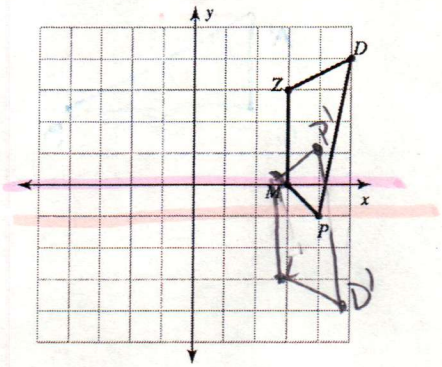
AGS 1 Name: _____ Period: _____ Date: _____

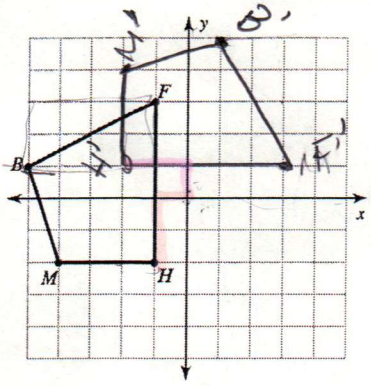
Notes 7.3 – Geometric Transformations

Warmup – Perform the requested transformations.

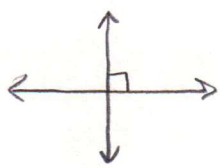
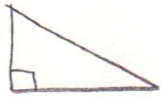
a. Reflect over the x-axis



b. Rotate 90° clockwise around the origin



Lesson – Perpendicular Lines

Word	Meaning/Notation	Example
Horizontal	A line that runs from left to right with a slope of zero	
Vertical	A line that runs up and down with an undefined slope	
Parallel	Two lines with equal slopes, never cross	
Perpendicular	Two lines that intersect at a 90° angle	
Right Triangle	A triangle with one right angle	

What common item can you use to check if two lines are perpendicular?

Corner of a piece of paper

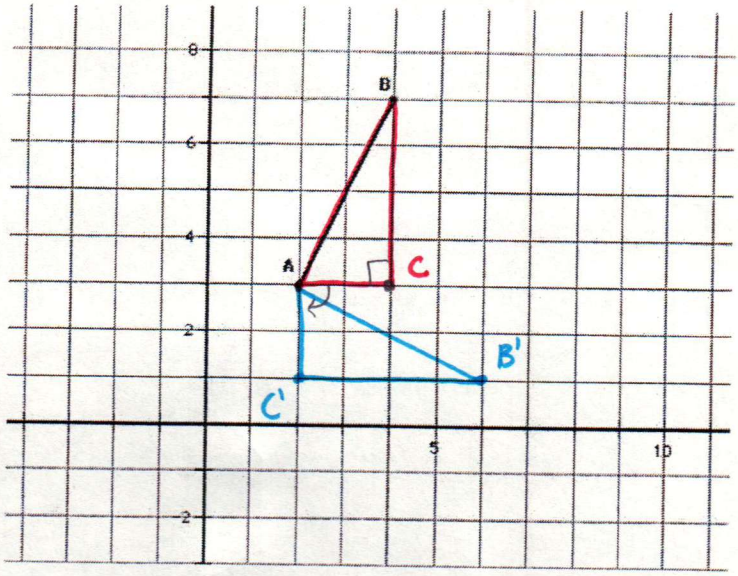
1. Calculate the slope of $\overline{AB}$.

m of $\overline{AB}$ = $\frac{4}{2}$ = 2

Plot a point C(x, y) that will make ΔABC a right triangle, where $\overline{AB}$ is the hypotenuse.

C(4 , 3)

Rotate ΔABC 90° clockwise around the point A.



Describe the slope of $\overline{AB}$ compared to the slope of $\overline{A'B'}$

The slopes are perpendicular to each other

Calculate the slope of $\overline{A'B'}$

m of $\overline{A'B'}$ = $\frac{-2}{4}$ = $-\frac{1}{2}$

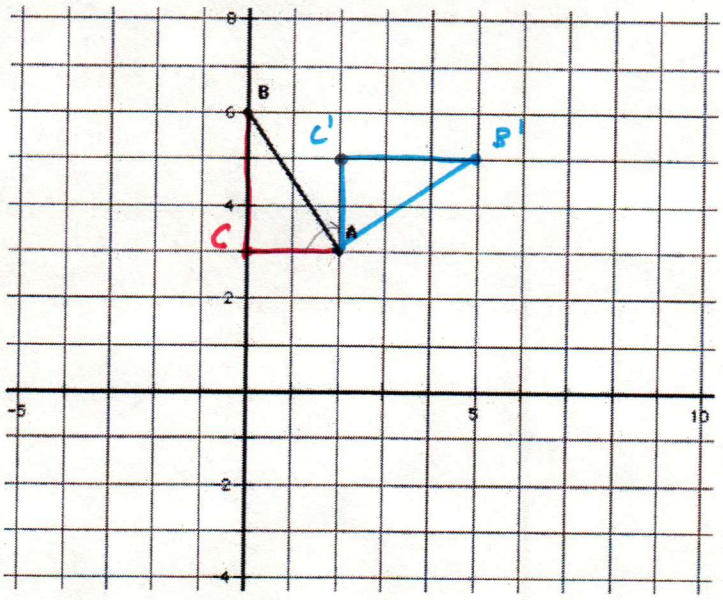
2. Calculate the slope of $\overline{AB}$.

m of $\overline{AB}$ = $-\frac{3}{2}$

Plot a point C(x, y) that will make ΔABC a right triangle, where $\overline{AB}$ is the hypontenuse.

C(0 , 3)

Rotate ΔABC 90° clockwise around the point A.



Describe the slope of $\overline{AB}$ compared to the slope of $\overline{A'B'}$

They are perpendicular

Calculate the slope of $\overline{A'B'}$

m of $\overline{A'B'}$ = $\frac{2}{3}$

3. Write the slopes you found in #1 & #2.

1) m of $\overline{AB}$ = $\frac{4}{2} = 2$

m of $\overline{A'B'}$ = $-\frac{1}{2}$

2) m of $\overline{AB}$ = $-\frac{3}{2}$

m of $\overline{A'B'}$ = $\frac{2}{3}$

Write a rule that shows the relationship between the 2 slope values.

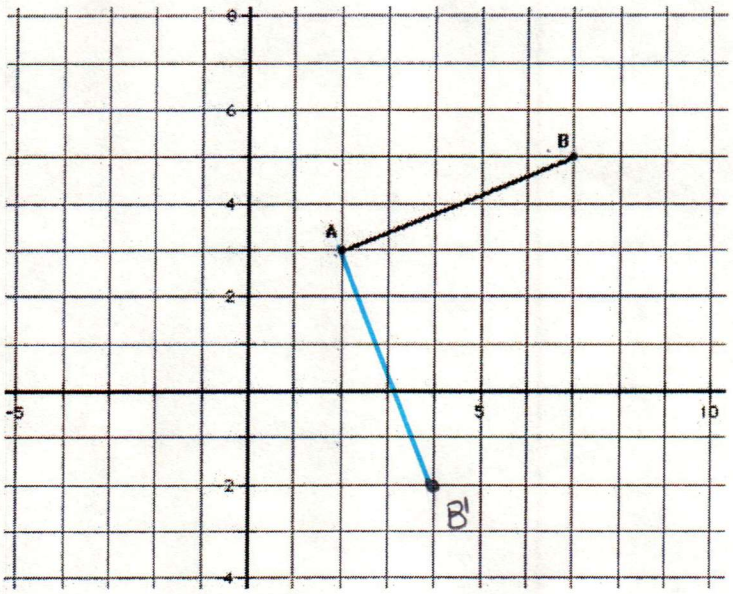
change the sign (positive / negative)
flip the fraction over

* negative reciprocal

4. Use the rule from #3 to draw a line that is perpendicular to the given line segment through point A.

m of $\overline{AB}$ = $\frac{2}{5}$

m of $\overline{A'B'}$ = $-\frac{5}{2}$



5. Give the slope of a line that is perpendicular to the given slopes.

a. $m = \frac{5}{3}$ b. $m = 7$ c. $m = -\frac{1}{4}$