Chapter 9: Transformational Geometry

SECTION 2: TRANSLATIONS

Megan Frantz Okemos High School Math Instructor

I Can

- ❑ Identify and draw translations

Isometry

An **isometry** is a transformation that does not change the shape or size of a figure. Also called *congruence transformations or rigid motions.*

THREE TYPES:

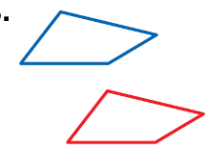
1. Reflections (flipping across a line)
2. Translations (sliding along a vector)
3. Rotations (turning around a point)

Translation?

Tell whether each transformation appears to be a translation. Explain.

A.

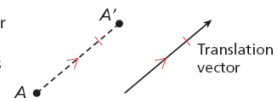
B.



Translations

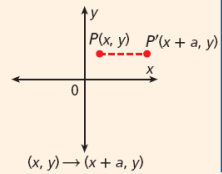
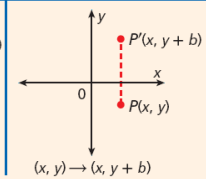
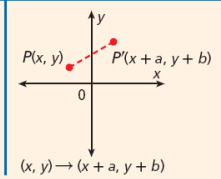
Translations

A translation is a transformation along a vector such that each segment joining a point and its image has the same length as the vector and is parallel to the vector.



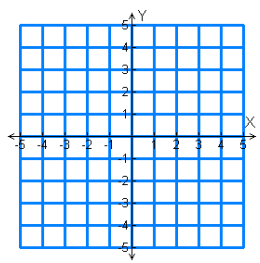
In the Coordinate Plane

Translations in the Coordinate Plane

HORIZONTAL TRANSLATION ALONG VECTOR ⟨a, 0⟩	VERTICAL TRANSLATION ALONG VECTOR ⟨0, b⟩	GENERAL TRANSLATION ALONG VECTOR ⟨a, b⟩
		
$(x, y) \rightarrow (x + a, y)$	$(x, y) \rightarrow (x, y + b)$	$(x, y) \rightarrow (x + a, y + b)$

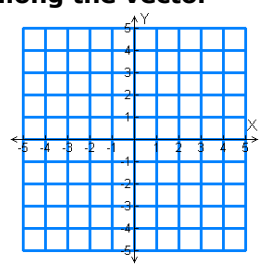
Example

Translate the triangle with vertices *D*(−3, −1), *E*(5, −3), and *F*(−2, −2) along the vector <3, −1>.



Example

Translate the quadrilateral with vertices *R*(2, 5), *S*(0, 2), *T*(1,−1), and *U*(3, 1) along the vector <−3, −3>.



Example

A rook on a chessboard has coordinates (3, 4). The rook is moved up two spaces. Then it is moved three spaces to the left. What is the rook's final position? What single vector moves the rook from its starting position to its final position?

I Can

- ❑ Identify and draw translations