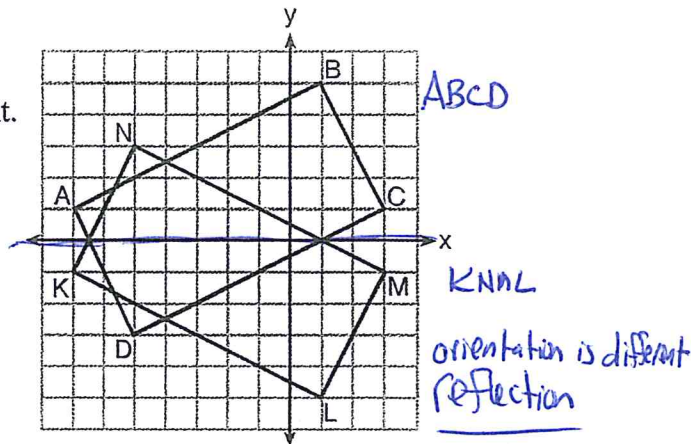


Proving Triangles are Congruent Using Rigid Motions

1. On the set of axes below, rectangle $ABCD$ and rectangle $KLMN$ are graphed. Use the properties of rigid motions to prove that the rectangles are congruent.

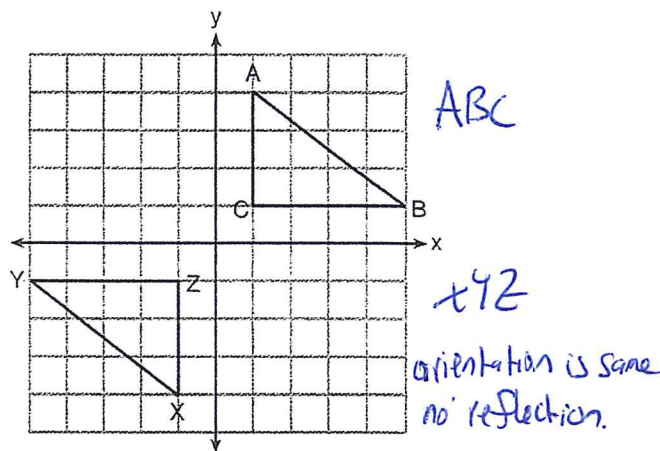
- 1) Reflect $ABCD$ over the x -axis
- 2) A reflection is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure.



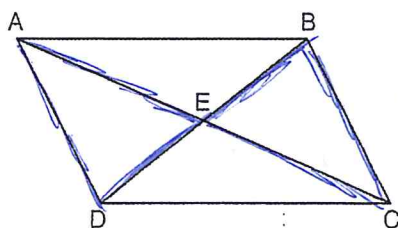
2. In the diagram below, $\triangle ABC$ and $\triangle XYZ$ are graphed.

Use the properties of rigid motions to explain why $\triangle ABC \cong \triangle XYZ$.

- 1) Rotate $\triangle ABC$ 180° about the origin
- 2) A rotation is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure.



3. Given: Quadrilateral $ABCD$ is a parallelogram with diagonals \overline{AC} and \overline{BD} intersecting at E

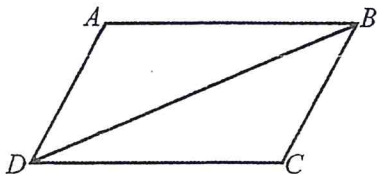


$\triangle AED$ Same orientation
 $\triangle CEB$ no reflection

Describe a single rigid motion that maps $\triangle AED$ onto $\triangle CEB$. Are the triangles congruent? Why or why not?

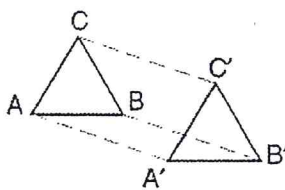
- 1) rotate $\triangle AED$ 180° about point E
- 2) A rotation is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure

4. The diagram below shows parallelogram $ABCD$ with diagonal \overline{BD} drawn. Using the properties of rigid motions, explain why $\triangle ABD \cong \triangle CDB$.



5. In the accompanying diagram, $\triangle A'B'C'$ is the image of $\triangle ABC$ and $\triangle A'B'C' \cong \triangle ABC$.

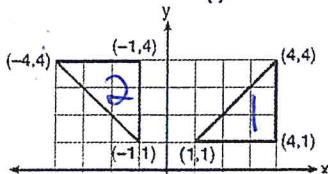
ACB same orientation
ACB no reflection



- 1) translate $\triangle ACB$ to $\triangle A'C'B'$
- 2) A translation is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure.

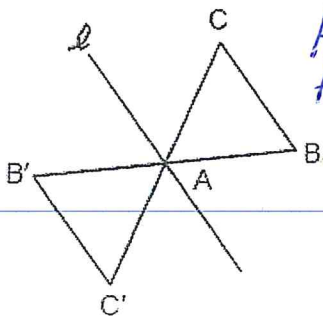
Explain why the two triangles are congruent.

6. Are the triangles in the accompanying diagram congruent? Why or why not?



- 1) rotate $\triangle 1$ 90° about the origin
- 2) a rotation is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure

7. The transformation of $\triangle ABC$ to $\triangle A'B'C'$ is shown in the accompanying diagram. Are the triangles congruent? Why or why not?



ACB same orientation
A'C'B' no reflection

- 1) rotate $\triangle ABC$ 180° about point A
- 2) a rotation is a rigid motion
- 3) A rigid motion preserves size and angle measure producing a congruent figure