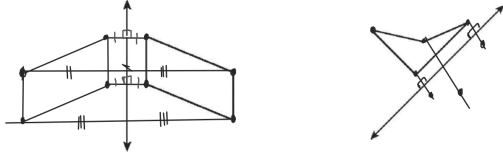


Geometry Notes 9-1
Reflections

May 12

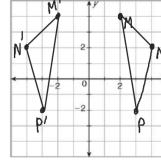
Draw the reflection of the figure across the line.



Reflections in the Coordinate Plane		
<p>Across the x-axis</p> <p>$(x, y) \rightarrow (x, -y)$</p>	<p>Across the y-axis</p> <p>$(x, y) \rightarrow (-x, y)$</p>	<p>Across the line $y = x$</p> <p>$(x, y) \rightarrow (y, x)$</p>

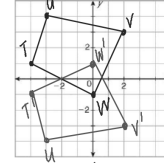
Reflect the figure with the given vertices across the line.

$M(2, 4), N(4, 2), P(3, -2); y\text{-axis}$



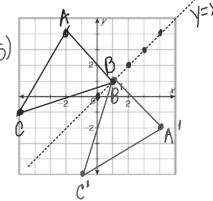
$M'(-2, 4)$
 $N'(-4, 2)$
 $P'(-3, -2)$

$T(-4, 1), U(-3, 4), V(2, 3), W(0, -1); x\text{-axis}$



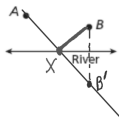
$T'(-4, -1)$
 $U'(-3, -4)$
 $V'(2, -3)$
 $W'(0, 1)$

$A(-2, 4), B(1, 1), C(-5, -1); y = x$
 $A'(4, -2) B'(1, 1) C'(-1, -5)$



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.

