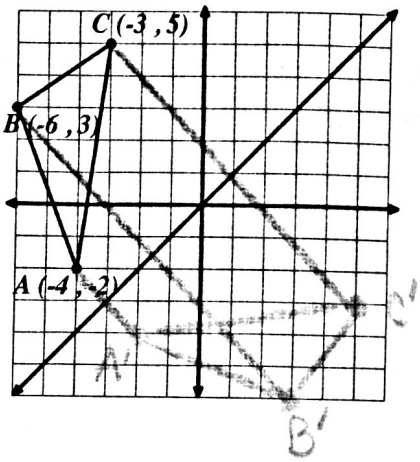
READY SET GO Name Period Date

READY

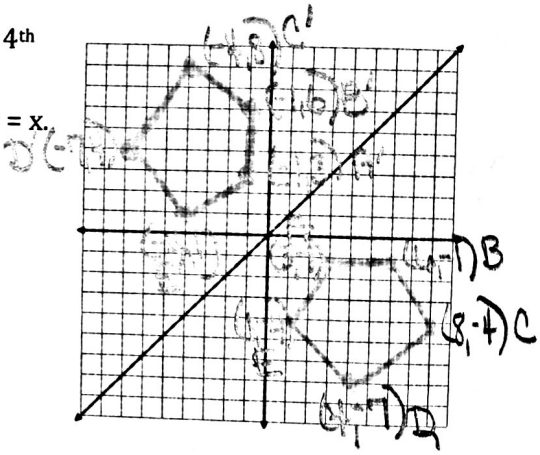
Topic: Reflecting Images

1. Reflect ΔABC across the line y = x. Label the new image as $\Delta A'B'C'$. Label the coordinates of *points* $A'B'C'$. Connect segments AA', BB', and CC'. Describe how these segments are related to each other and to the line y = x.



- The segments are parallel to each other
- The segments are perpendicular to the line y=x

2. On the graph provided to the right, draw a 5-sided figure in the 4th quadrant. Label the vertices of the pre-image. Include the coordinates of the vertices. Reflect the pre-image across the line y = x. Label the image, including the coordinates of the vertices.



* Answers can vary

3. A table of values for a four-sided figure is given in the first two columns. Reflect the image across the line y = x, and write the coordinates of the reflected image in the space provided.

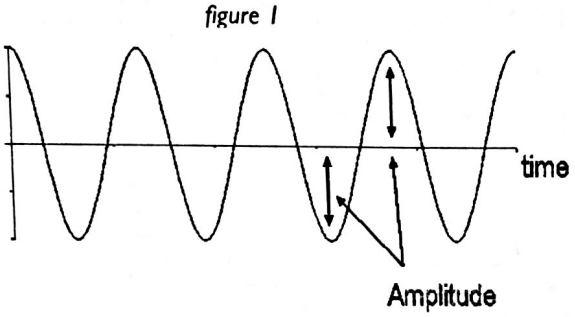
A	(−6,2)	A′	(2,-6)
B	(−4,5)	B′	(5,-4)
C	(−2,3)	C′	(3,-2)
D	(−3,−1)	D′	(-1,-3)

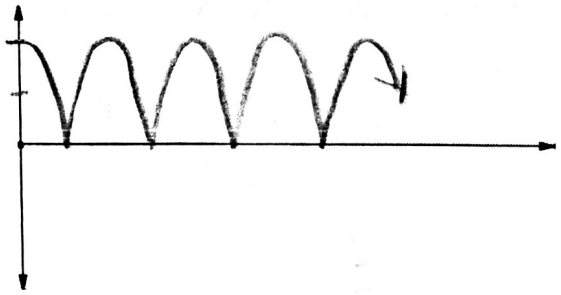
SET

Topic: Absolute value and non-linear functions

4. *Figure 1* is the graph of a sound wave. The height (or depth) of the graph indicates the magnitude and direction $f(x)$ reaches from the norm or the undisturbed value. In this case that would be the x-axis. When we are only concerned with the distance from the x-axis, we refer to this distance as the **amplitude.** Since distance alone is always positive, **amplitude** can be described as the absolute value of $f(x)$. Use the graph of a sound wave to sketch a graph of the absolute value of the amplitude or $y = |f(x)|$.

figure 1



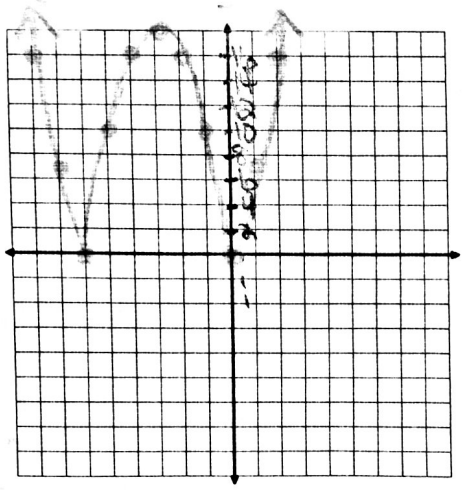


5. *Figure 2* is a table of values for $g(x) = (x + 3)^2 - 9$ What values in the table would need to change if the function were redefined as $h(x) = |g(x)|$?

The negative output values would be changed to being positive

figure 2

x	$g(x)$
-8	16
-7	7
-6	0
-5	-5
-4	-8
-3	-9
-2	-8
0	0
1	7
2	16



6. Graph $h(x) = |g(x)|$.

7. Write the piece-wise equation for $h(x) = |g(x)|$, as defined in question 6. Let the domain be all real numbers in the interval [-8, 2].

$$h(x) = \begin{cases} (x+3)^2-9, & x \le -6 \\ -[(x+3)^2-9] \text{ or } -(x+3)^2+9, & -6 < x < 0 \\ (x+3)^2-9, & x \ge 0 \end{cases}$$

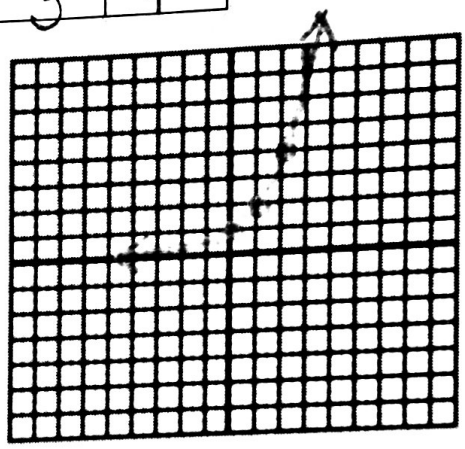
GO

Topic: Representing exponential functions as tables, equations, and graphs.

8. Create a table from the equation $f(x) = 3^x$

x	-2	-1	0	1	2
y	1/9	1/3	1	3	9

9. Create a graph from the equation $f(x) = 2^x$

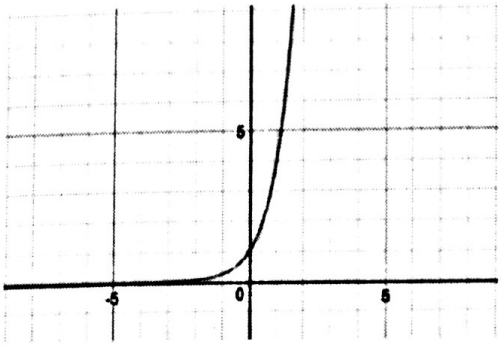


10. Create an equation from the table:

x	1	2	3	4	5
y	4	16	64	256	1024

$f(x) = 4^x$

11. Create an equation from the graph



$f(x) = 5^x$

12. Create an equation from this situation:
A certain type of bacteria, given a favorable growth medium, doubles in population every hour. Given that there were approximately 10 bacteria to start with, how many bacteria will there be in a day and a half? Let x = # of hours
Equation: $f(x) = 10(2^x)$
Sub in x = 36 & get
687,194,767,360
$(6.871947674 \times 10^{11})$