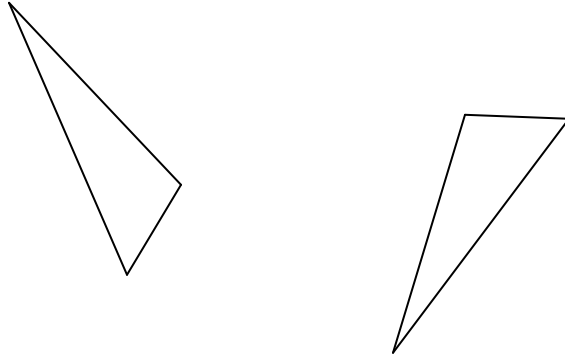
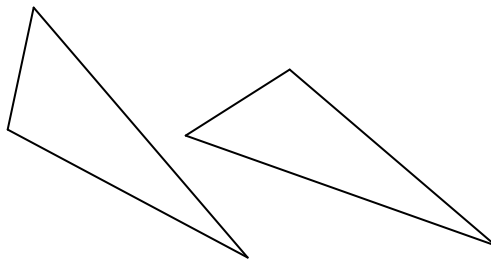


Isometry Problems I

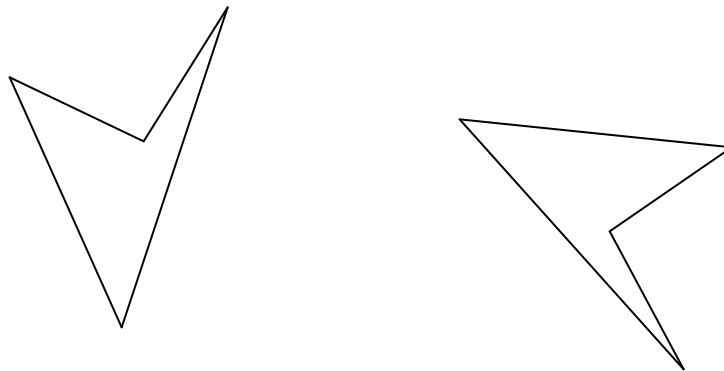
Exercise 0.1 Are the following two figures congruent? Why or why not?



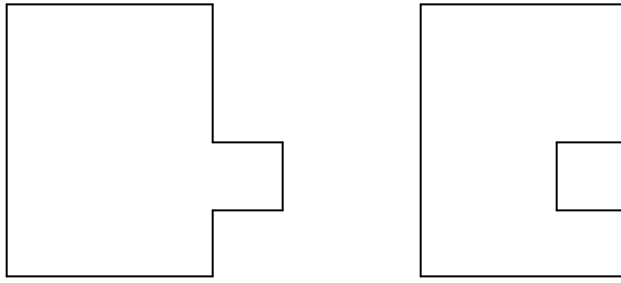
Exercise 0.2 Are the following two figures congruent? Why or why not?



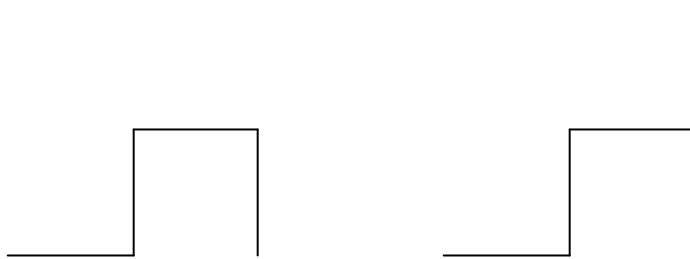
Exercise 0.3 Are the following two figures congruent? Why or why not?



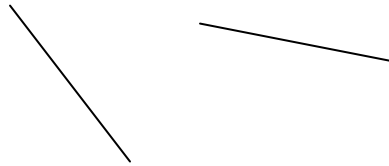
Exercise 0.4 Are the following two figures congruent? Why or why not?



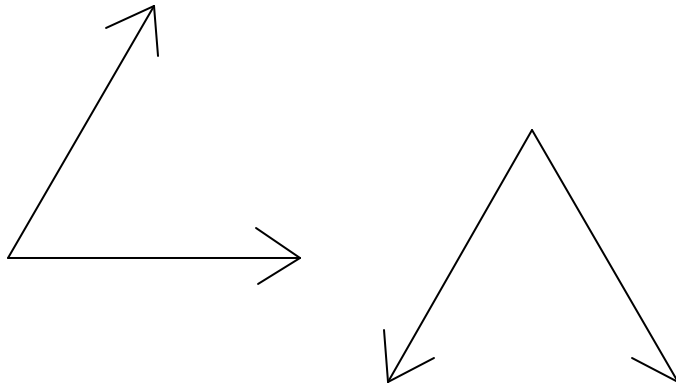
Exercise 0.5 Are the following two figures congruent? Why or why not?



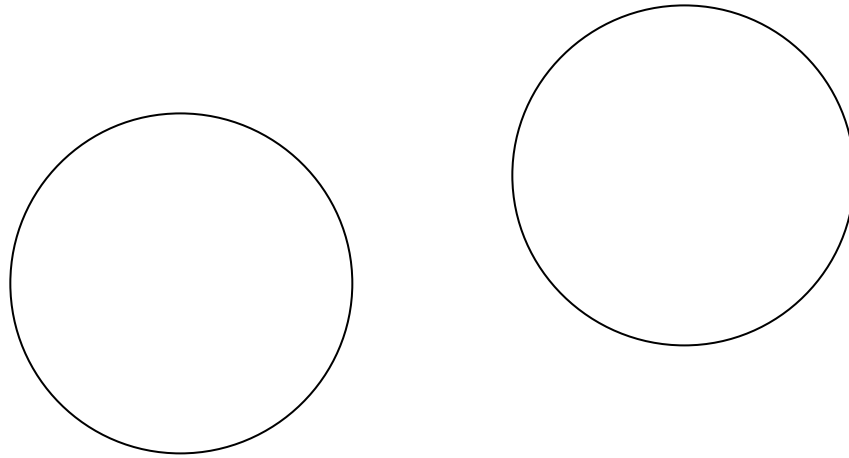
Exercise 0.6 Are the following two figures congruent? Why or why not?



Exercise 0.7 Are the following two figures congruent? Why or why not?

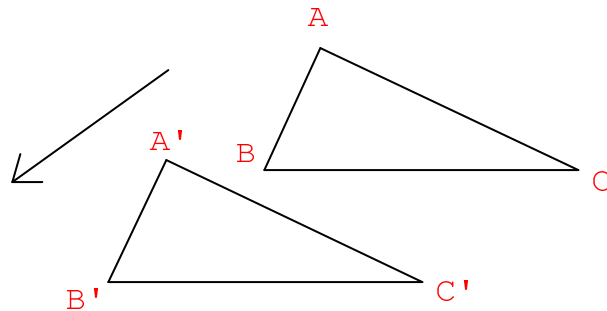


Exercise 0.8 Are the following two figures congruent? Why or why not?



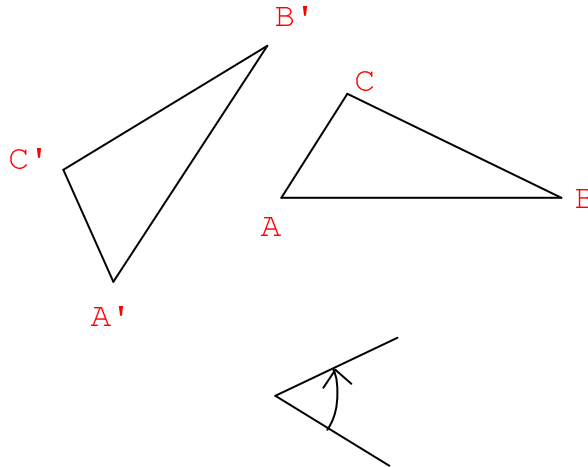
The four isometries are:

1. *Translation* by specified direction and amount. We can indicate the translation by drawing a vector.



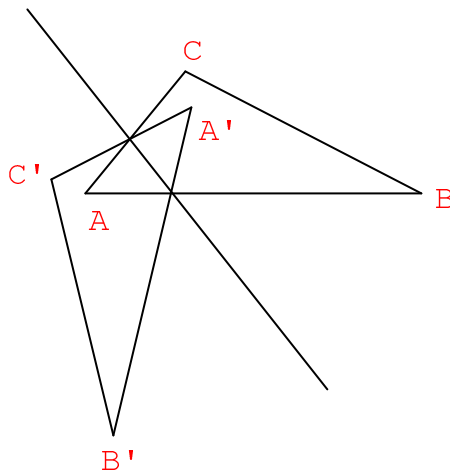
Note that the *identity isometry* is a special case of a translation in which the translation amount is zero.

2. *Rotation* by a specified angle about a specified point. We can indicate the rotation by drawing an angle at the center of rotation.

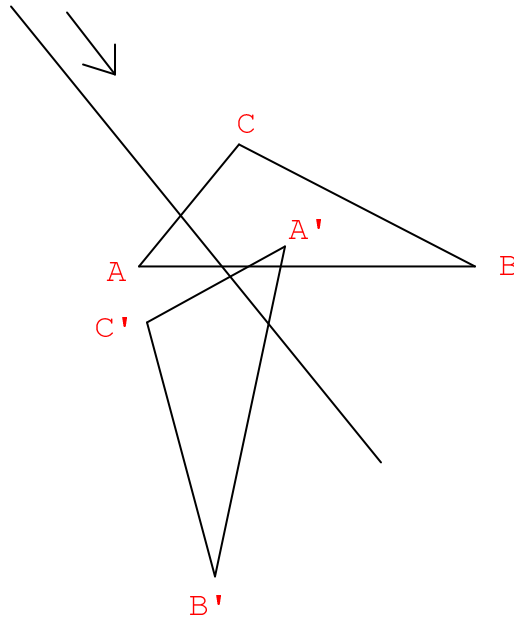


Note that the *identity isometry* is a special case of a rotation in which the rotation angle is zero.

3. *Reflection* across a specified line. We can indicate the reflection by drawing the line of reflection.

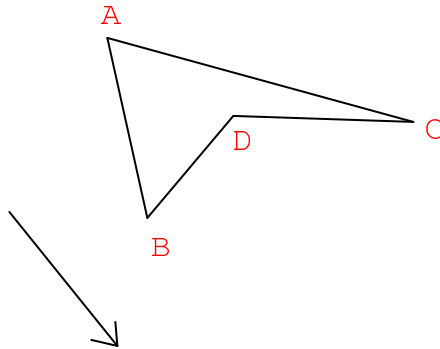


4. *Glide reflection*—reflection across a specified line followed by a translation parallel to that line by a specified amount. We can indicate the glide reflection by drawing the line and drawing a parallel vector. Remember that a reflection is a special case of a glide reflection in which the translation amount is zero.

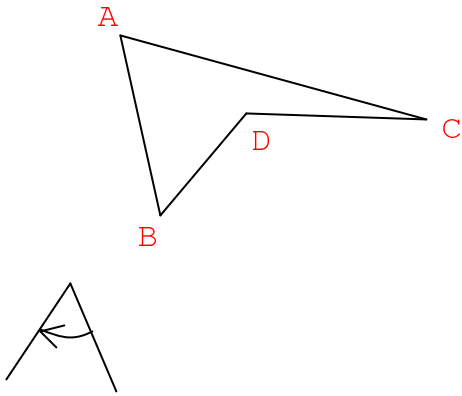


Exercise 0.9 In each case below, apply the indicated isometry to the figure. You may need a protractor, compass, and straightedge. Note: You may also continue this exercise with a partner, with one person placing the figure and specifying the isometry, and the other applying the isometry to the figure.

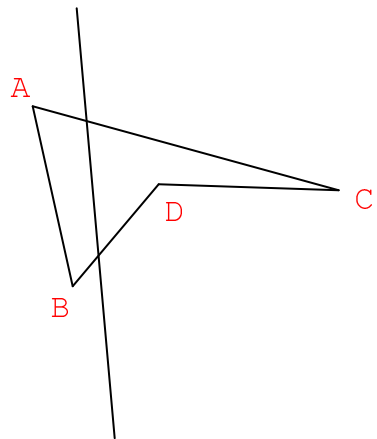
1.



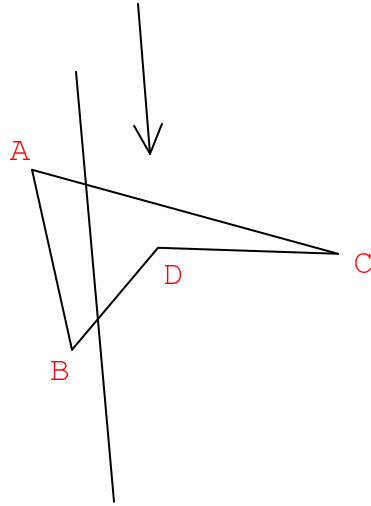
2.



3.

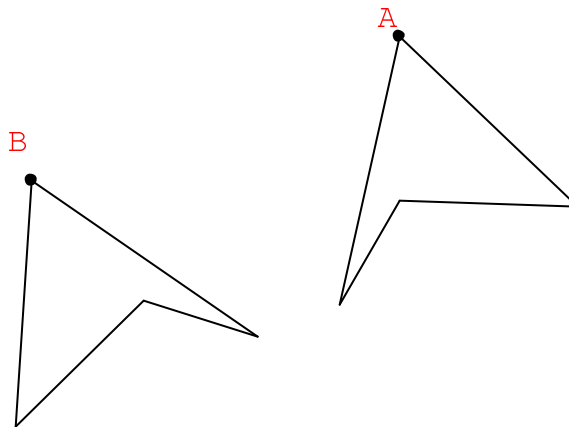


4.

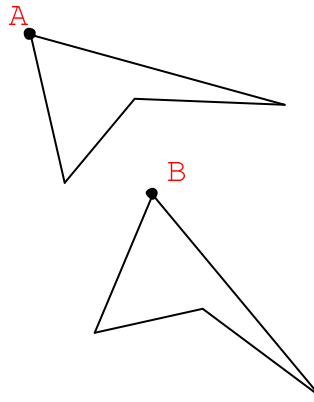


Exercise 0.10 In each of the following cases determine what isometry was applied to move the figure containing the point A to the figure containing the point B . If it is a translation, draw a vector of translation. If it is a rotation, mark the center of rotation and draw an angle of rotation. If it is a reflection, draw the line of reflection. If it is a glide reflection, draw the line of reflection and draw a vector of translation. Note: You may also extend this exercise with a partner, with one person placing the figures, either on paper or with Wingeom, and the other determining the isometry.

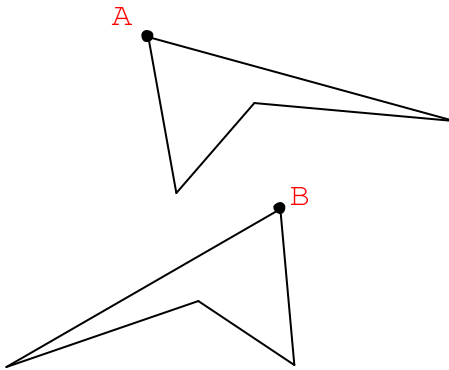
1.



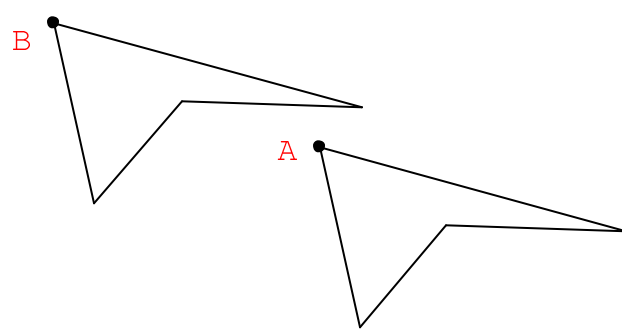
2.



3.



4.



Exercise 0.11 Refer to Exercise 0.10. Describe general procedures to identify the isometry and its elements from such figures and justify your answers.