

Warm-Up



Take out your HW to be checked. You will have a Translations Skills Check after we check HW!

What am I learning today?

Learning Objective 1.8 (pg. 14)

How can I determine if a figure has rotational symmetry?

What am I going to do today?

- Go over HW Answers
- Skills Check - Translations
- Take notes on rotating a figure and rotational symmetry
- Practice rotating a figure

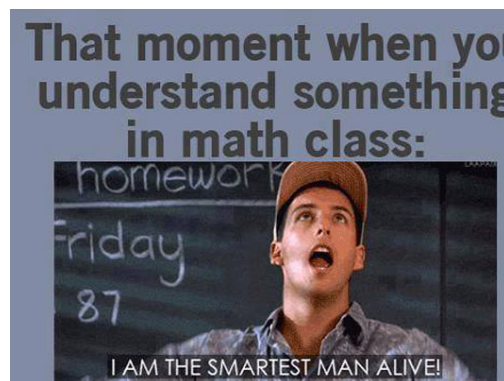
What will I do to show that I have learned it?

I can rotate a figure given a rule and I can create a rule using the pre-image and image.

HW Answers

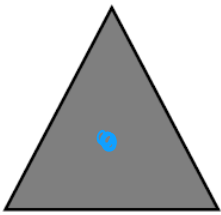
Skills Check

1. There is **NO communication/eye contact** during a quiz to anyone!
2. When you are done, **raise your paper in the air.**



- **Rotational symmetry** – the number of times a figure can rotate and create the same figure after a rotation less than 360°
- **Order** – the amount of times a figure matches when rotated 360°
- The smallest angle you need to turn is called the angle of rotation
- **Angle of rotation** - 360° divided by the order (magnitude)
$$\frac{360^\circ}{\text{order}}$$

**Determine if the figures have rotational symmetry.
If it does, describe the order AND calculate the angle of rotation.**



ORDER: 3
 $A \cdot R = \frac{360^\circ}{3} = 120^\circ$



O: 2
 $A \cdot R = \frac{360^\circ}{2} = 180^\circ$



O: 5
 $A \cdot R = \frac{360^\circ}{5} = 72^\circ$



O: 2
 $A \cdot R = 180^\circ$

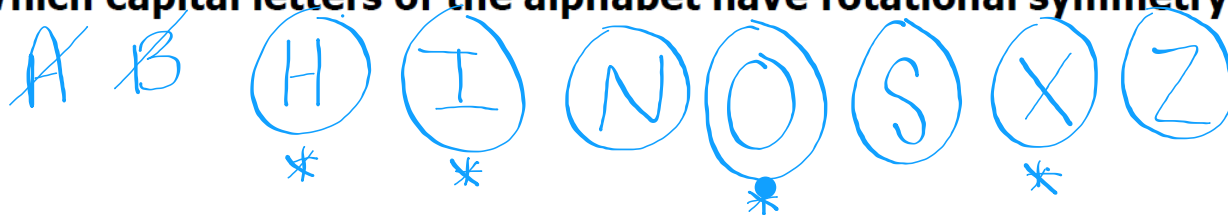


O: 4
 $A \cdot R = \frac{360^\circ}{4} = 90^\circ$



O: 1

Which capital letters of the alphabet have rotational symmetry?



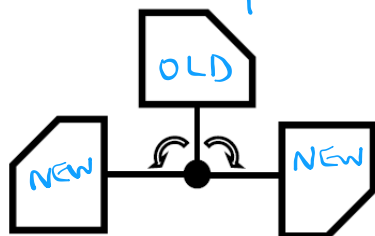
What am I learning today?

Learning Objective 1.9 (pg.15-16)

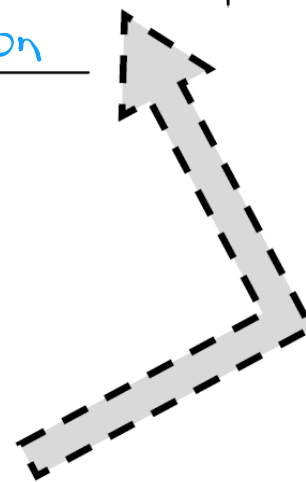
How can I rotate a figure?

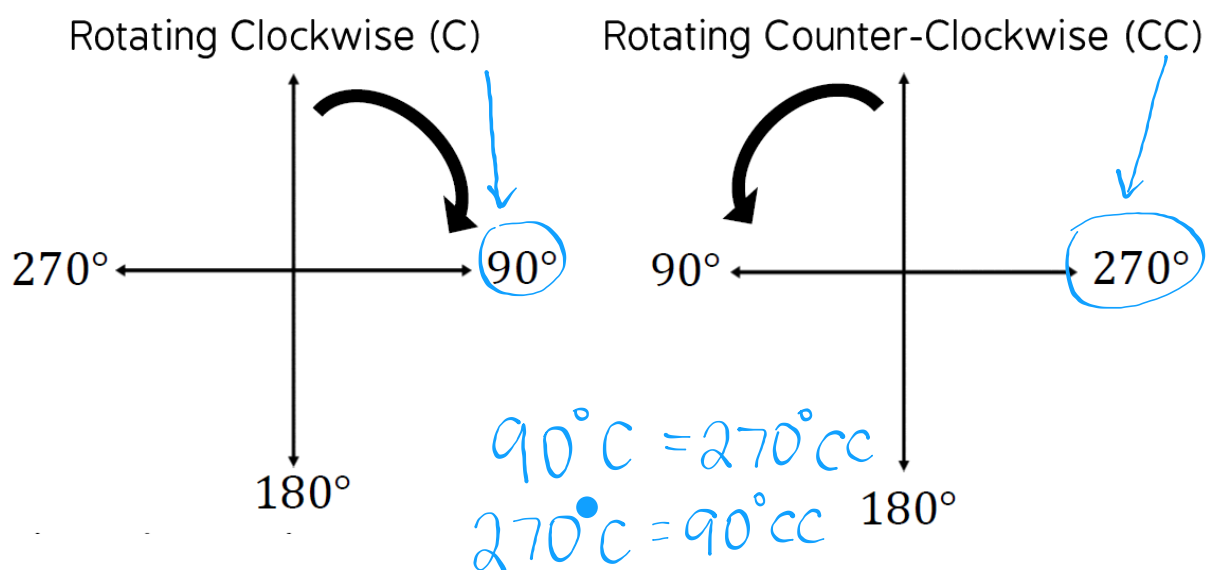
- **Rotation** - turns EVERY point of a figure around the same fixed point and direction called the point of rotation

- It simply "spins" a figure to a new location.



- This means a rotation is an isometry.

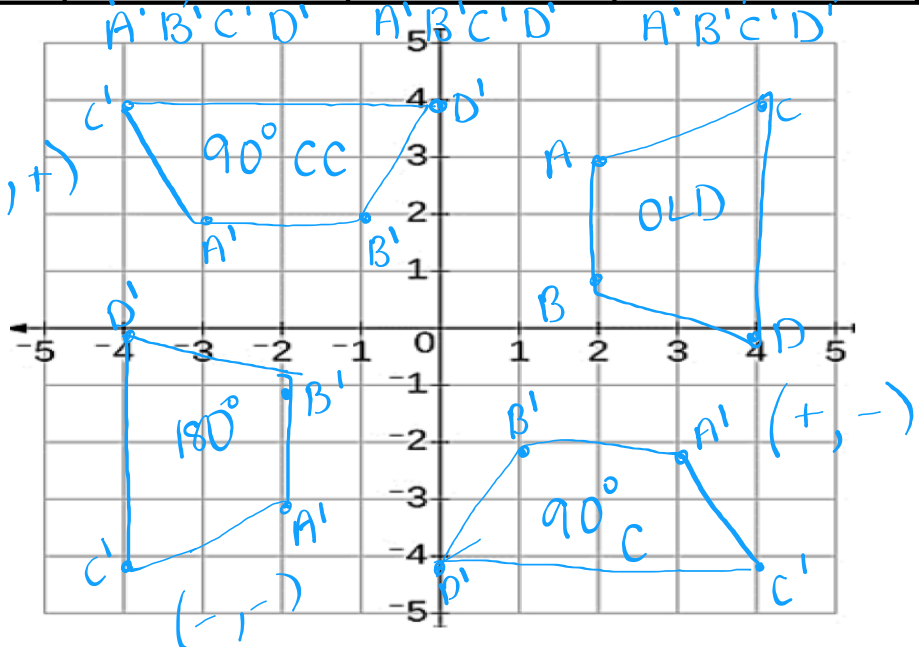


Rotation "Turn Guide"

Rotation Rule Notations

Type of rotation	Pre-image coordinates	90° CC * 270° C	180° CC 180° C	270° CC 90° C
Mapping	(x, y)	(-y, x)	(-x, -y)	(y, -x)
General Rule		<ul style="list-style-type: none"> • Switch • Change new x-value ← ←	<ul style="list-style-type: none"> • Change both x and y-values 	<ul style="list-style-type: none"> • Switch • Change new y-value → →
A	(2, 3)	(-3, 2)	(-2, -3)	(3, -2)
B	(2, 1)	(-1, 2)	(-2, -1)	(1, -2)
C	(4, 4)	(-4, 4)	(-4, -4)	(4, -4)
D	(4, 0)	(0, 4)	(-4, 0)	(0, -4)

Graph all of the coordinates from the previous page.



Find the coordinates of the image.

1. Rotate 90° counterclockwise. $(-y, x)$

$$C(-2, 4) \rightarrow C'(-4, -2)$$

$$A(0, -8) \rightarrow A'(8, 0)$$

$$T(-3, 5) \rightarrow T'(-5, -3)$$

Find the coordinates of the image.

2. Rule: $(-x, -y)$

Rotate 180°

$$M(2, -9) \rightarrow M'(-2, 9)$$

$$O(-6, -2) \rightarrow O'(6, 2)$$

$$W(0, 0) \rightarrow W'(0, 0)$$

Find the two rotation angles and directions for each figure.

$$3. C(-2, 4) \xrightarrow{(4, -2)} C'(4, 2)$$

$$A(0, -8) \rightarrow A'(-8, 0)$$

$$T(-3, 5) \rightarrow T'(5, 3)$$

- switched
 - changed $\xrightarrow{\text{old } x}$ old x
- $$(y, -x)$$

90° C OR
 270° CC

Find the two rotation angles and directions for each figure.

$$4. M(-5, -9) \rightarrow M'(5, 9) \quad \text{changed both}$$

$$O(3, -2) \rightarrow O'(-3, 2) \quad 180^\circ$$

$$W(0, 0) \rightarrow W'(0, 0)$$

Summarize:

Take 5 minutes to summarize both lessons (rotations and rotational symmetry). Use the guided questions to help you create a summary for you to study later on.

Classwork:



Complete the classwork rotating a figure.

HW: Worksheet on top of the bin
(review of all 3 transformation).

REMEMBER YOUR

UNIT 1 QUIZ 1 is TOMORROW!!!

