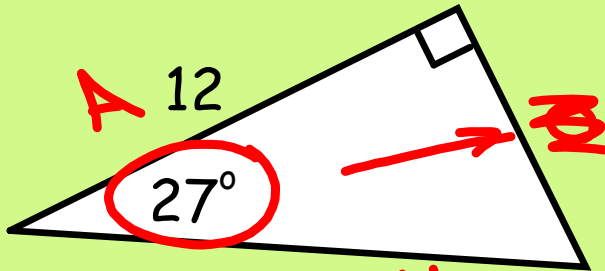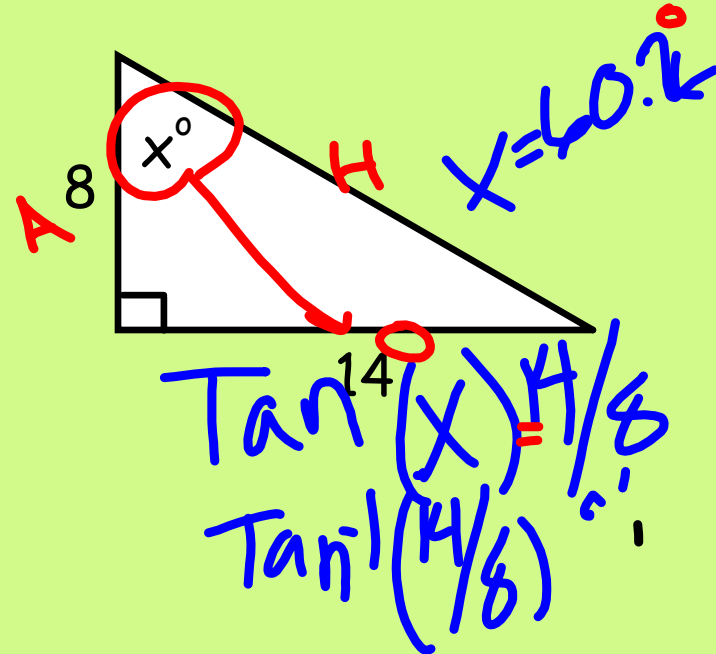# 2/18/20 - Warm Up Problem

Find the value of x in each triangle.

A 12

27°

x   H

$$\cos(27) = \frac{12}{x}$$

$$= 13.46$$

$$\frac{12}{\cos(27)} = \frac{x \cdot \cos(27)}{\cos(27)}$$

A 8   x°   H

14

X=60.2°

$$\tan^{-1}(x) = \frac{H}{8}$$

$$\tan^{-1}\left(\frac{14}{8}\right) =$$

WHAT IS A TRANSFORMATION?
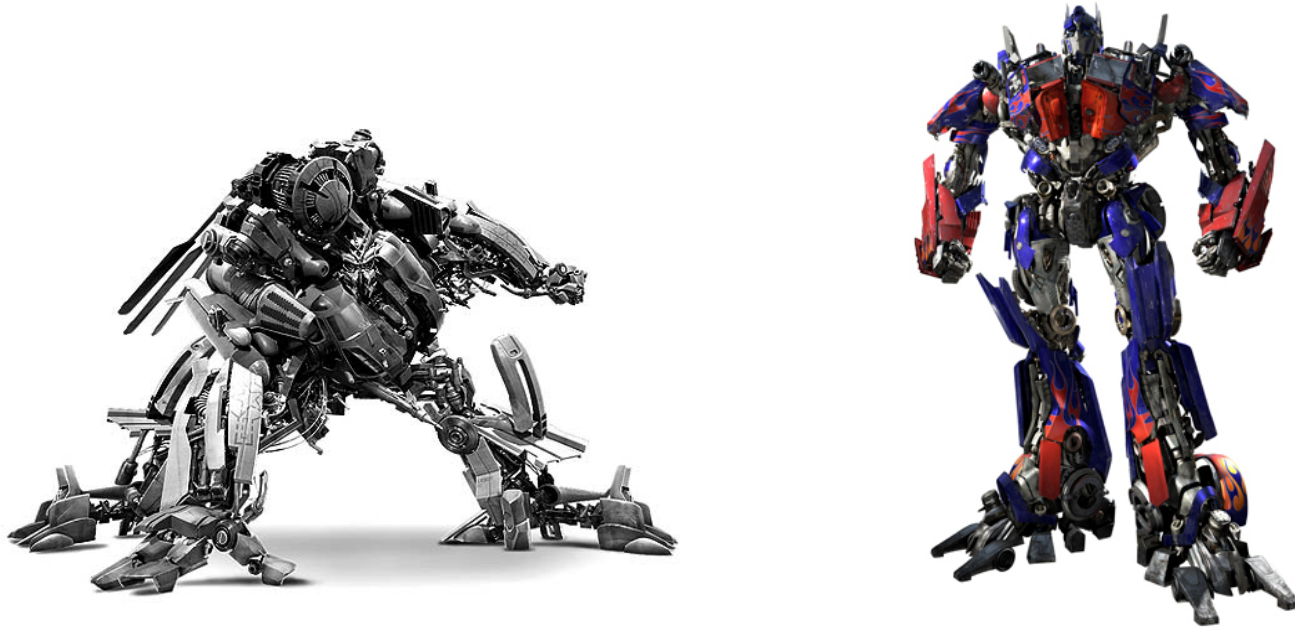
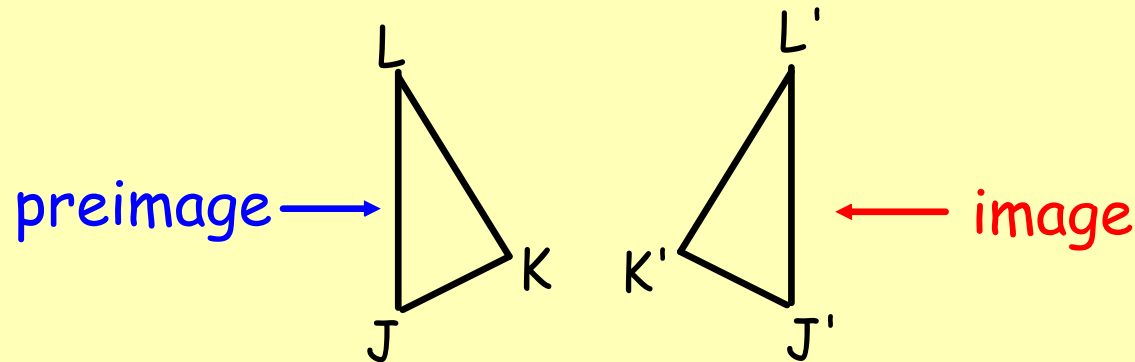# Section 9.1 - Translations

Goals: identify rigid motion transformations (isometries)

graph and write function rules for transformations

....

Transformation: a function that changes the position, shape, or size of a figure

**Preimage:** the original figure

Image: the transformed figure

preimage ——→   image ←—————

L   L'

K   K'

J   J'

Rigid Motions

Describe each transformation?

Is the image congruent to the preimage?

Turn Rotate

Slide down + left Translate

Flip Reflection

increased size Dilation
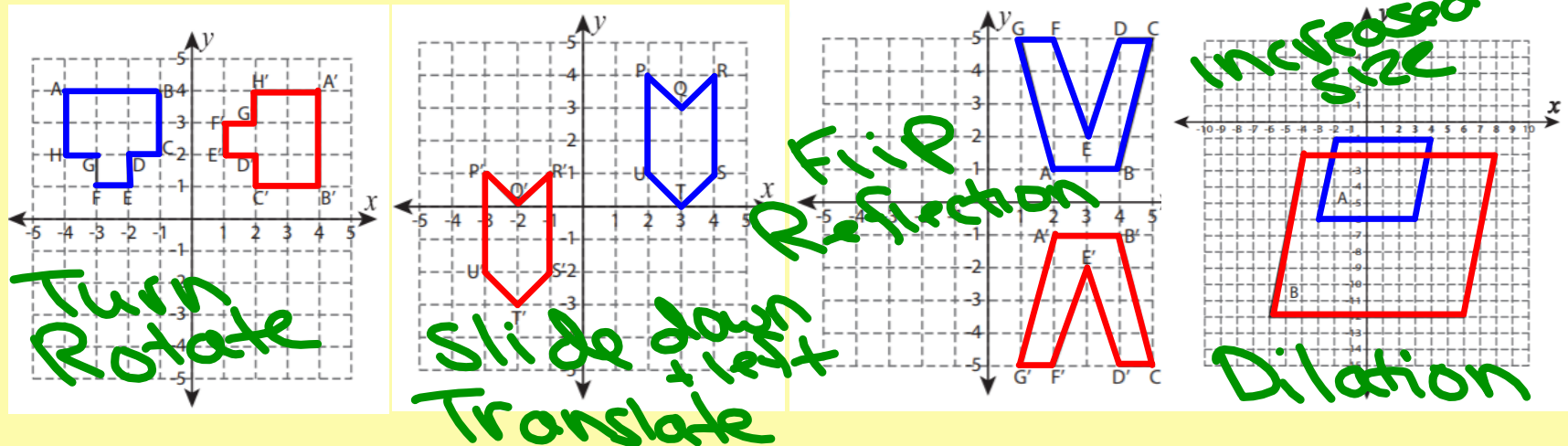
Rigid Motion/Isometry: a transformation that preserves distance and angle measure

- the preimage and image are congruent

Translation: (slide) a rigid motion that moves all points the same distance in the same direction

Function Notation

$$T_{<x,y>}(A) = A'$$ means

$$\overset{+}{R}/\overset{-}{L} \to \overset{+}{U}/\overset{-}{D}$$
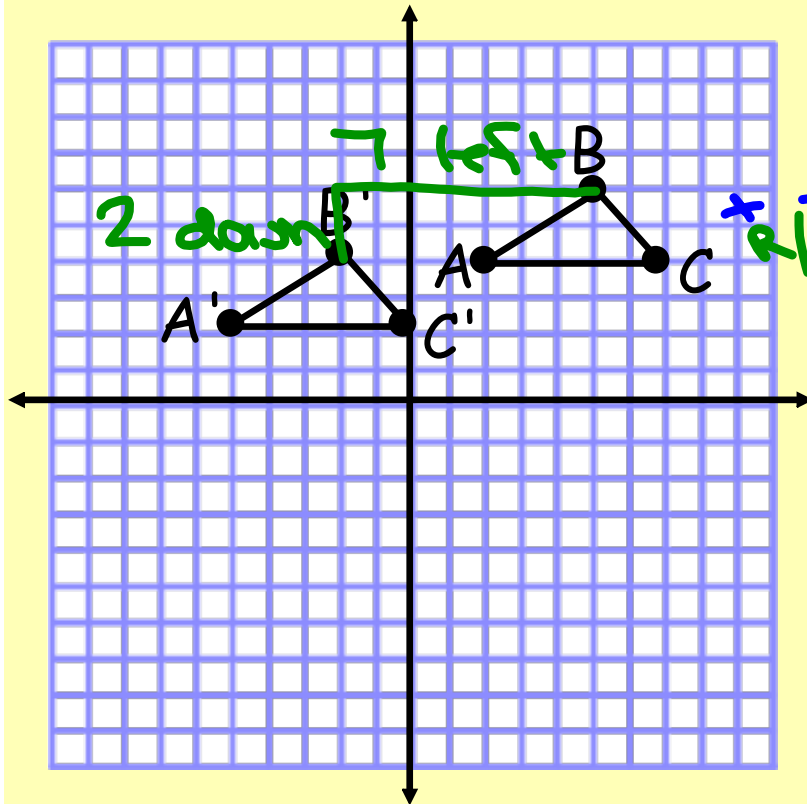
Point A is translated x units right/left and y units up/down

Write a rule in function notation to describe the translation.
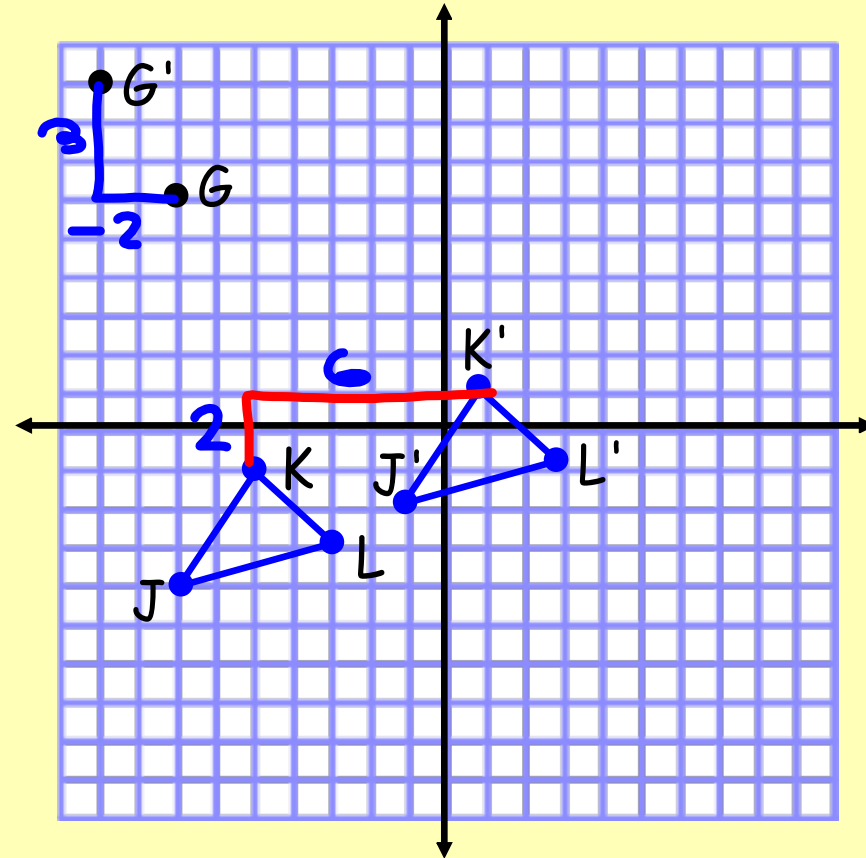
$$T_{<-7,-2>}(\triangle ABC)$$

Write a rule in function notation to describe the translation of each figure.

Point G

$$T_{<-2,3>}(G)$$

ΔJKL

$$T_{<6,2>}(\Delta JKL)$$

Theorem 9.1 - Translation Theorem
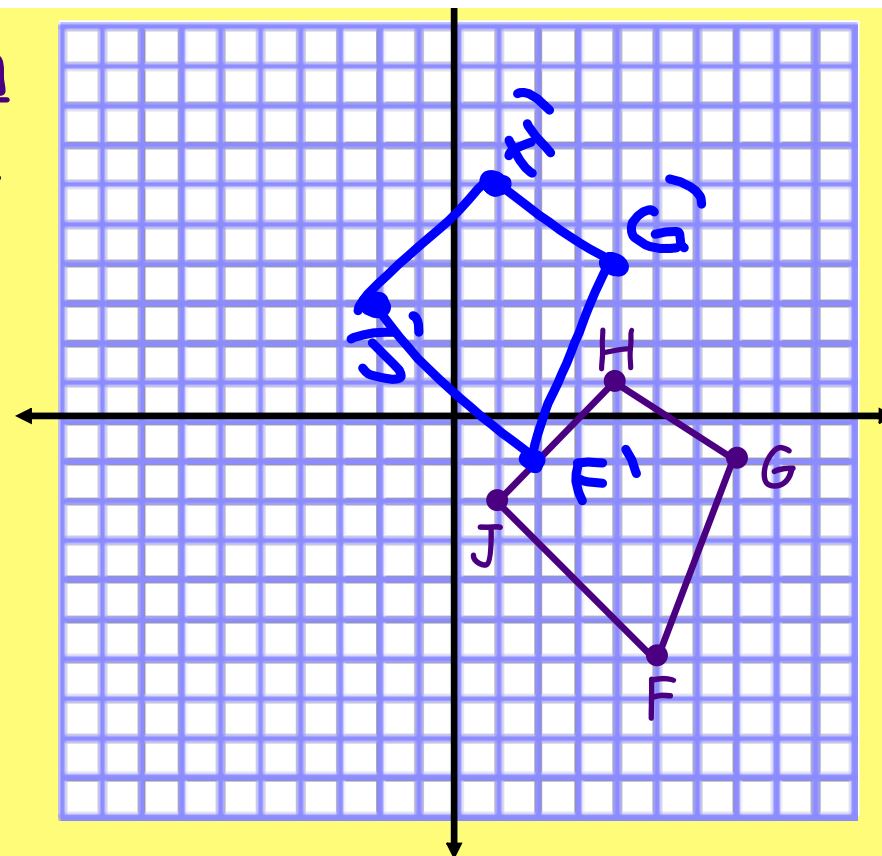
A translation is an isometry.

Graphing a Translation

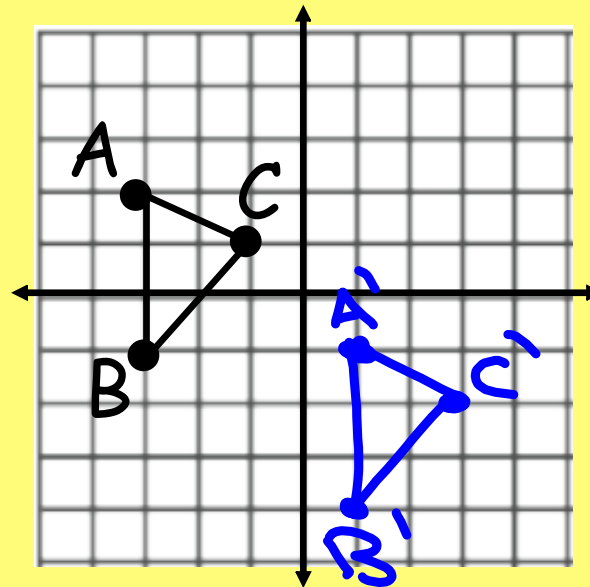Transform each point of the figure according to the rule.

$$T_{<-3,5>}(FGHJ)$$

left 3   up 5

Try this one in your notes.

Graph the image of ΔABC.

$$T_{<4,-3>}(\Delta ABC)$$
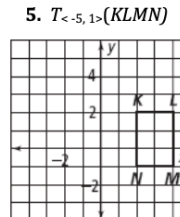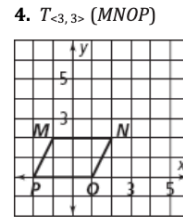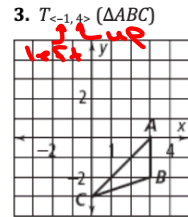
right
4
down
-3

Assignment:

Concept 21 Worksheet

(1-9)

<u>TRANSLATIONS</u>

Tell whether the transformation appears to be a <u>rigid motion</u> **Explain.**

1.

Preimage   Image

2.
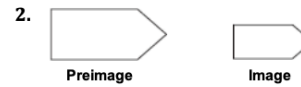
Preimage   Image

Graph the image of each figure under the given translation.

3. $T_{<-1, 4>} (\triangle ABC)$

4. $T_{<3, 3>} (MNOP)$

5. $T_{<-5, 1>}(KLMN)$

The preimage and image of a translation are shown. Describe the translation using function notation. $T_{<4,-4>}(\triangle AIJ)$

6.

7.

8.

9.