## Warmup 2/(Sum of the numbers on

a die) Created by Mr. Lischwe

1) What sequence of transformations could map shape " $A$ " onto shape " $B$ "? Be specific!

2) Draw a capital "R" like so:
3) Draw the $R$ after $a 90^{\circ}$ clockwise rotation.
4) Draw the R after a $180^{\circ}$ clockwise rotation.
5) Draw the $R$ after a $270^{\circ}$ clockwise rotation.
6) Draw the $R$ using a vertical line of reflection.
7) Draw the $R$ using a horizontal line of reflection.
8) (Challenge) Draw the $R$ after $a$ diagonal line of reflection.

## Don't turn your rotations into reflections...



Which one is the correct rotation around the origin?


Rotations around OTHER points than the origin..

- Rotating around the origin:


Rotations around OTHER points than the origin..

- Rotate around one of the vertices...


Rotations around OTHER points than the origin..

- Around a diiferent vertex...


Rotations around OTHER points than the origin..

- Around a different vertex...


Rotations around OTHER points than the origin..

- Around the point $(2,1)$


Rotations around OTHER points than the origin..

- Around the point $(0,6)$



## If you're still struggling with rotations...

- I put a link on my website to a good Youtube video that explains the strategy.


## Challenge: Reflect the figure across

 the line!

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## Reverse Transformations

## Today's Objectives:

- Perform translations, reflections, and rotations in reverse!


## More transformation problems...

ON GRAPH 1

- A triangle was translated 4 units up and 2 units left. The image is $\mathbf{A}^{\prime}(-2,7) B^{\prime}(-1,9) C^{\prime}(1,7)$. Draw the original triangle $A B C$.
- In reverse: 2 right and 4 down



## More transformation problems...

ON GRAPH 1

- A triangle was translated 4 units up and 2 units left. The image is $A^{\prime}(-2,7) B^{\prime}(-1,9) C^{\prime}(1,7)$. Draw the original triangle $\mathbf{A B C}$.
- In reverse: 2 right and 4 down


## ALSO ON GRAPH 1

- A quadrilateral was reflected across the x-axis. The image is $D^{\prime}(-8,5) E^{\prime}(-8,7) F^{\prime}(-6,7) G^{\prime}(-4,3)$. Draw the original quadrilateral DEFG.
- In reverse: reflect back across the x-axis



## Counterclockwise and clockwise...

- It's very easy to mix these up if you're not careful.
oPICTURE A CLOCK!!!


## More transformation problems...

## ON GRAPH 2

- A triangle was rotated $90^{\circ}$ clockwise. The image is $A^{\prime}(2,5) B^{\prime}(2,9) C^{\prime}(4,5)$. Draw the original triangle $A B C$.
- In reverse: $90^{\circ}$ counterclockwise

A triangle was rotated $90^{\circ}$ clockwise.


## More transformation problems...

## ON GRAPH 3

- A triangle was rotated $270^{\circ}$ counterclockwise. The image is $D^{\prime}(5,-7) E^{\prime}(6,-4) F^{\prime}(7,-7)$. Draw the original triangle DEF.
- In reverse: $27 \mathbf{0}^{\circ}$ clockwise


A triangle was rotated $270^{\circ}$ counterclockwise.

## More transformation problems...

## ON GRAPH 4

- A triangle was reflected across the $y$-axis and then translated right 3 units. The image is $A^{\prime}(5,4)$ $B^{\prime}(6,2) C^{\prime}(9,2)$. Draw the original triangle $A B C$.
- In reverse: translate left 3 units, then reflect across the $y$-axis


## ON GRAPH 5

- A rectangle was translated 3 units right and 5 units down, and then rotated $90^{\circ}$ counterclockwise. The image is $D^{\prime}(3,-7) E^{\prime}(8,-7)$ $F^{\prime}(8,-5) G^{\prime}(3,-5)$. Draw the original rectangle DEFG.
- In reverse: rotate $90^{\circ}$ clockwise, then translate 5 up and 3 left

A triangle was reflected across the $y$ -
In reverse:
translate left 3 units, then reflect across the $y$-axis axis and then translated right 3 units.


## More transformation problems...

## ON GRAPH 4

- A triangle was reflected across the $y$-axis and then translated right 3 units. The image is $A^{\prime}(5,4)$ $B^{\prime}(6,2) C^{\prime}(9,2)$. Draw the original triangle $A B C$.
- In reverse: translate left 3 units, then reflect across the $y$-axis


## ON GRAPH 5

- A rectangle was translated 3 units right and 5 units down, and then rotated $90^{\circ}$ counterclockwise. The image is $D^{\prime}(3,-7) E^{\prime}(8,-7)$ $F^{\prime}(8,-5) G^{\prime}(3,-5)$. Draw the original rectangle DEFG.
- In reverse: rotate $90^{\circ}$ clockwise, then translate 5 up and 3 left

A rectangle was translated 3 units right and 5 units down, and then rotated $90^{\circ}$
In reverse: rotate $90^{\circ}$ clockwise, then translate 5 up and 3 left counterclockwise.


## More transformation problems...

## ON GRAPH 6

- A trapezoid was translated 5 units down, then reflected across the $x$-axis and then rotated $270^{\circ}$ clockwise. The image is $A^{\prime}(1,6) B^{\prime}(1,1)$ $C^{\prime}(3,1) D^{\prime}(3,4)$. Draw the original trapezoid $A B C D$.
- In reverse: rotate $270^{\circ}$ counterclockwise, then reflect across the x-axis, then translate 5 units up.

In reverse:

- rotate $270^{\circ}$ counterclockwise
- then reflect across the $x$-axis
- then translate 5 units up.

A trapezoid was translated 5 units down, then reflected across the x -axis and then rotated $270^{\circ}$ clockwise.


## HOMEWORK:

- Same as yesterday

