

Chapter Transformations

Day 1: Overview of transformations

Warm-Up

1. The coordinate of A on the number line is $x-5$ and the coordinate of B is $2x+5$. $AB = 11$. Find the coordinate of A.

2. In the coordinate plane, A has coordinates $(0,2)$ and B has coordinates $(2,-3)$. Find AB.

A transformation is a change in the _____, _____, and/or _____ of a figure. The original figure is called the _____ and the transformed figure is called the _____.

A transformation is a function:

Functions have input \rightarrow output; so, transformations have _____ \rightarrow _____

Mapping - is a term used to mean a transformation is taking place.

Rigid Motion or Isometry: A transformation that changes the position of a figure without changing shape or size.

_____, _____, _____ are rigid motions.

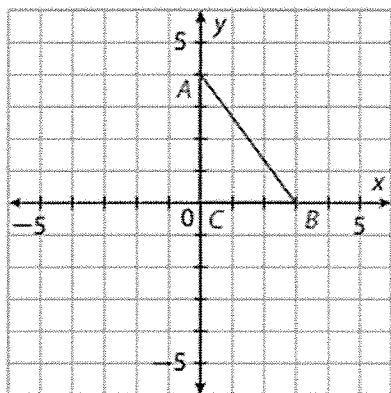
Properties of rigid motion: The following are preserved: distance, angle measure, betweenness, collinearity, parallelism

Then what is NOT a rigid motion? _____

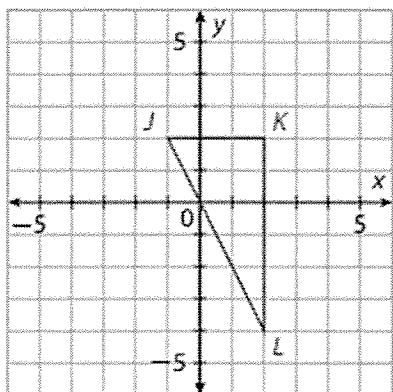
Coordinate notation- When you use coordinates to show the transformation or to state the rule of the transformation.

- Find the unknown coordinates for each transformation and draw the image. Check if each is a rigid motion or a non-rigid motion.

a) $(x, y) \rightarrow (x - 4, y - 3)$



b) $(x, y) \rightarrow (2x, y)$



2. Use coordinate notation to write the rule that maps each preimage to its image. Then determine whether this is a rigid or nonrigid motion.

$\triangle JKL$ maps to $\triangle J'K'L'$:

Preimage	Image
J (4, 1)	J' (4, 3)
K (-2, -1)	K' (-2, -3)
L (0, -3)	L' (0 , -9)

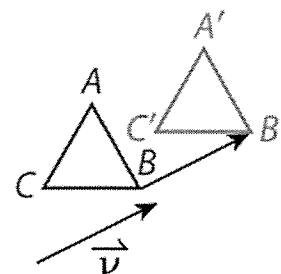
Translations:

A Vector: A quantity with both magnitude and direction.

Translation: A translation is a transformation along a vector such that the segment joining a point and its image.....

1) _____

2) _____

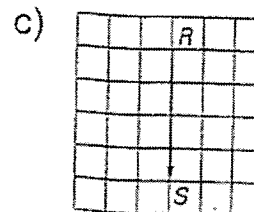
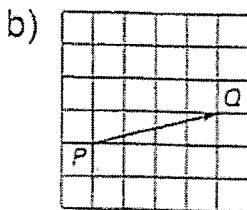
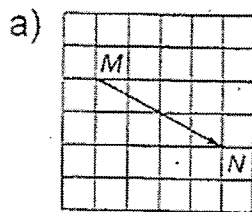


Two ways to describe a translation:

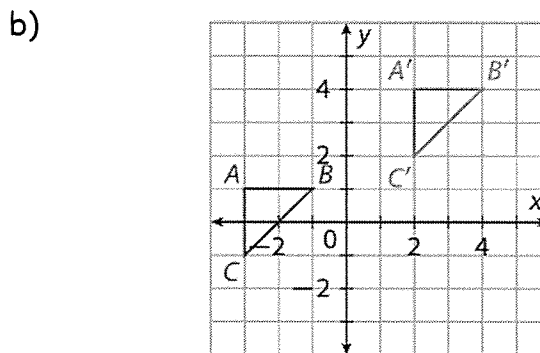
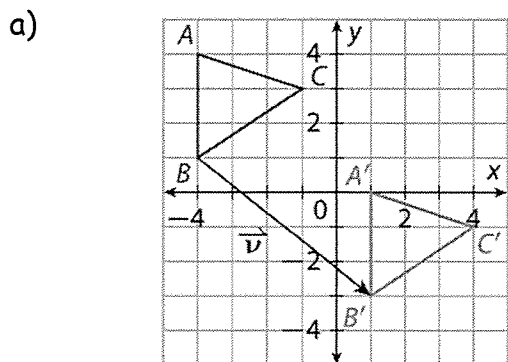
Coordinate notation:

Component Form of a vector:

1. Name the vector and write its component form.



2. Describe the translation using coordinate notation and component form of vector.



Coord. Notation:

coord. Notation:

Vector:

vector:

3. $\triangle ABC$ has vertices $A(0,0)$, $B(1,5)$ and $C(4,1)$. State the coordinates of the image after each translation.

Examples:

a) $(x, y) \rightarrow (x + 4, y + 3)$

b) $\langle 6, -4 \rangle$

You try:

c) $(x, y) \rightarrow (x - 5, y + 2)$

d) $\langle -4, -5 \rangle$

7. You are given the translation information and the vertices of the image. Find the vertices of the preimage.

a) $(x, y) \rightarrow (x - 2, y + 1)$

$$A'(3, 2)$$

$$B'(-3, 4)$$

$$C'(6, -1)$$

b) $\langle -4, -1 \rangle$

$$A'(2, 1)$$

$$B'(4, 4)$$

$$C'(-3, 1)$$

c) $(x, y) \rightarrow (x + 3, y + 4)$

$$A'(-5, 1)$$

$$B'(0, 4)$$

$$C'(4, -3)$$