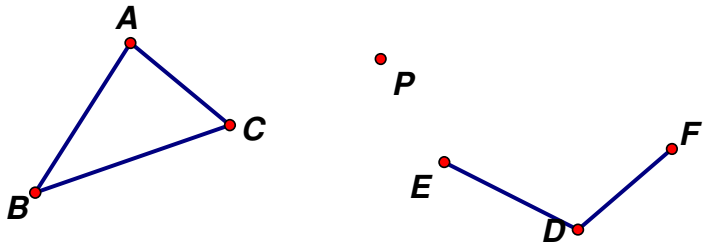
Geometry test 1 topics and problems:

1. Know how to use a compass and straight edge to transform a shape (eg. a triangle).

Typical problem:

Rotate ΔABC around point P by angle $\angle EDF$, then reflect its image across line $\overleftrightarrow{PD}$ (note: there will be sufficient space on the test to do this).

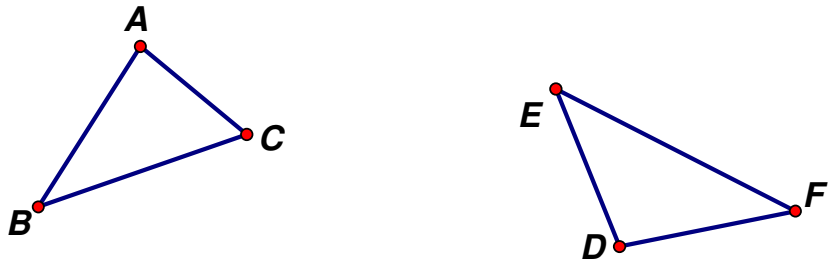


2. Explain how to find a midpoint of a segment $\overline{AB}$

3. Given a segment $\overline{AB}$, explain how to find a third point C so that ΔABC is equilateral

4. Explain how to move a triangle to a given place using compositions of rotations and translations

Typical problem: Describe a set of rotations and/or translations that will map ΔABC so that the image of C is D and the image of B is on ray $\overrightarrow{DE}$ and the image of A is on the opposite side of $\overleftrightarrow{DE}$ as F



5. Which of these outcomes can always be achieved by doing an isometry or a series of isometries? (For any set of non-collinear points A, B, C, D, E, F)?

D maps to F B maps to a point on $\overrightarrow{FA}$ C maps to a point on the same side of $\overleftrightarrow{FA}$ as D	A maps to E B maps to a point on $\overrightarrow{EF}$ C maps to a point on the same side of $\overleftrightarrow{DE}$ as F	A maps to D B maps to a point on $\overrightarrow{EF}$ C maps to a point on the same side of $\overleftrightarrow{EF}$ as D

Which ones are impossible, and what is wrong with the instructions?

6. Use Axiom 3 to define a reflection across $\overleftrightarrow{AB}$

7. Prove two sets are equal using distance properties:

typical problems:

a. Prove that the isometric image of a segment is a segment

b. Prove that the isometric image of a circle with radius 5 is a circle with radius 5.

c. Given that ΔABC is an equilateral triangle (all sides the same length), prove that the isometric image of A, B and C are vertices of an equilateral triangle.