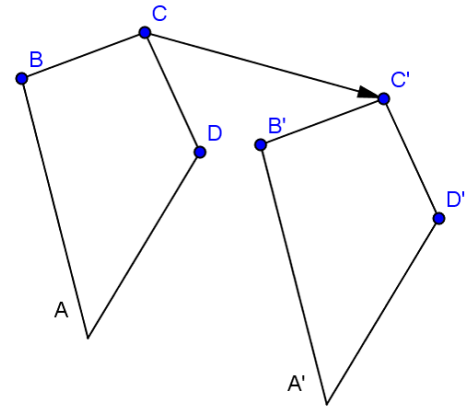


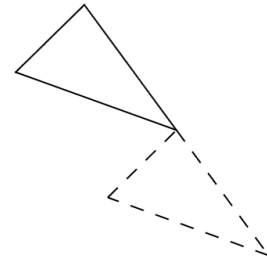
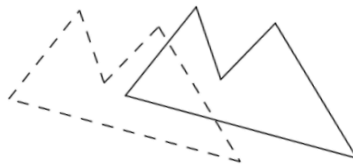
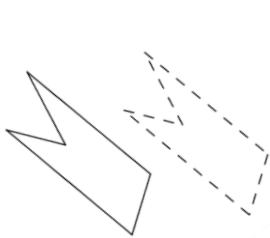
AIM: HOW DO WE CONSTRUCT TRANSLATIONS?

RECALL:

- Translations _____ a figure a distance horizontally and a distance vertically.
- If we are working off the coordinate plane, we define the distance translated using _____.
- In the figure below, quadrilateral $ABCD$ has been translated the _____ and _____ along vector $\vec{CC'}$.
- *Notice that the _____ and _____ from each vertex (point) to its corresponding vertex on the image are identical to that of $\vec{CC'}$.
- Quadrilateral $ABCD$ is congruent to quadrilateral $A'B'C'D'$ because translations are rigid motions that preserve _____ and _____.

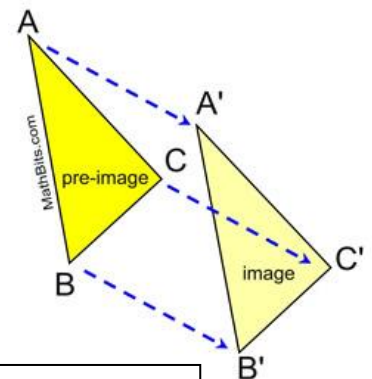


Given the diagrams below, the pre-image is the solid image and its image is the dotted image. Draw the vector that defines each translation below.



Properties that are preserved under a **translation** from pre-image to the image:

1. _____ (lengths of segments are the same)
2. _____ (angles stay the same)
3. _____ (things that were parallel are still parallel)
4. _____ (points on a line, remain on the line)
5. _____ (lettering order remains the same)



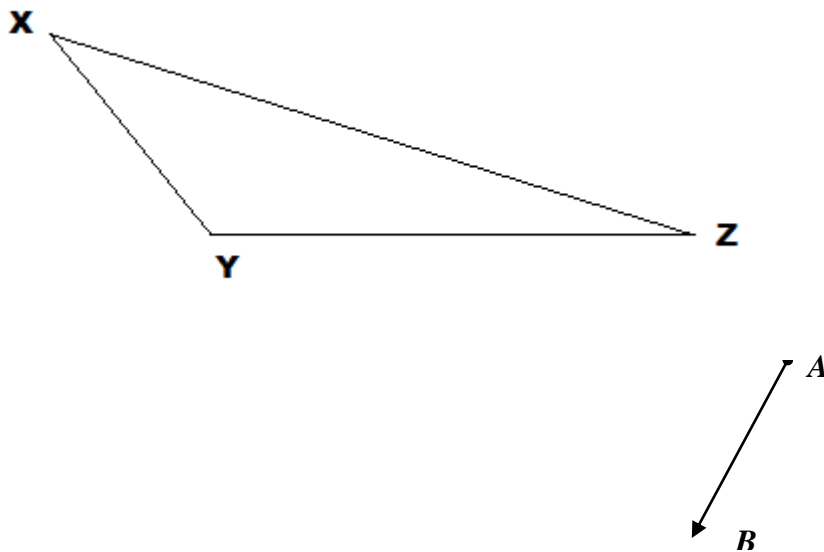
In this translation that maps ΔABC to $\Delta A'B'C'$, the distances from the pre-image points to the image points equal and the segments representing these distances are parallel.

CONCLUSION: _____

STEPS FOR CONSTRUCTING A TRANSLATION:

1. Open compass from A to B (needle on A).
2. Construct circle X, center X , radius AB
3. Construct circle Y, center Y, radius AB
4. Construct circle Z, center Z, radius AB
5. Open compass from A to X (needle on A).
6. Keeping width from step 5, Slide Needle to B, construct circle B with radius AX.
7. Open compass from A to Y (needle on A).
8. Keeping width from step 7, Slide Needle to B, construct circle B with radius AY.
9. Open compass from A to Z (needle on A).
10. Keeping width from step 9, Slide Needle to B, construct circle B with radius AZ.
11. Construct the translated triangle by connecting the intercepted arcs.

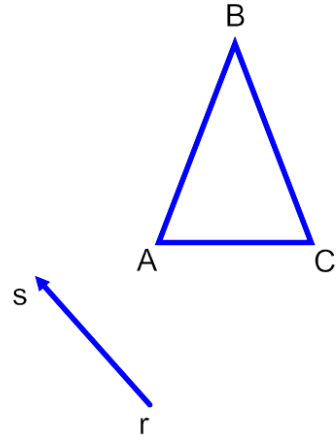
Use your compass and straightedge to apply $T_{\overline{AB}}$ to $\triangle XYZ$.



Is $\triangle XYZ \cong \triangle X'Y'Z'$? Explain your answer.

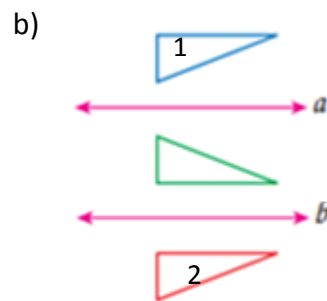
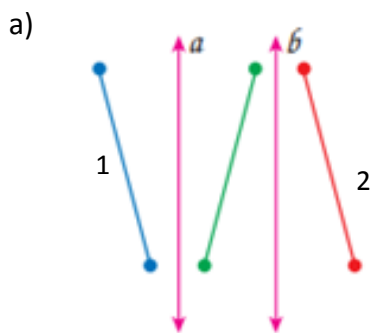
PRACTICE:

1. Use your compass and straightedge to apply $T_{\overline{RS}}$ to $\triangle ABC$.



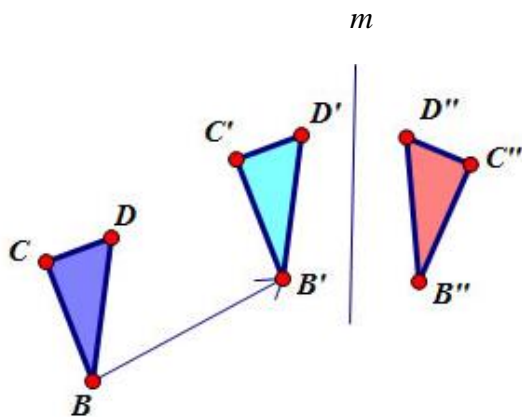
Is $DABC \cong DA'B'C'$? Explain your answer.

2. In each figure below $a \parallel b$. Determine whether figure 2 is a translation image of figure 1.



CONCLUSION: _____

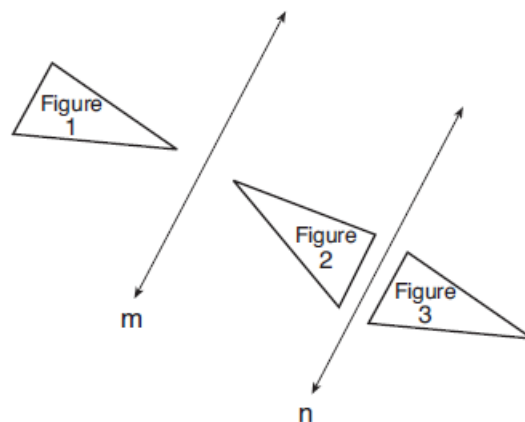
3. Describe a sequence of transformations which would map $\triangle BCD$ onto $\triangle B''C''D''$.



4. In the diagram below, line m is parallel to line n . Figure 2 is the image of Figure 1 after a reflection over line m . Figure 3 is the image of Figure 2 after a reflection over line n .

Which single transformation would carry Figure 1 onto Figure 3?

- (1) a dilation
- (2) a rotation
- (3) a reflection
- (4) a translation



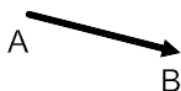
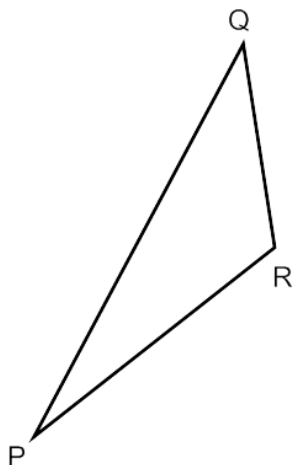
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Date: _____

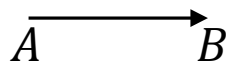
UNIT 2

LESSON 4 HOMEWORK

1. Use your compass and straightedge to apply $T_{\overline{AB}}$ to $\triangle XYZ$.



2. Use your compass and straightedge to apply $T_{\overline{AB}}$ to segment P_1P_2 .



3. Triangle $A'B'C'$ is the image of triangle ABC after a translation of 2 units to the right and 3 units up. Is triangle ABC congruent to triangle $A'B'C'$? Explain why.
