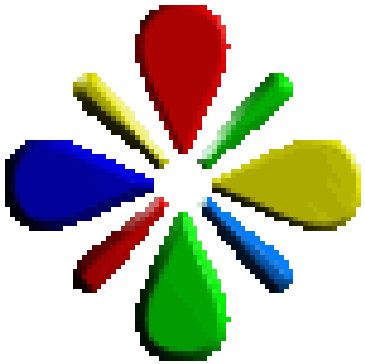
Transformations

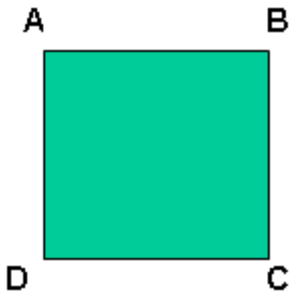
To transform something is to change it. In geometry, there are specific ways to describe how a figure is changed. The transformations you will learn about include:

- Translation
- Rotation
- Reflection
- Dilation

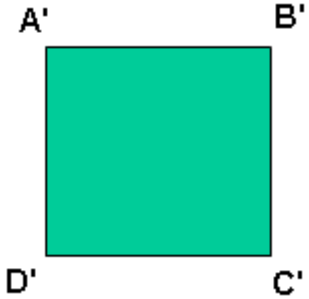


Renaming Transformations

It is common practice to name shape using capital letters:

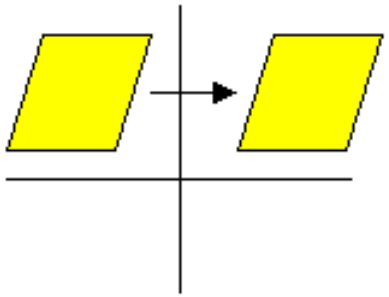


It is common practice to name transformed shapes using the same letters with a "prime" symbol:



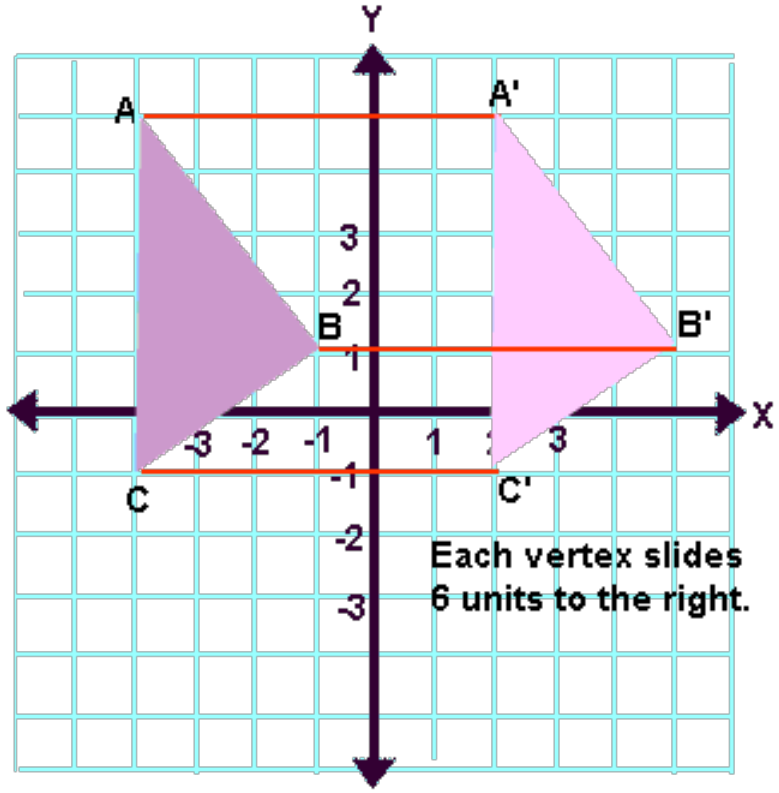
A Translation "slides" an object a fixed distance in a given direction. The original object and its translation have the, same shape and size and they face in the same direction.

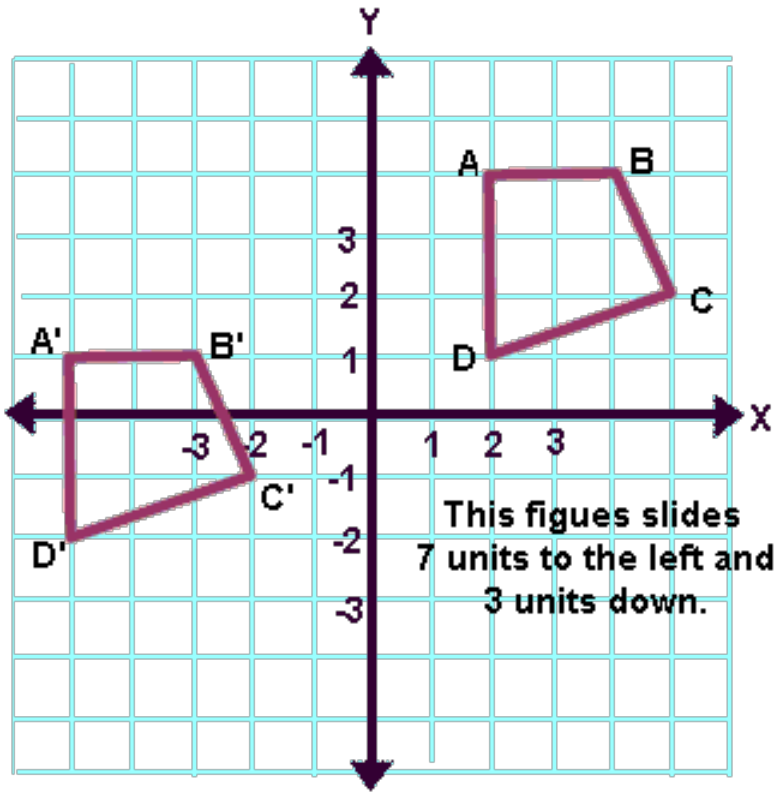
Translations are SLIDES.



Let's examine some translations related to coordinate geometry.

The example shows how each vertex moves the same distance in the same direction.





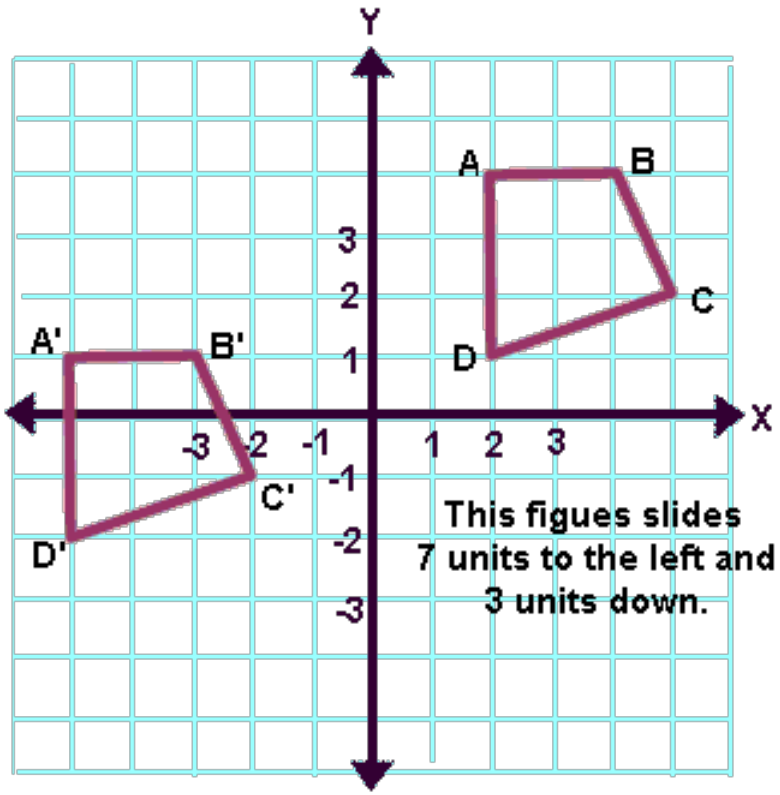
In this example, the "slide" moves the figure

7 units to the left

3 units down

(or 3 units down and 7 units to the left.)

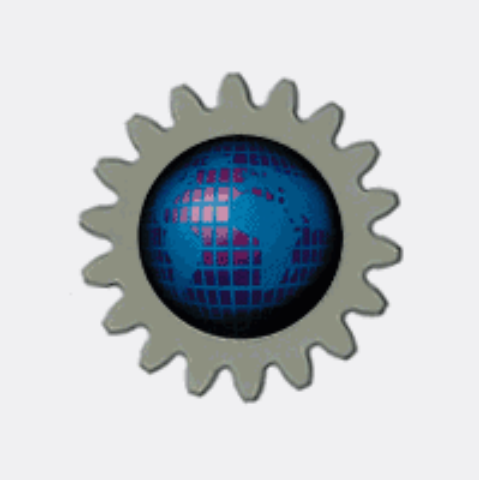
Write the points



- What are the coordinates for A, B, C, D? A (2, 4) B (4, 4) C (5, 2) D (2, 1)
- What are the coordinates for A', B', C', D'? A' (-5, 1) B' (-3, 1) C' (-2, -1) D' (-5, -2)
- How did the transformation change the points?

The figure slides 7 units to the left and 3 units down

A **rotation** is a transformation that turns a figure about a fixed point called the center of rotation. An object and its rotation are the same shape and size, but the figures may be turned in different directions

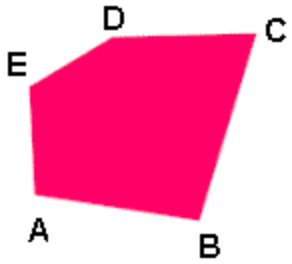


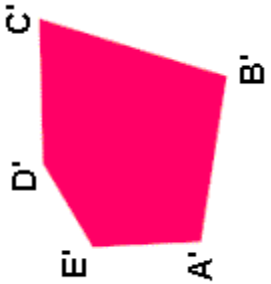
$R \cdot R$

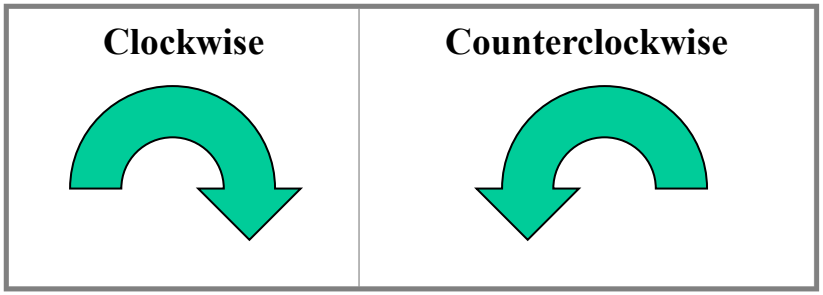
The concept of rotations can be seen in wallpaper designs, fabrics, and art work.

Rotations are TURNS!!!

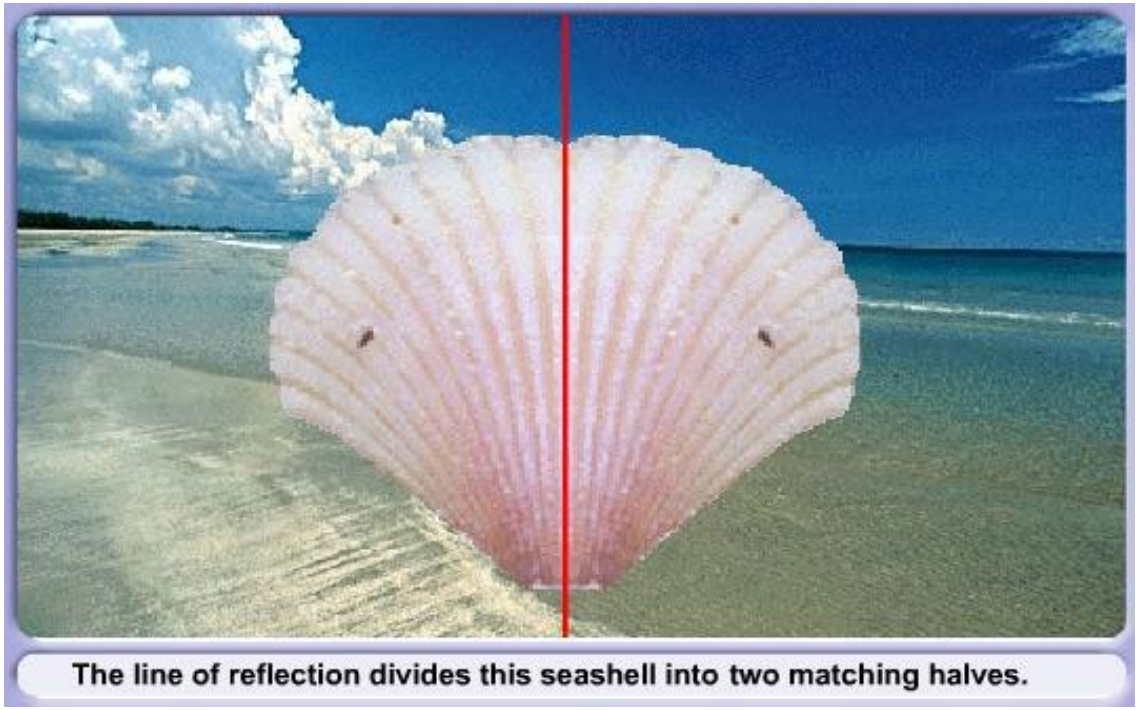
This rotation is 90 degrees counterclockwise.







A **reflection** can be seen in water, in a mirror, in glass, or in a shiny surface. An object and its reflection have the **same shape and size**, but the **figures face in opposite directions**. In a mirror, for example, right and left are switched.

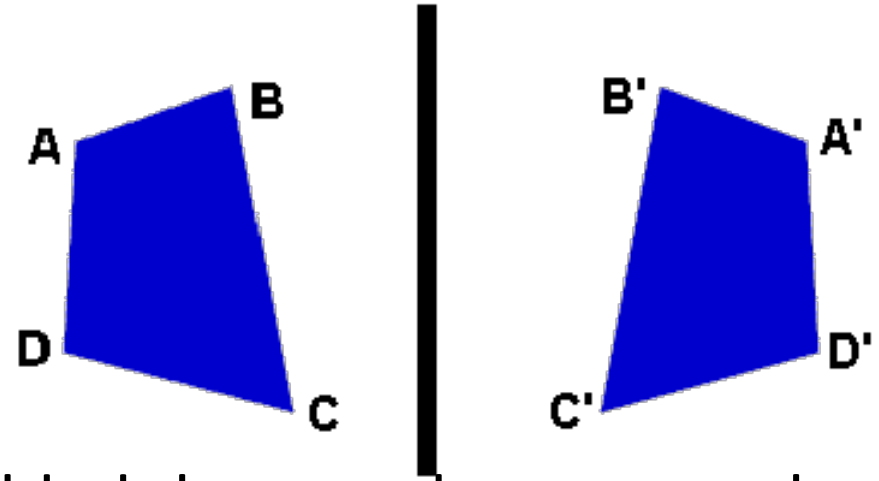


The line of reflection divides this seashell into two matching halves.

Line reflections are FLIPS!!!

The line (where a mirror may be placed) is called the **line of reflection** The distance from a point to the line of reflection is the same as the distance from the point's image to the line of reflection.

A reflection can be thought of as a "flipping" of an object over the line of reflection.



If you folded the two shapes together **line of reflection** **the two shapes would overlap exactly!**

What happens to points in a Reflection?

- Name the points of the original triangle.

  A (2,-3) B (5,-4) C (2,-4)

- Name the points of the reflected triangle.

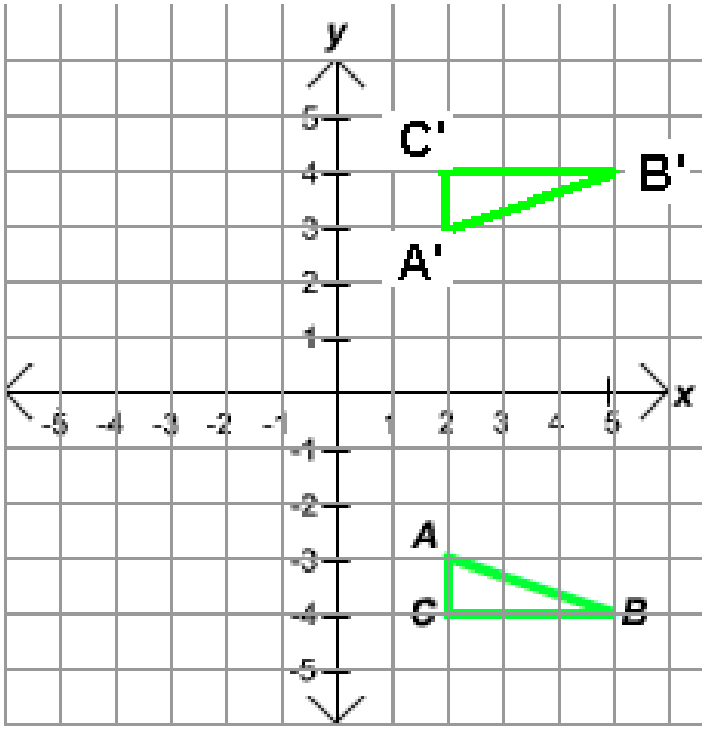
  A' (2,3) B' (5,4) C' (2,4)

- What is the line of reflection?

  x-axis

- How did the points change from the original to the reflection?

  The sign of y switches



Interactive Notebooks

- Update Table of Contents
- Pages 27-28 Dilations on the Coordinate Plane
- Pages 29-30 Congruent Figures vs. Similar Figures Double Bubble Map
- Pages 31-32 Solving Proportions: Similar Figures Flow Map

Interactive Notebooks

- Page 2 – Make a pocket for the syllabus
- Page

Warm-Up 9.21.17
15 Minutes

- Complete Problems 1, 2, 3, 4, 5, and 6 on using proportional relationships to find missing side lengths in similar figures.

Warm-Up 9.15.17
15 Minutes

- In your Textbook, tear out page M1-82.
- Answer problems 1 &2 under “Stretch”
- *#2- perform a 180 degree rotation around the origin.
- Complete Problems 1-4 under “Review”
- Bonus points for Problems 5& 6, extra 5 points each!!

Homework Review

- At your table, review your Homework problems on Dilations and Scale Factor.

Homework

- On the back of your Dilations Skills Practice, complete **EVEN** Problems only, 10, 12, 14, 16, 18, and 20.

Tomorrow in Class

- Transformations Jeopardy

Standard

- **MGSE8.G.3** Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.

Interactive Notebook Check!

- Checking to make sure you have completed your **Tranformations Tree Map (pages 33-34). (100 points). You should have at least 3-4 facts listed under each of the 4 transformations. Make it colorful!** Use this time to review your notes on the 4 transformations.

Essential Question

- How are figures dilated on the coordinate plane?
- What is similarity?

Essential Question

- How are figures dilated on the coordinate plane?
- What is similarity?

Homework

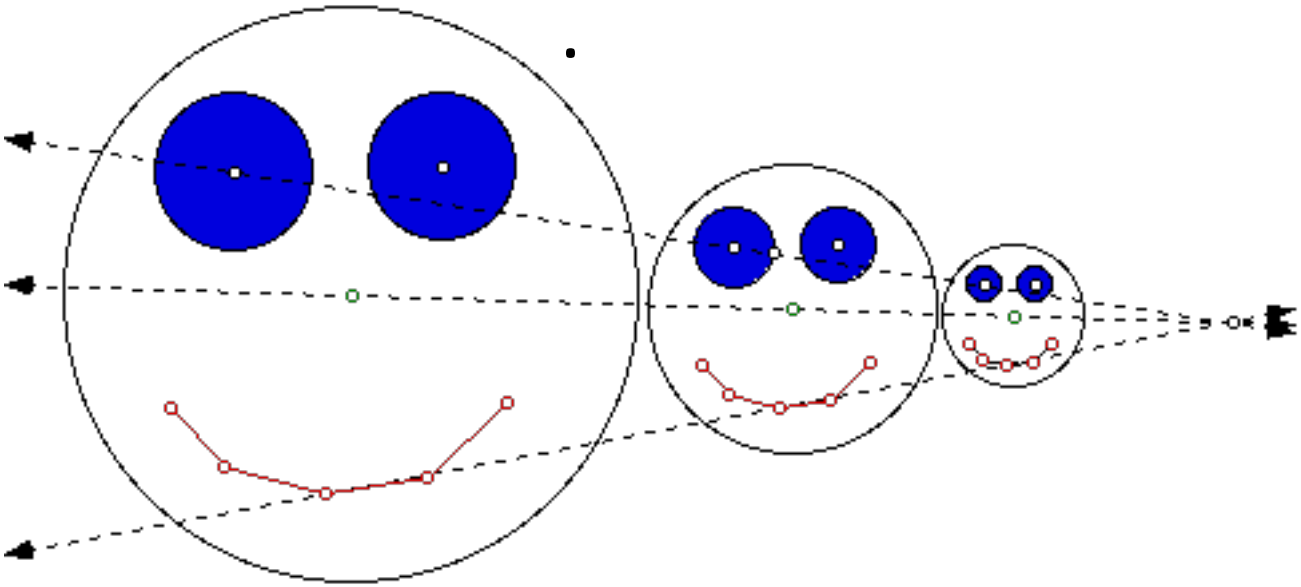
- Tear out Page M1-135
- Complete Problem 4 a, b, and c
- CENTER IS ALWAYS THE ORIGIN (0,0)

Homework Check

- 1. With your group, review homework answers for Problem 4 a, b, and c
- 2. When finished, glue your homework problems to page 27. (You may have to cut it to make it fit.)
- 3. Complete problems 1-4 on Dilations Skills Practice.

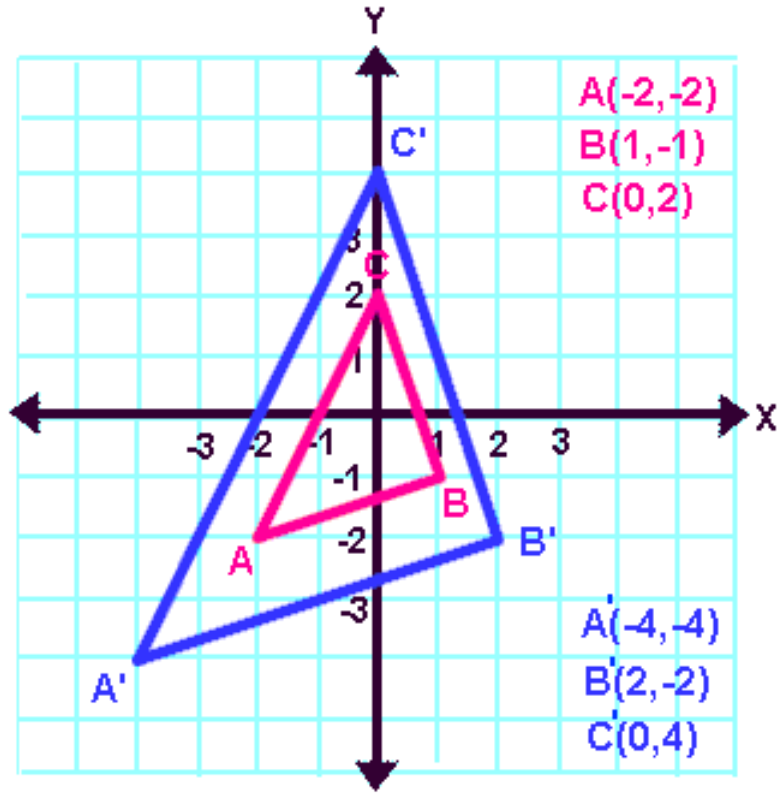
A **dilation** is a transformation that produces an image that is the **same shape** as the original, but is a **different size.**

A dilation used to create an image **larger** than the original is called an **enlargement**. A dilation used to create an image **smaller** than the original is called a **reduction**.



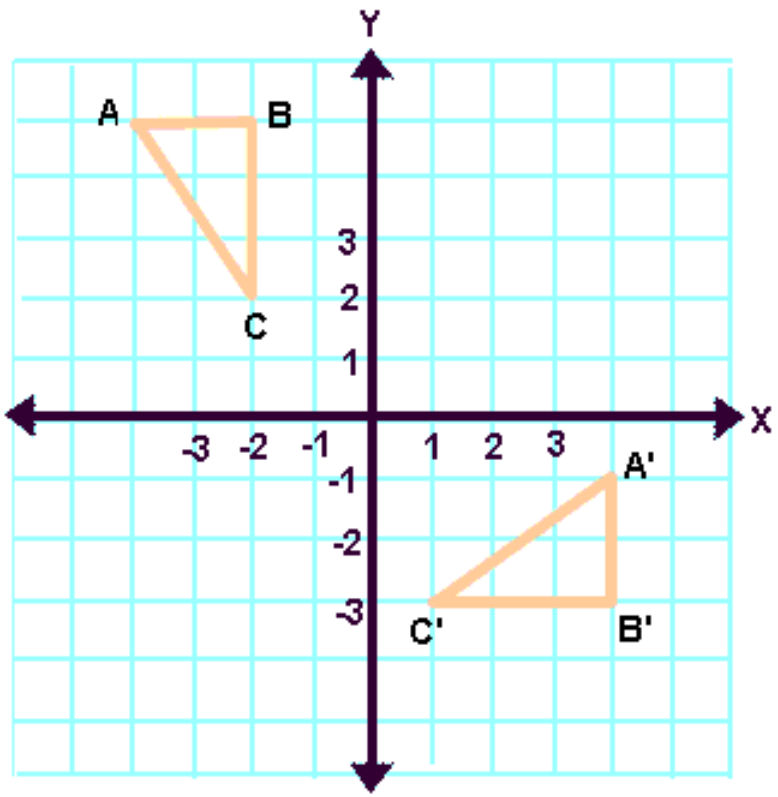
Dilations always involve a change in size.

Dilations



Notice how EVERY coordinate of the original triangle has been multiplied by

REVIEW: Answer each question…….



Does this picture show a translation, rotation, dilation, or reflection?

Rotation

How do you know?

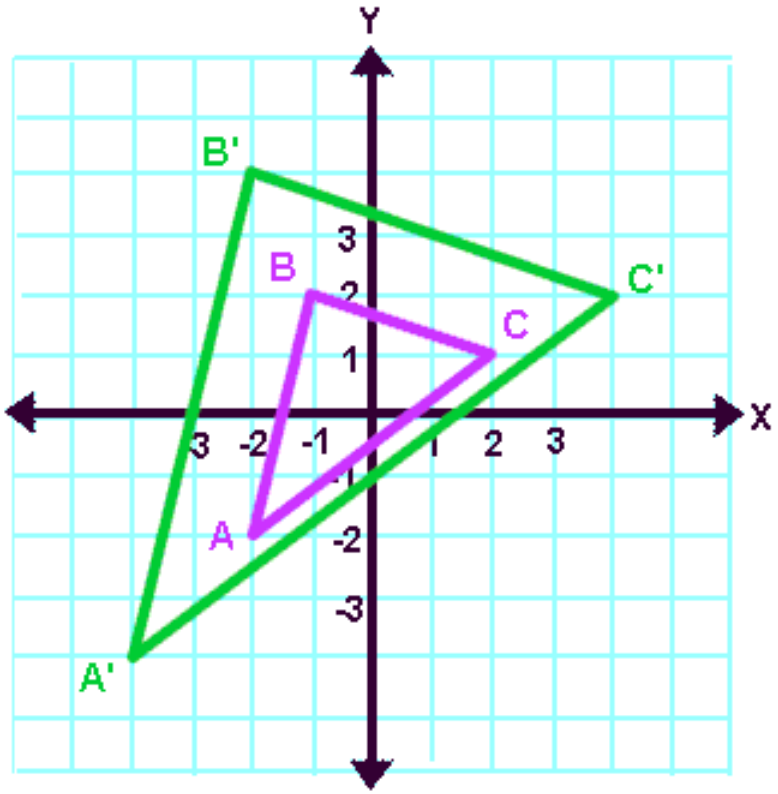
Because the image is turned.

Does this picture show a translation, rotation, dilation, or reflection?

Dilation

How do you know?

Because the image got bigger.

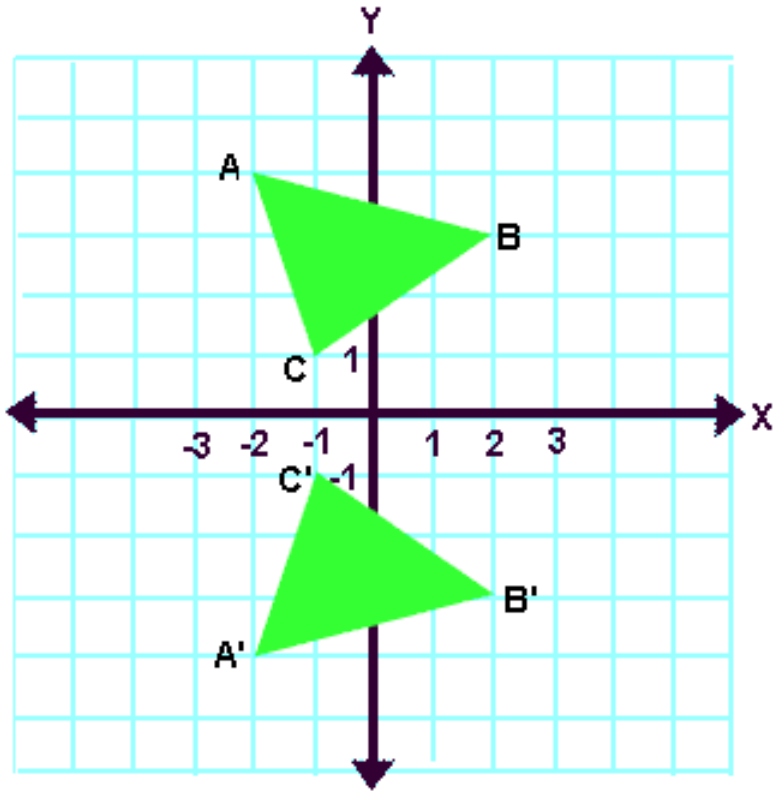


Does this picture show a translation, rotation, dilation, or reflection?

(Line) Reflection

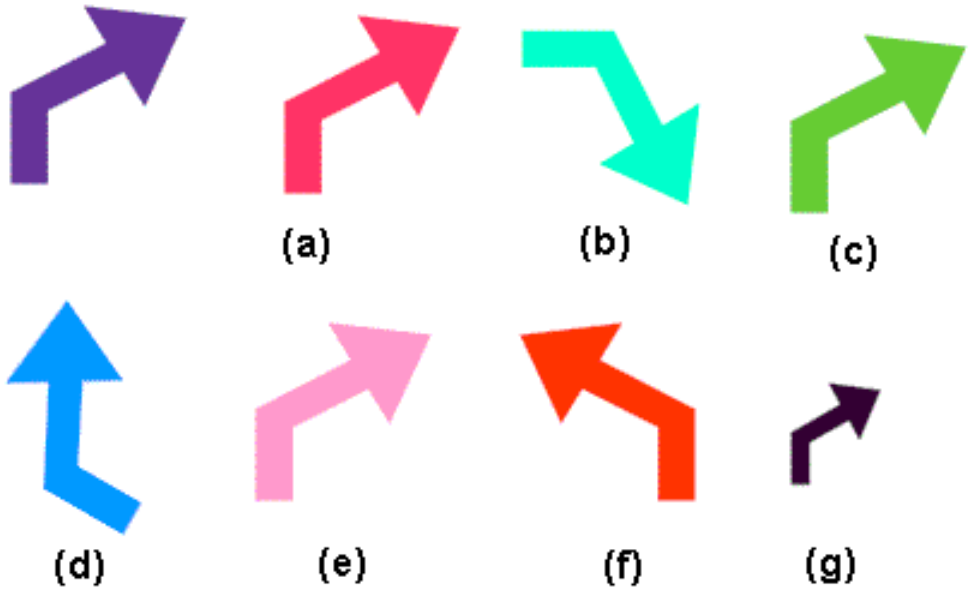
How do you know?

Because the image flipped over.



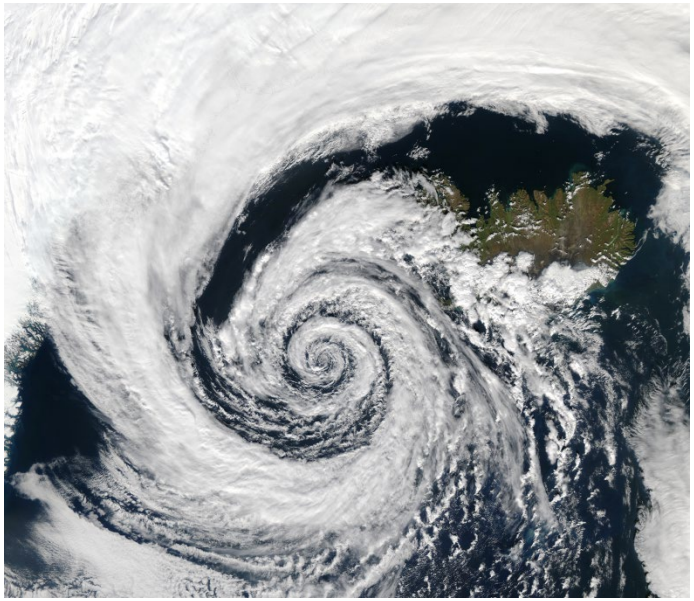
Which of the following lettered figures are translations of the shape of the **purple arrow**? **Name ALL that apply.**

Explain your thinking.

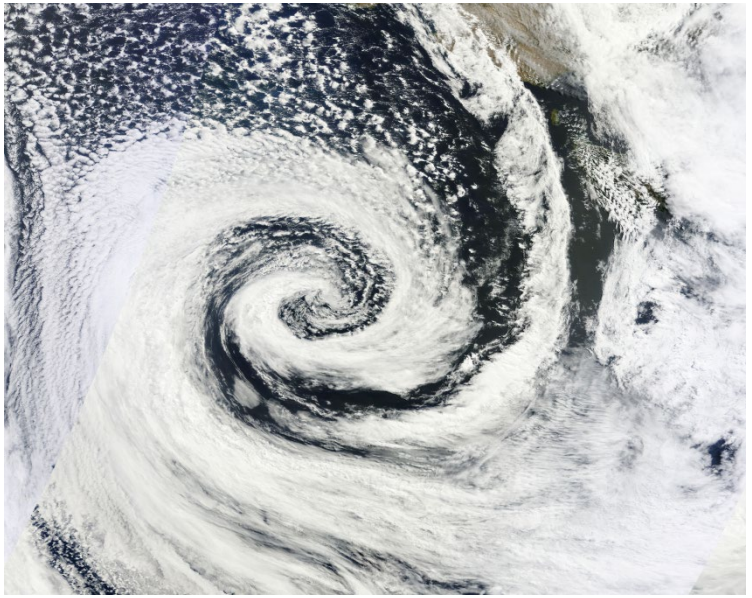


Letters a, c, and e are translations of the purple arrow.

Has each picture been rotated in a clockwise or counter-clockwise direction?

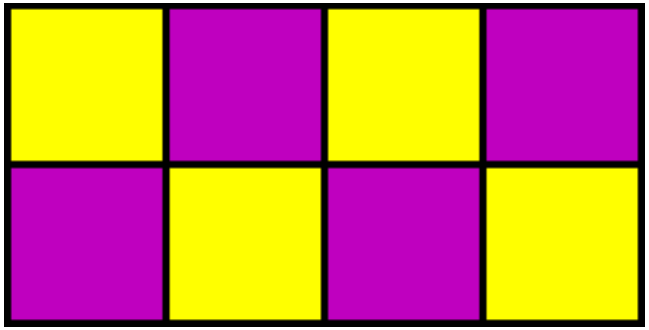


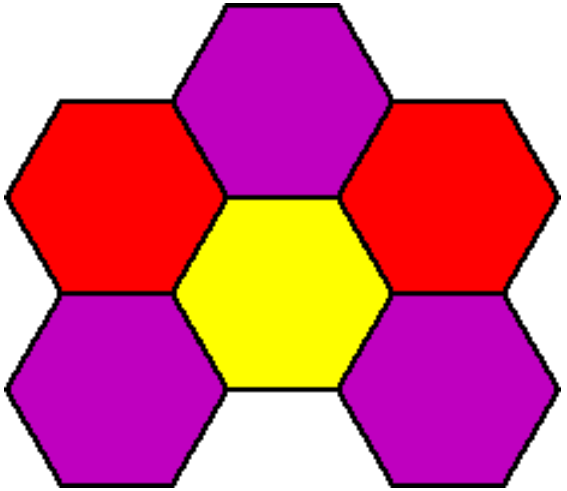
Clockwise

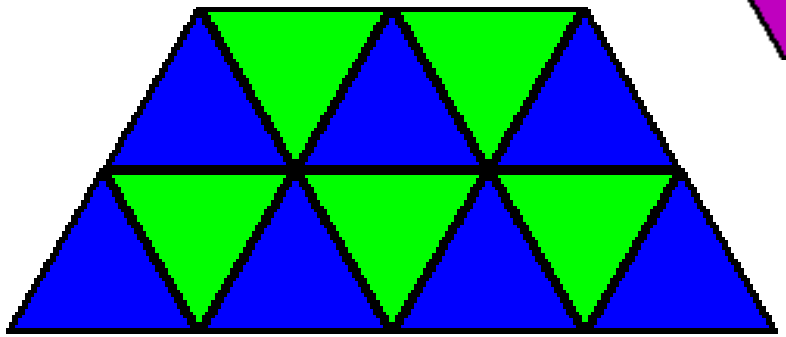


Counter-Clockwise

Basically, a **tessellation** is a way to tile a floor (that goes on forever) with shapes so that there is no overlapping and no gaps.

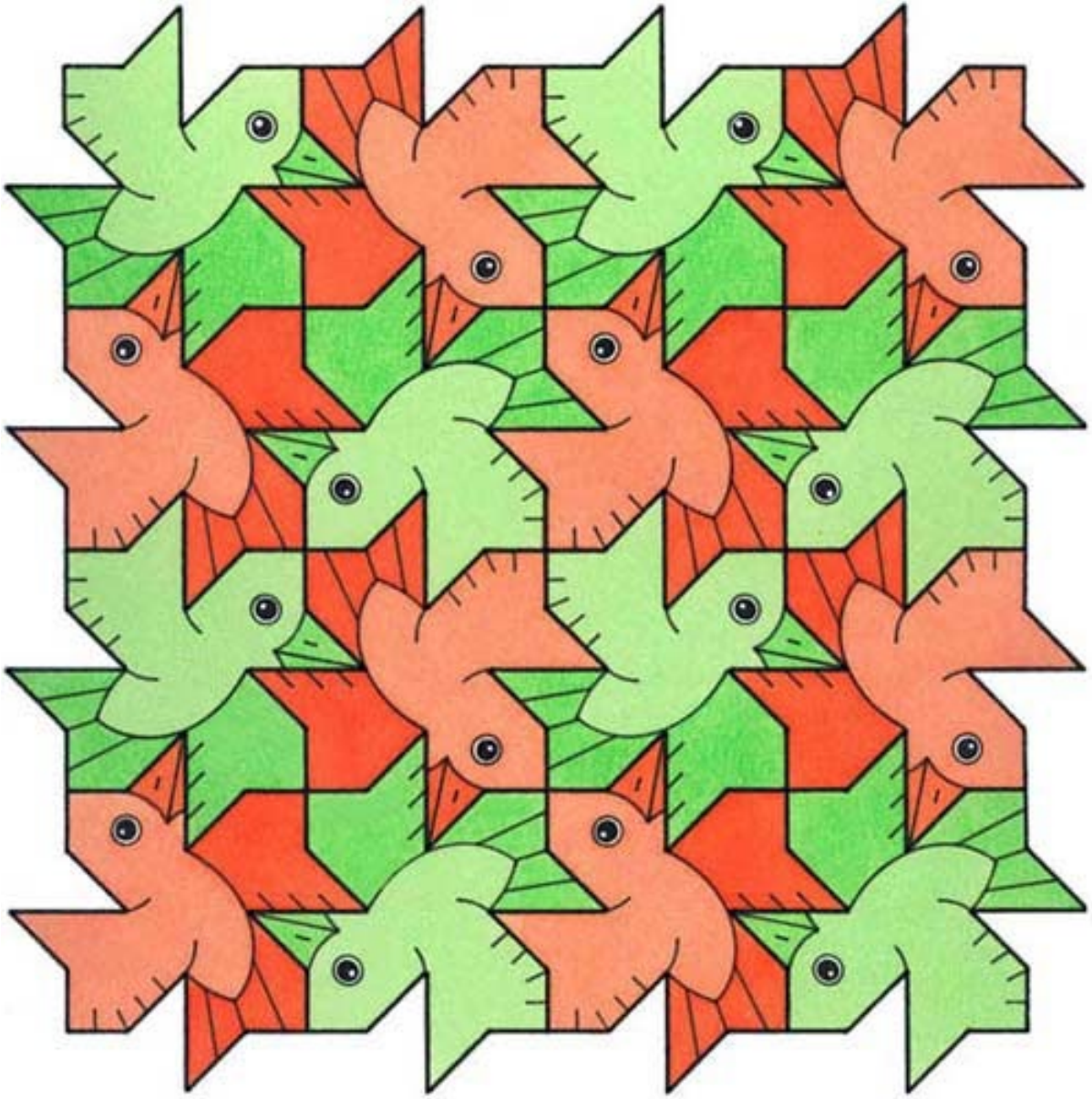






Dutch graphic artist M. C. Escher (1898-1972) is known for his creative use of tessellations in his work. What transformations can you see in this picture?

The birds and fish have been translated here.



What transformations can you see in this Escher print?

Some birds have been translated and some have been rotated.

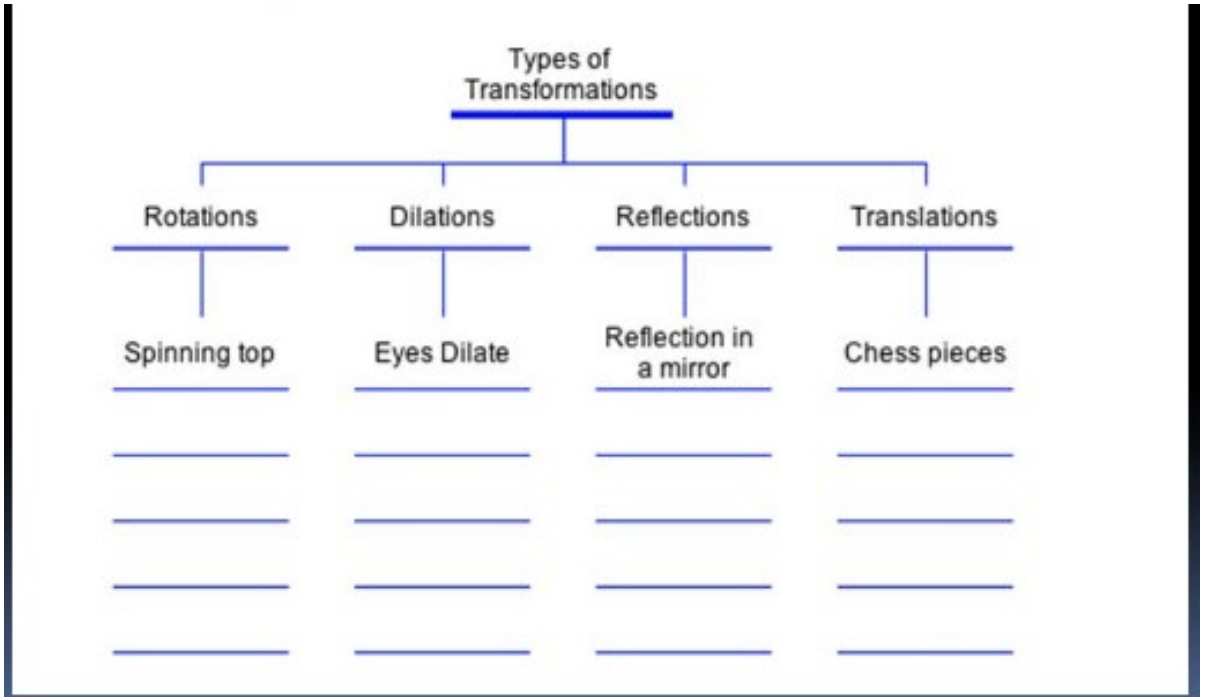
Can you name examples in real life of each transformation?

- Translation
- Rotation
- Reflection
- Dilation

Transformations Tree Map

Classifying Transformations (Translations, Reflections, Rotations, Dilations)

Under each Sub Catergory, list 3-4 facts. Use your Interactive Notebook and include real-world examples.



Transformations Task Cards

Your name and your partner's name

Date 9/27/17

Class Period

Title: Transformations Task Cards

1. Number your paper 1-24. SKIP A SPACE BETWEEN EACH NUMBER

Unit 2 Pre-Test

10 questions total (8 multiple choice, 2 constructed response)

You may use your calculator only.

25 minutes

4 Seasons Partners

Spring- 2 people (including you)

Summer- 2 people (including you)

Fall- 3 people (including you)

Winter- 4 people (including you)

Warm-Up 10.3.17

In your Interactive Notebook, update your Table of Contents

Pages 35-36 Line and Angle Relationships

**Glue the Geometry Notes (Line and Angle Relationships) page across pages 35-36.

*Begin reviewing these vocabulary words. Work with a partner.

Unit 1 Vocabulary (continued)

1. Corresponding Angles- Two angles that have the same position in geometric figures **ARE EQUAL**

2. Alternate Interior Angles- Two angles that are located between two parallel lines on opposite sides of the transversal. **ARE EQUAL**

3. Alternate Exterior Angles- Two angles that are located outside two parallel lines on opposite sides of the transversal. **ARE EQUAL**

4. Same Side Interior Angles- Two angles that are on the same side of the transversal and between the parallel lines. **ADD UP TO 180 DEGREES**

Important Reminders

- Fall Break October 5-9. This week, we only come to school today, Tuesday, and Wednesday.

We will return to school on Tuesday, Oct. 10.

- USATestPrep currently unavailable (schoolwide). More information to come regarding testing, assignments.

Important Reminders (continued)

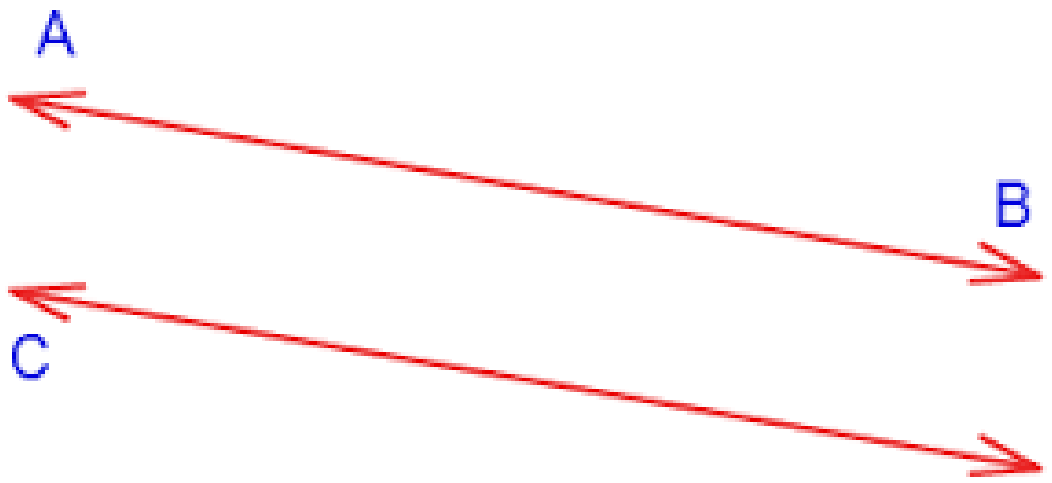
- REVISED SCHEDULE thru Dec. 20

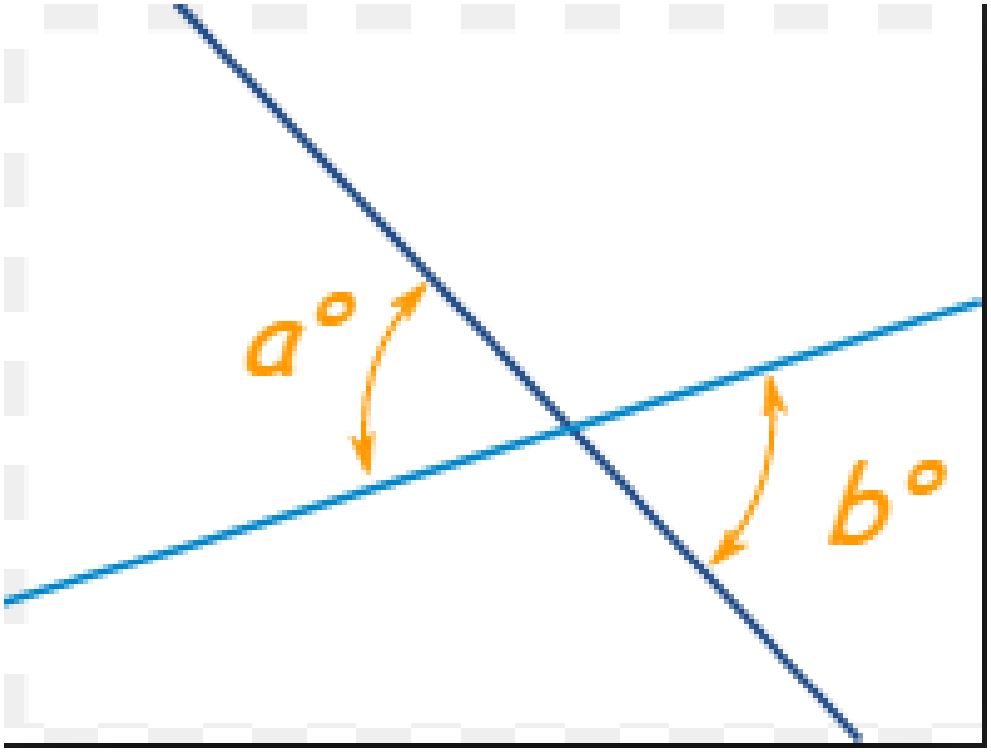
8th Grade

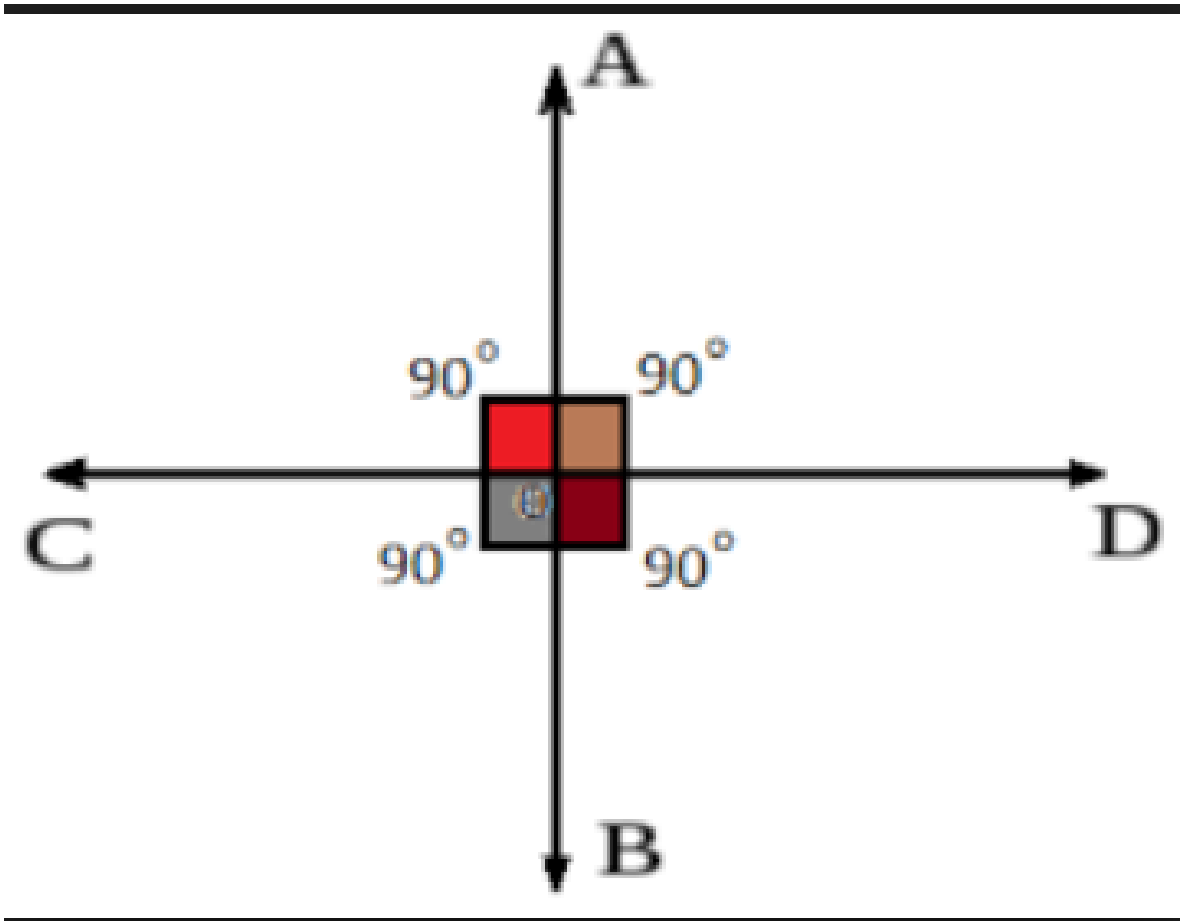
PERIOD	TIME	CLASS
0	8:20 – 8:50 8:50 – 9:00	Homeroom & DEAR
1	9:00 – 10:05	Academic #1
2nd	10:10 – 11:10	Academic #2 (P.E. & Connections
3rd/Lunch	11:15 – 12:55	Academic #3/Lunch
4th	1:00 – 2:05	Academic #4
5th	2:10 – 3:10	Academic #5
6th	3:15 – 4:20	Academic #6
Dismissal/PM Announcements	4:00 – 4:05	

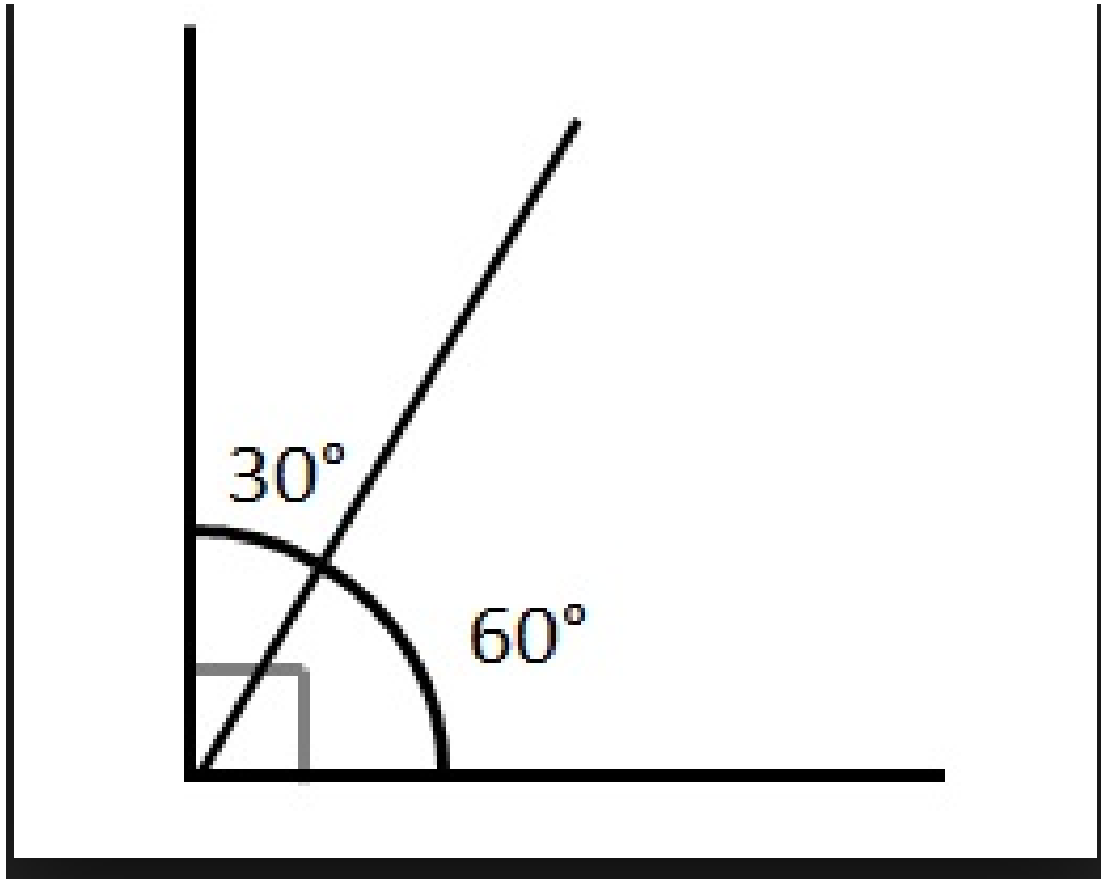
To be Completed 10/4

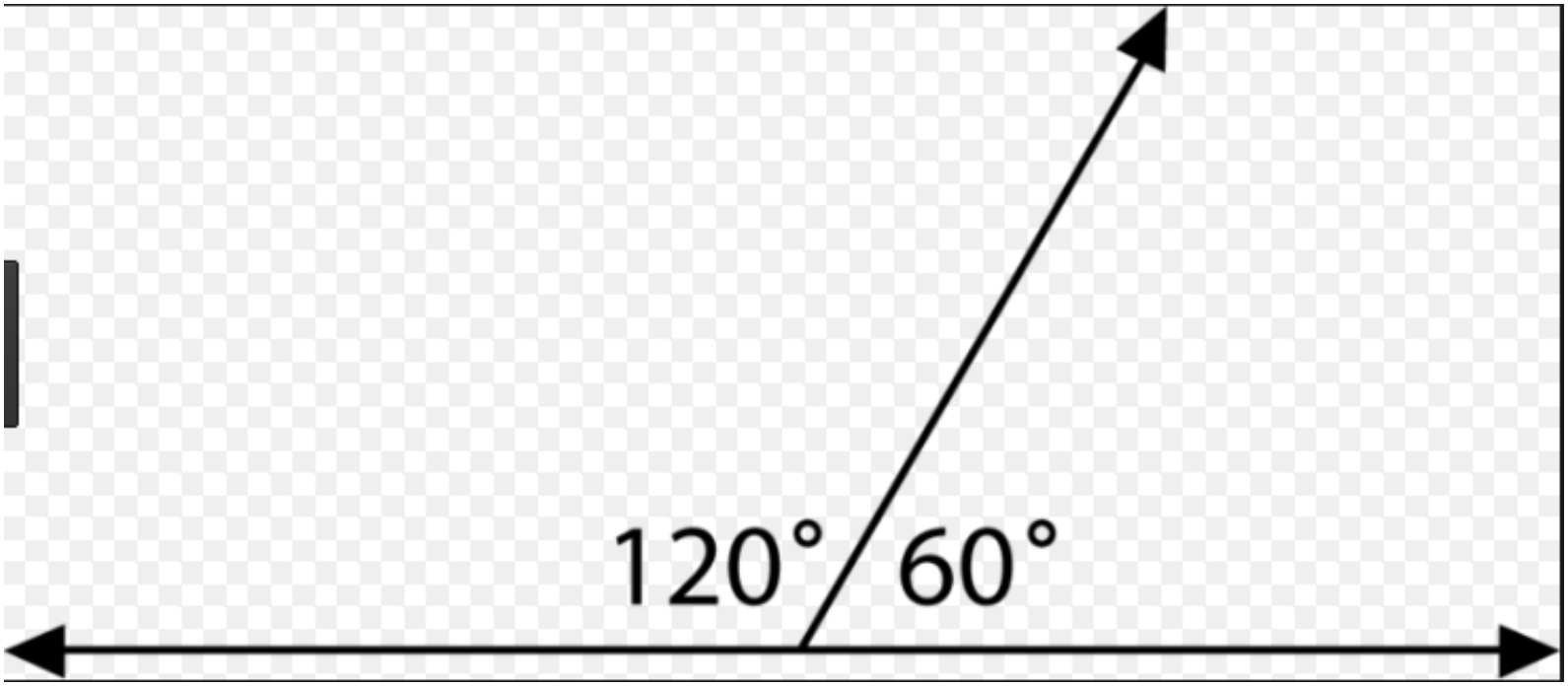
- Complete your foldable on Corresponding Angles, Alternate Interior Angles, Alternate Exterior Angles, and Same Side Interior Angles.
- Complete and turn in Centennial Olympic Park Task.


A
B
C


a°
b°


A
90°
90°
C
D
90°
90°
B


30°
60°


120°
60°