# Geometry B Live Lesson Class

## U4L5 – Dilations
(Ch. 9-5 in textbook)


CONNECTIONS ACADEMY®

# Agenda

1. Review topics and problems from Unit 4, Lesson 5 – Dilations.

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

# 2-Column Notes Template

1. Announcements/To Do's

2. School-Wide Learner Outcomes

3. LL Objectives

4. Vocabulary words

5. Problems

6. Summary (End of class)

1. Write down important details.

2. What are you going to work on this week?

4. Definitions (fill in as we go)

5. Steps to solving problems

6. 1 or 2 sentences about the LL class.

# Reminders and To – Do's

## Information

1. Complete 1 math lesson per day.

2. Check your WebMail every day

3. Be prepared to spend 4 - 6 hours per day on schoolwork.

4. Remind your Learning Coach to take daily attendance

## What to do

1. Go to your Planner in Connexus to find the math lesson for the day

2. Go to Connexus to find WebMail

3. Complete lessons for the day from your Planner. Do not get behind on lessons.

4. Have your Learning Coach log into Connexus daily.

# Reminders and To – Do's

| **Information** | **What to do** |
|---|---|
| 5. Go to the Message Board first for information about our math class. | |
| 6. Contact Mr. Elizondo for math questions. | 6. Call (559) 549 - 3244 and leave a voicemail if call is not answered. |
| Remember: You need at least 2 phone calls with Mr. Elizondo per semester. | Make an appointment at: https://elizondo.youcanbook.me |
| | Send a WebMail |

# U4L5 – California Common Core State Standards

- HSG-SRT.A.1: Verify experimentally the properties of dilations given by a center and a scale factor:

- HSG-SRT.A.1a: A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

- HSG-SRT.A.1b: The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

# U4L5 – Objectives

- Understand dilation images of figures

- What does the scale factor tell you about the dilation?

# U4L5 – Vocabulary Words

- center of dilation

- dilation

- enlargement

- glide reflection
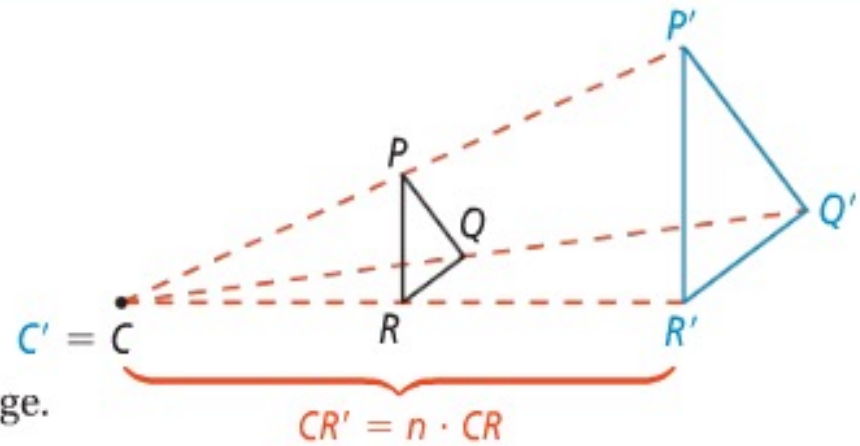
- isometry

- reduction

- scale factor of dilation

**Key Concept   Dilation**

A **dilation** with **center** $C$ and **scale factor** $n$, $n > 0$, is a transformation with these two properties:

- The image of $C$ is itself (that is, $C' = C$).
- For any other point $R$, $R'$ is on $\overrightarrow{CR}$ and $CR' = n \cdot CR$, or $n = \frac{CR'}{CR}$.

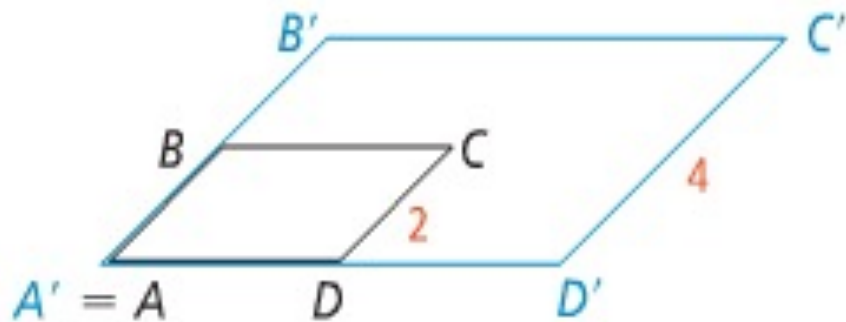The image of a dilation is similar to its preimage.

$$CR' = n \cdot CR$$
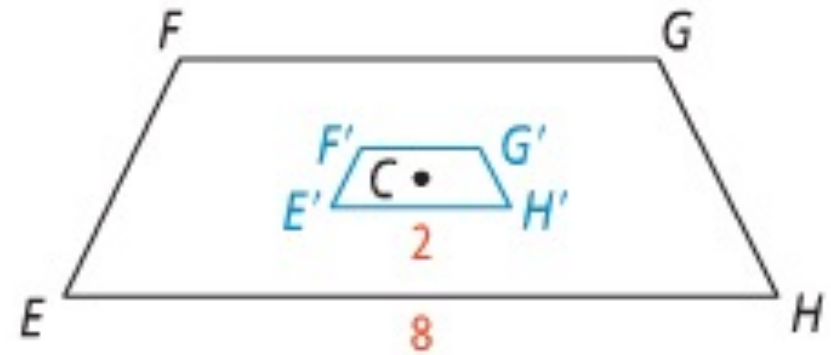
$$\text{scale factor} = \frac{\text{new length}}{\text{old length}}$$

▪A dilation is an **enlargement** if the scale factor is greater than 1. The dilation is a **reduction** if the scale factor is between 0 and 1.
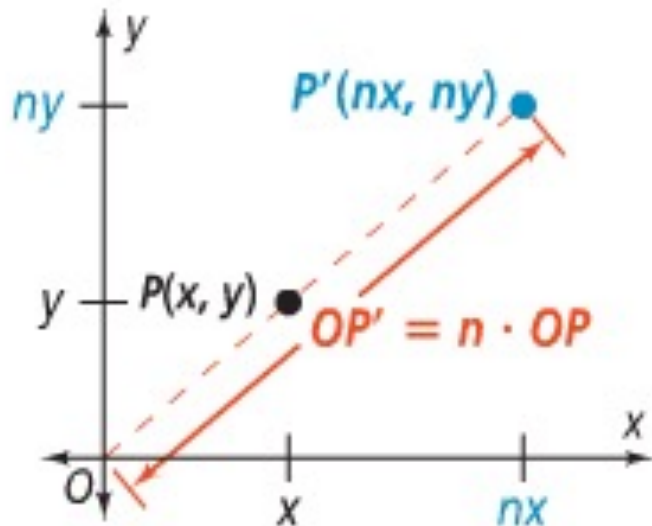
Enlargement
center A, scale factor 2

Reduction
center C, scale factor $\frac{1}{4}$

▪You can find the dilation image of a point P(x, y) by multiplying the coordinates of P by the scale factor n.

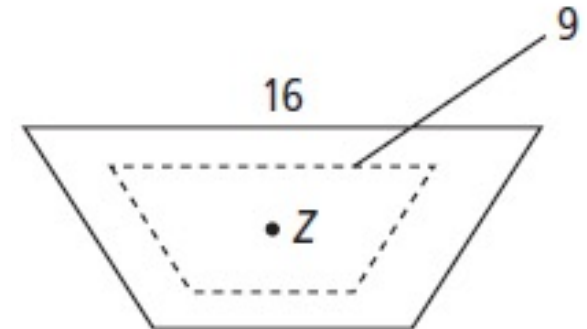All dilations in our textbook on the coordinate plane use (0,0) as the center of dilation.

The solid-line figure is a dilation of the dashed-line figure. The labeled point is the center of dilation. Tell whether the dilation is an enlargement or a reduction. Then find the scale factor of the dilation.
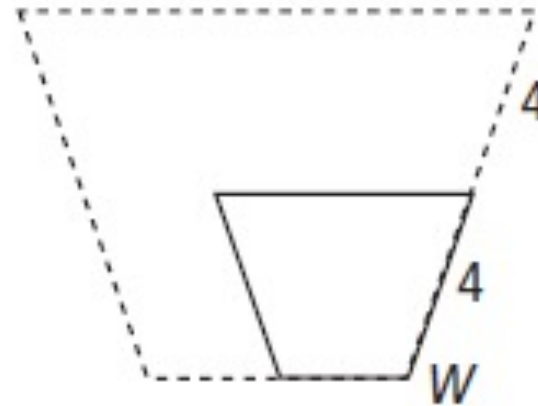


Reduction, scale factor 1/2
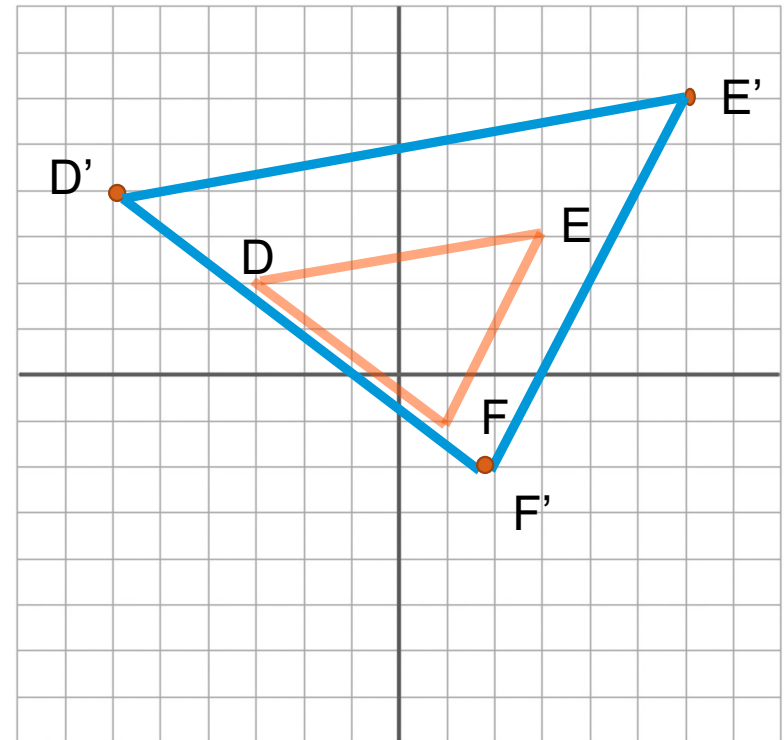


Enlargement, scale factor 16/9

What is the scale factor for the dilation? Is the dilation a reduction or enlargement?

D (-3, 2)  D'(-6, 4)
E (3, 3)   E'(6, 6)
F (1, -1)  F'(2, -2)
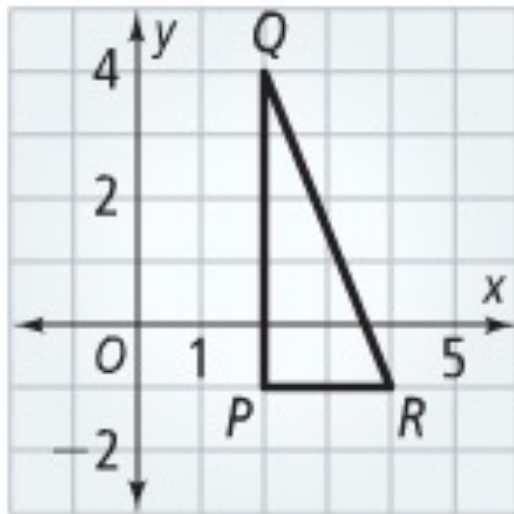
Enlargement, scale factor 2

Find the vertices of the image of triangle PQR for a dilation with center (0,0) and the given scale factor.

scale factor 3



P (2, -1)
Q (2, 4)
R (4, -1)

P' (6, -3)
Q' (6, 12)
R' (12, -3)

# U4L5 – Reflection

What does the scale factor tell you about the dilation?

If the scale factor is greater than 1, the dilation is an enlargement. If the scale factor is between 0 and 1, it is a reduction.

# Questions?

- Check the Message Board first

- Send a WebMail

- You can also make an appointment at https://elizondo.youcanbook.me

- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.