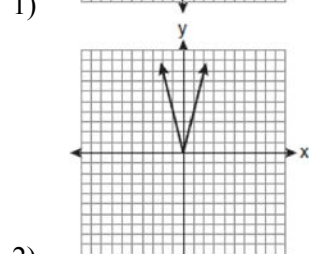
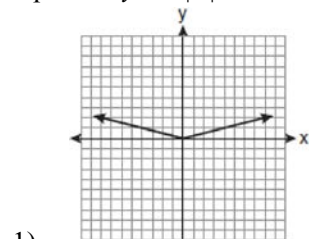
Which graph represents  $y = -|x + 2|$ ?



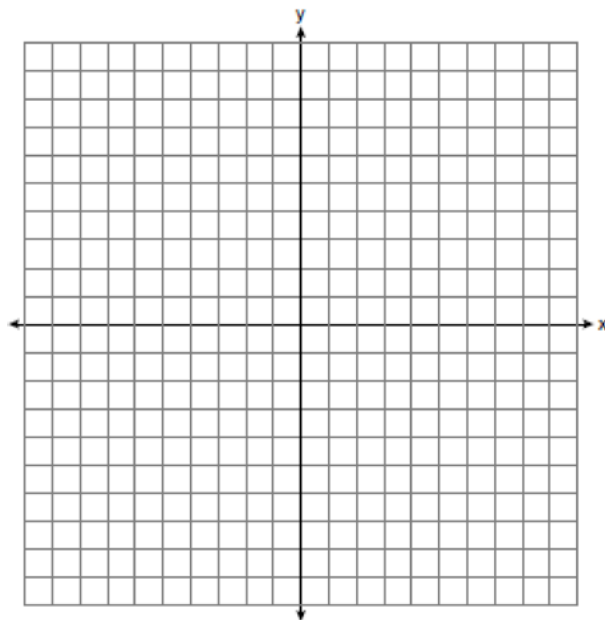
- 3 The graph of the equation  $y = |x|$  is shown in the diagram below.



Which diagram could represent a graph of the equation  $y = a|x|$  when  $-1 < a < 0$ ?

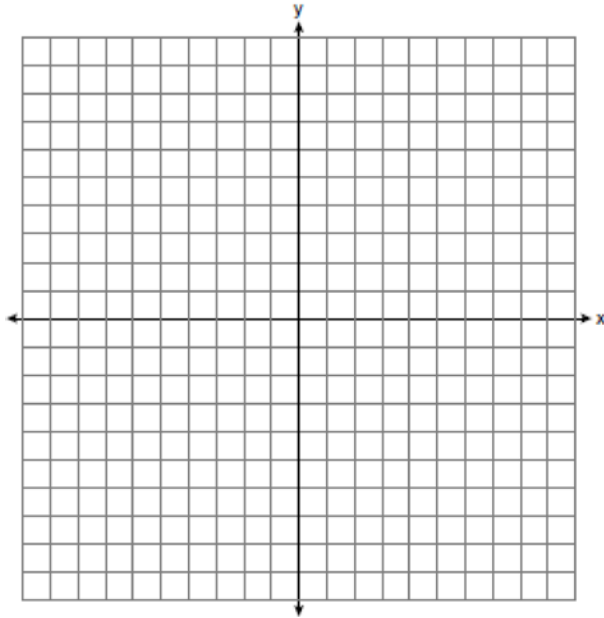


- 4 Dominick graphs the equation  $y = a|x|$  where  $a$  is a positive integer. If Gina multiplies  $a$  by  $-3$ , the new graph will become
- 1) narrower and open downward
  - 2) narrower and open upward
  - 3) wider and open downward
  - 4) wider and open upward
- 5 Graph and label the functions  $y = |x|$  and  $y = |2x|$  on the set of axes below.



Explain how increasing the coefficient of  $x$  affects the graph of  $y = |x|$ .

- 6 On the set of axes below, graph and label the equations  $y = |x|$  and  $y = 3|x|$  for the interval  $-3 \leq x \leq 3$ .



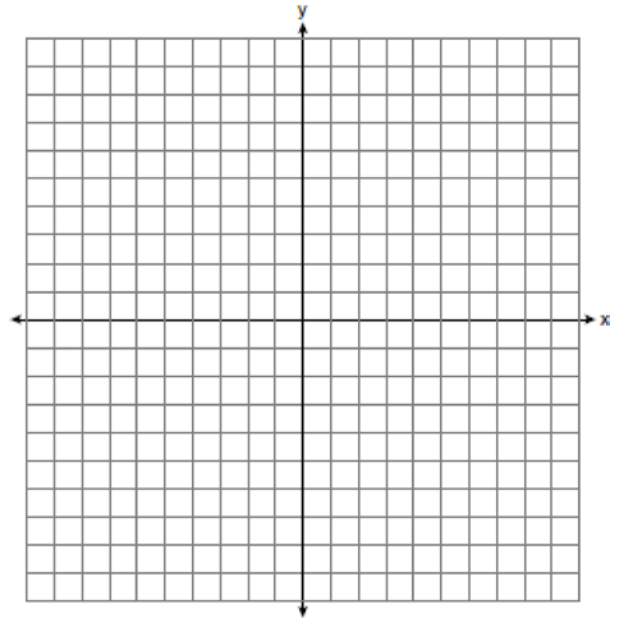
Explain how changing the coefficient of the absolute value from 1 to 3 affects the graph.

- 7 Graph and label the following equations on the set of axes below.

$$y = |x|$$

$$y = \left| \frac{1}{2}x \right|$$

Explain how *decreasing* the coefficient of  $x$  affects the graph of the equation  $y = |x|$ .



**A.G.5: Graphing Absolute Value Functions: Investigate and generalize how changing the coefficients of a function affects its graph**  
**Answer Section**

1 ANS: 4

The transformation is a reflection in the  $x$ -axis.

REF: fall0722ia

2 ANS: 4

The transformation is a reflection in the  $x$ -axis.

REF: 011206ia

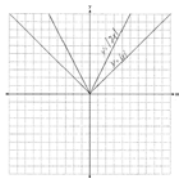
3 ANS: 3

REF: 011017ia

4 ANS: 1

REF: 011529ia

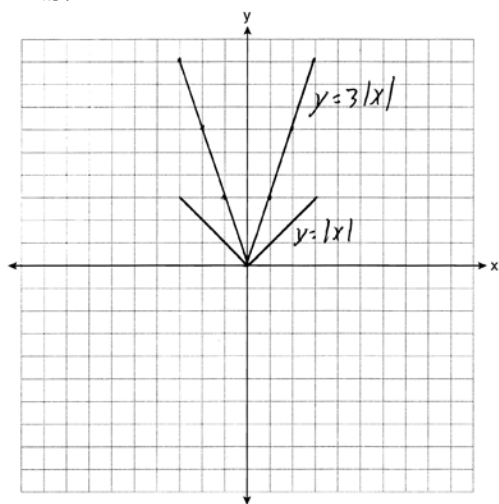
5 ANS:



. Graph becomes narrower as the coefficient increases.

REF: 011434ia

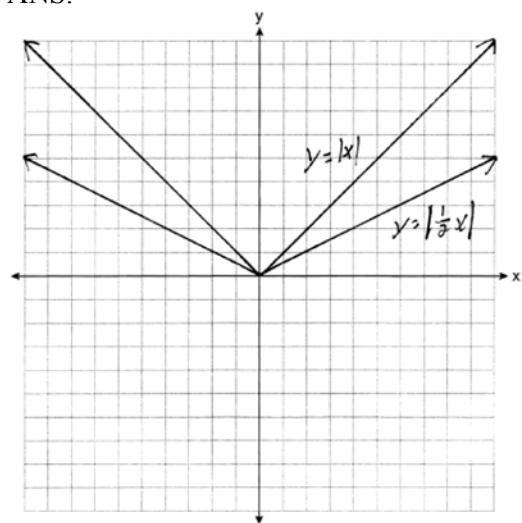
6 ANS:



The graph becomes steeper.

REF: 081134ia

7 ANS:



. Graph becomes wider as the coefficient approaches 0.

REF: 061035ia