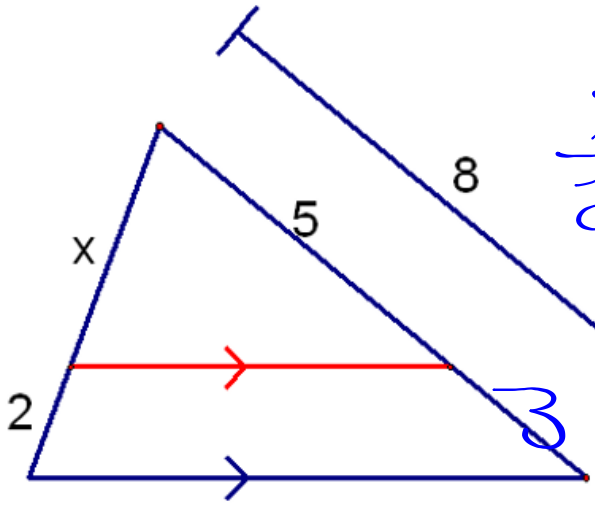
**Warm-up:**


1. Put your phones in the pouches/away
2. Take out your HW and HW Calendar
3. Complete the Warm-Up

1. Solve for x.

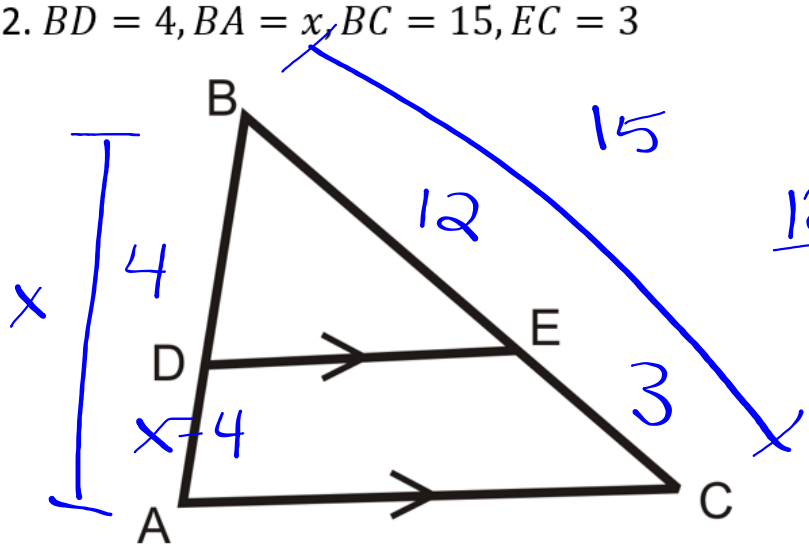



$\frac{x}{2} \times \frac{5}{3}$

$\frac{10}{3} = \frac{3x}{3}$

$3.33 = x$

2. $BD = 4, BA = x, BC = 15, EC = 3$




$\frac{12}{4} = \frac{3}{x-4}$

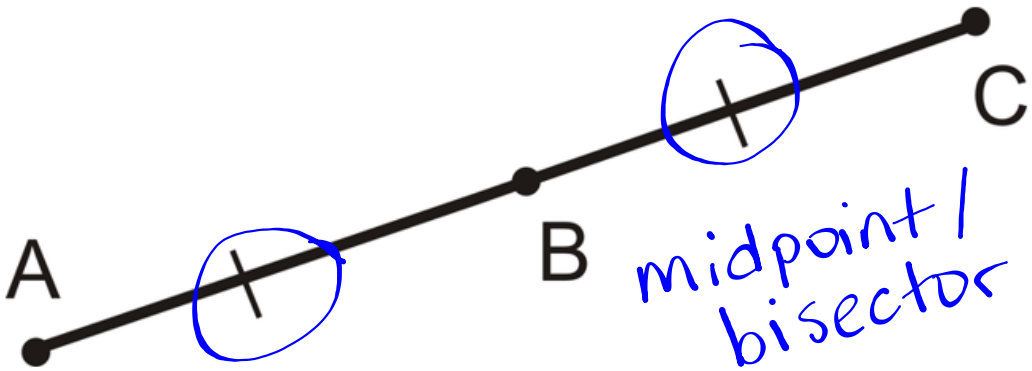
$12x - 48 = 12$

$+48 \quad +48$

$\frac{12x}{12} = \frac{60}{12}$

$x = 5$

3. What Geometry vocabulary word describes Point B?




midpoint / bisector

# What am I learning today?

## Learning Objective 2C.2

How to dilate a figure using a scale factor.

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

I can...Use a scale factor and a center of dilation by multiplying the pre-image to create similar figures.

- **Dilation** – A **transformation** that changes the **SIZE** of a figure.
- Dilations can result in a **BIGGER** or **SMALLER** figure than the pre-image.
- ***Since dilations **do not** maintain the same distance/length between the points from the pre-image to the image, a dilation is **NOT** an **ISOMETRY**.***

**4 qualities preserved during a dilation transformation:**

- ✓ **ANGLE** measures
- ✓ Corresponding sides are **PROPORTIONAL**
- ✓ Pre-image and image coordinates are **COLINEAR** (on the same line) from the center of dilation

- Dilations need **two** things:
  1. **SCALE FACTOR** --> $\frac{\text{new}}{\text{old}}$ $\frac{A'}{A}$

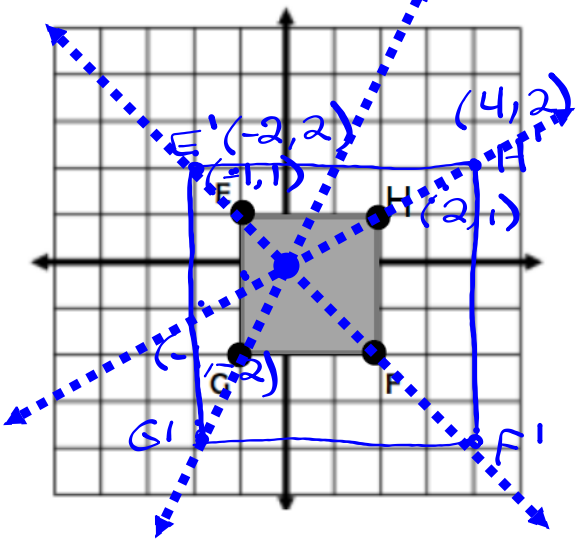
$k$ = scale factor

$(x, y) \rightarrow (kx, ky)$

  2. **Center of Dilation**

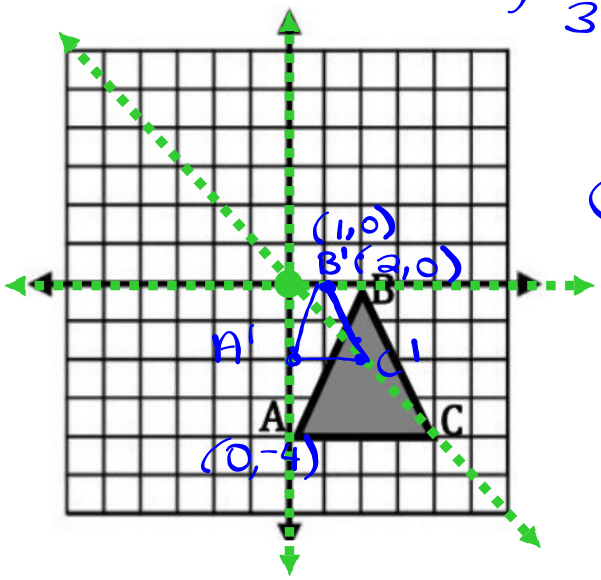
**We often use the **ORIGIN** for the center of dilation; when this happens simply **multiply** the scale factor with the **COORDINATES** of each vertex**

- An image that is **bigger** than the pre-image is called an **ENLARGEMENT**
- This means the **scale factor** was **MORE** than 1 Ex: 1.5 ; $\frac{8}{5}$



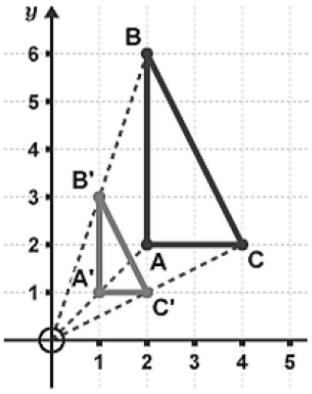

**Find the image E'H'F'G' after a dilation centered at the origin with a scale factor of 2**

- An image that is **smaller** than the pre-image is called an **REDUCTION** (compression)
- This means the **scale factor** was **LESS** than 1 Ex: 0.75; $\frac{2}{3}$



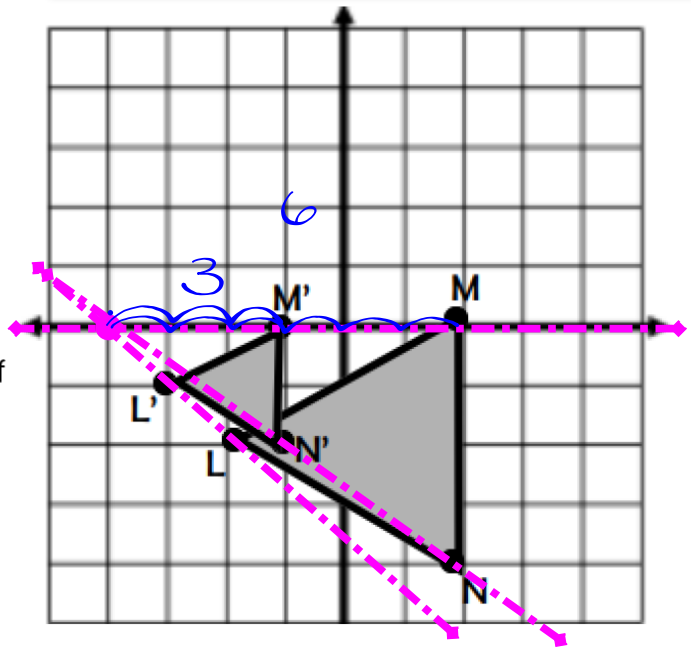

**Find the image A'B'C' after a dilation centered at the origin with a scale factor of 1/2**

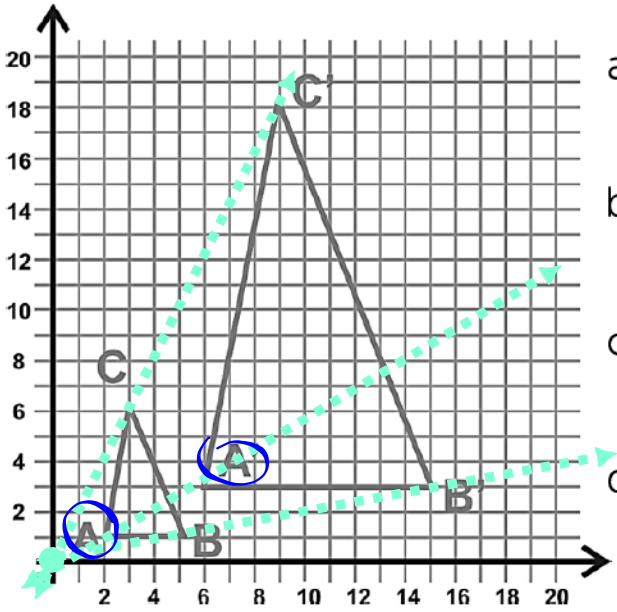
- An image that is **the same size** as the pre-image is called a **CONGRUENCE**
- This means the **scale factor** was **EQUAL** to 1.




1. Find the center of dilation.
   (-4, 0)
2. Calculate the scale factor.
   $\frac{3}{6} \rightarrow \boxed{\frac{1}{2}}$

***Connect the corresponding vertices with lines and find the intersection point!***






a. Find the center of dilation.

(0,0)

b. Calculate the scale factor.

$\frac{6}{2} = 3$

c. Describe the type of dilation.

enlargement

d. Create a rule for the dilation.

$(x,y) \rightarrow (3x, 3y)$

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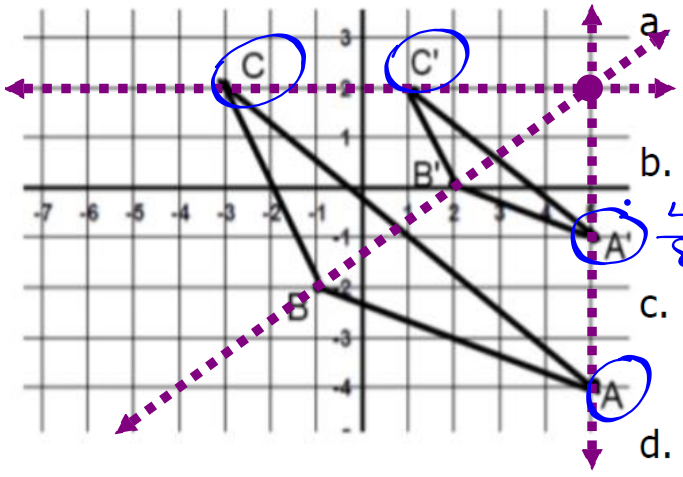



a. Find the center of dilation.

(5,2)

b. Calculate the scale factor.

$\frac{4}{8} = \frac{1}{2}$ $\frac{3}{6} = \frac{1}{2}$

c. Describe the type of dilation.

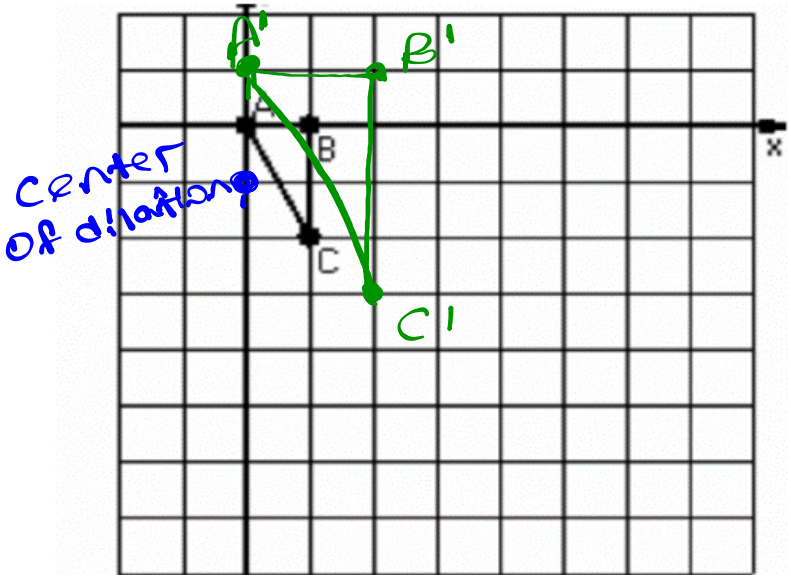
reduction

d. Create a rule for the dilation.

$(x,y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$

**3. Graph the image using the dilation and center of dilation.**

Dilation = 2, center D(0, -1)



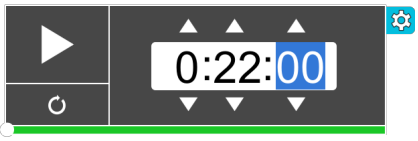

**4. Complete the coordinates of the image after a dilation of scale factor *k* centered at the origin.**

A(1, 1) B(3, 1) and C(-2, -3);

k = 3 A'(3, 3) B'(9, 3)

C'(-6, -9)

**Classwork**:




Complete the classwork about using dilations.

**HW**: On top of the bin.