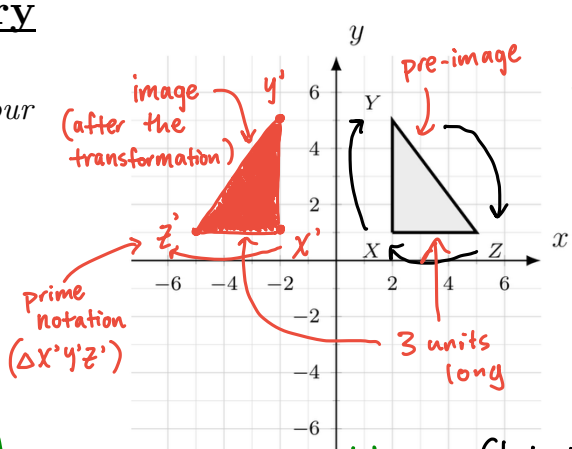
Artifact 1 – Orientation and Congruence

Driving Question 1: Can two figures be congruent yet still have different orientations?

Vocabulary

Find these in your topic overview guide!

- Congruent ✓
- Orientation ✓
- Reflection ✓
- Rotation
- Pre-Image ✓
- Image ✓
- Corresponding sides/angles ✓
- Prime notation ✓



Yes, two figures can be Congruent (same corresponding side lengths, angle measures) yet still have reverse orientations (as in the case of a reflection).

Rotations keep orientation the same → only reflections reverse.

Orientation → clockwise (or counterclockwise) order of the vertices.

Pre-image	Image
Clockwise order → X → Y → Z	X' → Z' → Y'

Even though ΔX'Y'Z' is congruent to pre-image ΔXYZ (both XZ & X'Z' are 3 units long), the order of the vertices is reversed, leading to a mirror/flipped image (after the reflection).

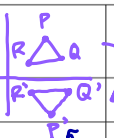
Driving Question 2: Which of the four major transformations preserve congruence?

- Congruent ✓
- Preserve → means to keep the same
- Rigid Motion
- Orientation ✓
- Reflection ✓
- Translation ✓
- Rotation ✓
- Dilation ✓
- Corresponding sides/angles ✓
- Prime notation ✓



7. A figure on the coordinate plane is transformed to create a new figure. Determine whether each transformation preserves or does not preserve congruence. Place a check in the correct column for each row.

Reflections do not re-size an image.	Preserves Congruence	Does Not Preserve Congruence
A reflection across the x-axis	☑	☐
A rotation of 270° about the origin	☑	☐
A dilation by a scale factor of 2 with the origin as the center of dilation	☐	☑
A translation 6 units right and 4 units up	☑	☐



*Translations only slide to a different location – no change in size or shape

*only dilations do not preserve congruence.

Rigid Motions (preserve congruence)
- Translation
- Reflection
- Rotation
- ~~Dilation~~

While orientation is preserved in dilations, size changes, thus the image cannot be congruent to the original pre-image.

