WRITING A PRECISE DEFINITION OF REFLECTION

*A Hands-on and Cooperative Learning Activity*

Protocol

1. One student assumes the role of facilitator and assigns to each student within the group a total of three reflections (from Part 1) according to the following criteria:
   i. Every student must perform a minimum of three reflections.
   ii. Every student must use patty paper to do at least one reflection of a triangle across line ℓ.
   iii. Every student must do at least one reflection across the x-axis.
   iv. Every student must do at least one reflection across the y-axis.
2. Another student should assume the role of Quality Controller and ensure that the facilitator has assigned the exercises to students in a manner consistent with the preceding criteria.
3. Students perform the reflections as assigned.
4. Students compare the results of their reflections for accuracy and resolve any discrepancies.
5. Proceed to Part 2 of the activity, where a third student assumes the role of the Resource Manager and, appropriately, is the guardian of the Hint Cards.
6. Using the shell of a definition for Reflection as provided in Part 2, students collaborate to write a definition as informed by their recent work with reflections.

   **Only and only if the entire group decides they would like to take a look at a hint while working on the definition will the Resource Manager reveal a timely hint.*

7. The fourth member of the group will be responsible for recording and reporting out the group's final definition.

WRITING A PRECISE DEFINITION OF REFLECTION. PART 1

Use patty paper to sketch the reflection of $\triangle ABC$ across line ℓ.
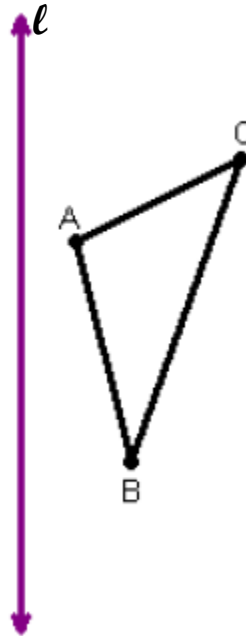
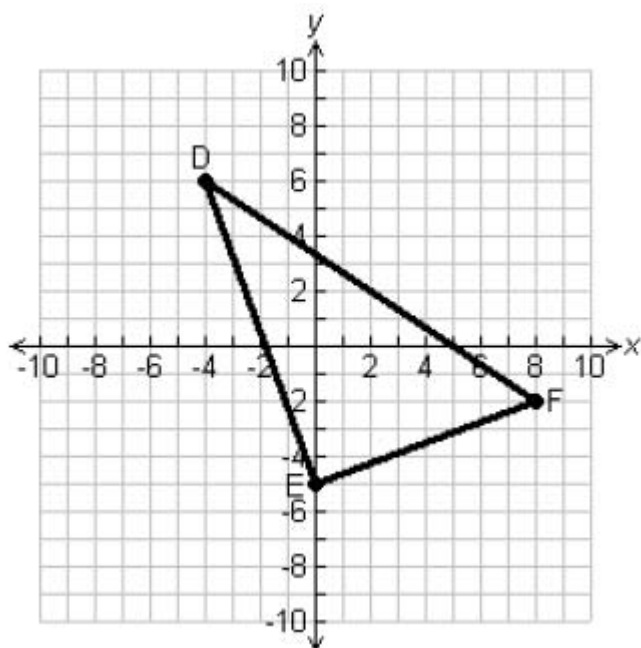
Use another piece of patty paper to sketch the reflection of $\triangle GHJ$ across line ℓ.
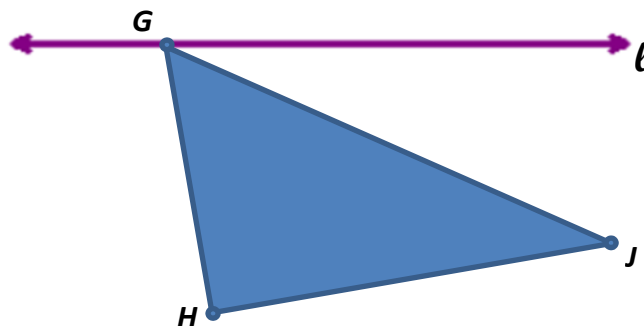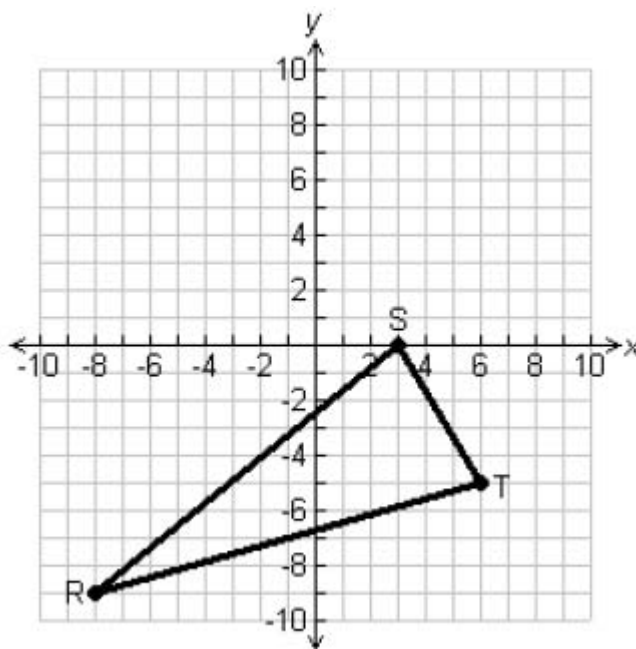
Directions. Use the coordinate plane to reflect the geometric figures as specified. Show evidence of your thinking to support the location of each image.
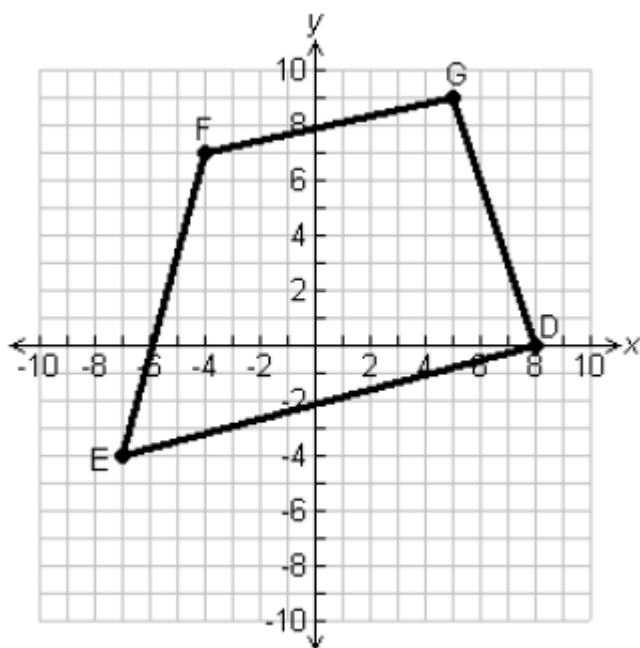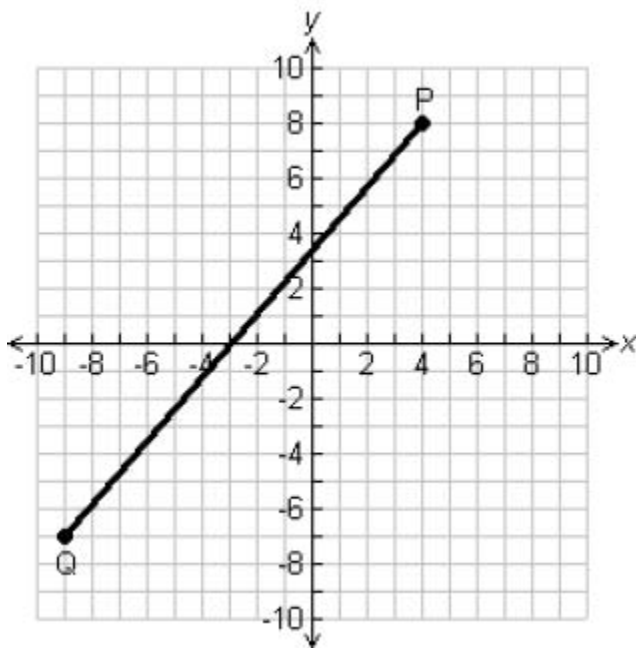
1. Reflect $\triangle DEF$ over the *y*-axis.

2. Reflect $\triangle SRT$ over the *x*-axis.

3. Reflect ▱ *FGDE* over the *x*-axis.

4. Reflect $\overline{PQ}$ over the *y*-axis.

WRITING A PRECISE DEFINITION OF REFLECTION. PART 2

Key Terms to include in your definition:

symmetric, perpendicular bisector

Reflection

The reflection *R* across a given line *ℓ*, where *ℓ* is called the line of reflection, assigns:

To each point on line *ℓ*, _____,

_____

[HINT CARD #1 IS AVAILABLE IF YOU NEED HELP.]

and

To any point *P* not on line *ℓ*, _____,

_____

_____

_____

_____

[HINT CARD #2 WILL HELP YOU INCLUDE THE CONCEPT OF *SYMMETRY* IN YOUR DEFINITION.]

[HINT CARD #3 WILL ILLUSTRATE A PERPENDICULAR BISECTOR—
JUST IN CASE ITS PROPERTIES HAVE SLIPPED YOUR MIND!]