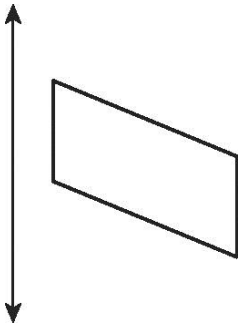
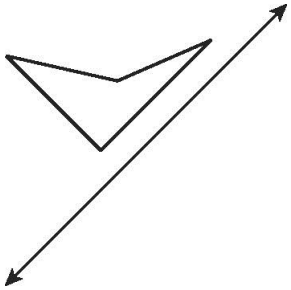
Name _____ Date _____ Class_____

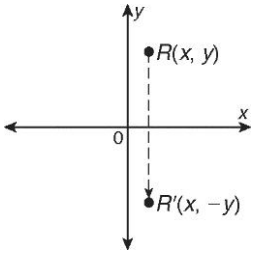
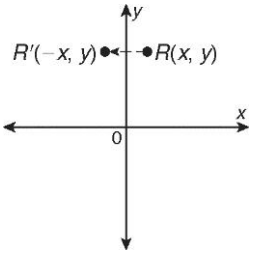
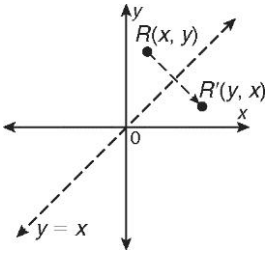
Geometry Notes 9-1

Reflections

Draw the reflection of the figure across the line.

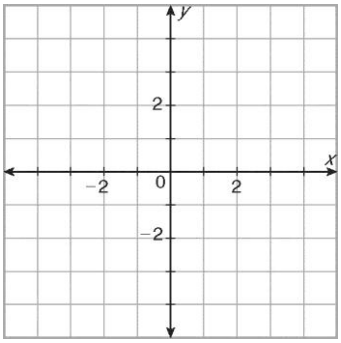




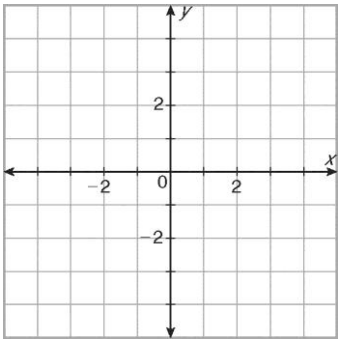
Reflections in the Coordinate Plane		
Across the *x*-axis	**Across the *y*-axis**	**Across the line *y* = *x***
		
$(x, y) \rightarrow (x, -y)$	$(x, y) \rightarrow (-x, y)$	$(x, y) \rightarrow (y, x)$

Reflect the figure with the given vertices across the line.

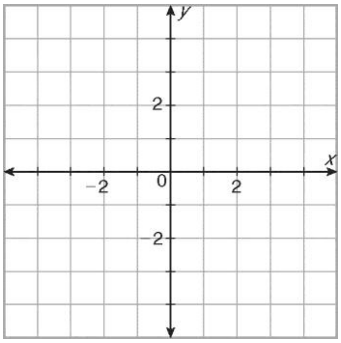
M(2, 4), *N*(4, 2), *P*(3, –2); *y*-axis



T(–4, 1), *U*(–3, 4), *V*(2, 3), *W*(0, -1); *x*-axis



A(–2, 4), *B*(1, 1), *C*(–5, –1); $y = x$



Problem-Solving Application

A trail designer is planning two trails that connect campsites A and B to a point on the river. He wants the total length of the trails to be as short as possible. Where should the trail meet the river?

1 Understand the Problem

The problem asks you to locate point X on the river so that $AX + XB$ has the least value possible.

2 Make a Plan

Let B' be the reflection of point B across the river. For any point X on the river, $\overline{XB'} \cong \overline{XB}$, so $AX + XB = AX + XB'$. $AX + XB'$ is least when A, X, and B' are collinear.

3 Solve

Reflect B across the river to locate B'. Draw $\overline{AB'}$ and locate X at the intersection of $\overline{AB'}$ and the river.