1.1 TRANSFORMATIONS

(G-Co.2, G-Co.4)

Learning Target:
I can recognize and distinguish transformations
Why are these called transformers?

Transformation of a geometric figure -
changes position
and/or size

In a transformation, the original figure is the preimage, and the resulting figure is the image.
Original (Pre-image)

Reflection

Reflection

Dilation

Rotation

Pre-image

Translation

Image

Stretch
In the examples below, the preimage is black and the image is gray.

Name each transformation

rotation     translation     reflection

What do you notice about the angle measurements when comparing the preimage and the image? stay the same

What do you notice about the segment lengths when comparing the preimage and the image? stay the same
Some transformations

- **preserved angles** (angles on the preimage and image are congruent)
- **preserved distances** (distance between points is the same on the image and preimage)

If angles and distance preserved, then the transformation is said to have **Rigid Motion**. (Congruence 
transformation)

**Which of these is a rigid motion?**

- Pre-image

<table>
<thead>
<tr>
<th>Image 1</th>
<th>Image 2</th>
<th>Image 3</th>
<th>Image 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>✅️</td>
<td>✔️</td>
<td>✗️</td>
<td>✗️</td>
</tr>
</tbody>
</table>
1. Does this transformation appear to have rigid motion? Explain.

   ![Preimage and Image](image)

   Yes, size changed.

2. Does this transformation appear to have rigid motion? Explain.

   ![Preimage and Image](image)

   A) Yes, distances are congruent.
   B) Yes, angle measures are the congruent.
   C) Yes, both distances and angle measures are the congruent.
   D) No, distances are the not congruent.
A transformation maps **every point** of a figure onto its image and may be described using arrow notation (→).

**Prime notation** (′) is often used to identify image points.

In the diagram below, A′ is the image of A.

Order is important!
3. Name the image, identify the type of transformation and complete the mapping statement.

image: \( \Delta \text{W}'X'R' \)

transformation: reflection

\[ \Delta \text{WXR} \rightarrow \Delta \text{W}'X'R' \]

4. Using #3,

what is the image of \( \overline{WR} \) ? \( \overline{W'R'} \)

\( X \rightarrow X' \)

what is the preimage of \( \overline{R'X'} \)? \( \overline{RX} \)

\( W \rightarrow W' \)
5. What transformation is demonstrated?

A. Reflection
B. Rotation
C. Translation

6. The image is the original figure. TRUE or FALSE

7. Name the 3 rigid motion transformations and explain what each does.

- Reflection \(\rightarrow\) flips
- Rotation \(\rightarrow\) turns the shape
- Translation \(\rightarrow\) slides
ASSIGNMENT:

Geo 1.1 Day 1 worksheet-
Transformations intro.
1.1 Day 1 Homework Answers

1. No, distance not preserved
2. 
3. a. Reflection
   b. $QR'$
   c. P
   d. 
4. 
5. a. Rotation
   b. Image
   d. BC
   e. polygon $E'D'C'B'F'$
6. 
7. Segment, $\overline{CD}$
8. 
9. Ray, $\overline{QR}$
10. 
11. Rigid, Rotation
12. 
13. Not Rigid, Dilation
14. 
15. Not Rigid, Dilation