## Problem Set

1. During this lesson, you constructed a perpendicular line to a line $\ell$ from a point $A$ not on $\ell$. We are going to use that construction to construct parallel lines:

   To construct parallel lines $\ell_1$ and $\ell_2$:

   I.  Construct a perpendicular line $\ell_3$ to a line $\ell_1$ from a point $A$ not on $\ell_1$.

   II. Construct a perpendicular line $\ell_2$ to $\ell_3$ through point $A$. *Hint:* Consider using the steps behind Lesson 3, Problem Set #4 to accomplish this.

$A.$

$\ell_1$

2. Construct the perpendicular bisector of $AB$, $BC$, and $CA$ on the triangle below.  What do you notice about the segments you have constructed?

*A*

*B*

*C*
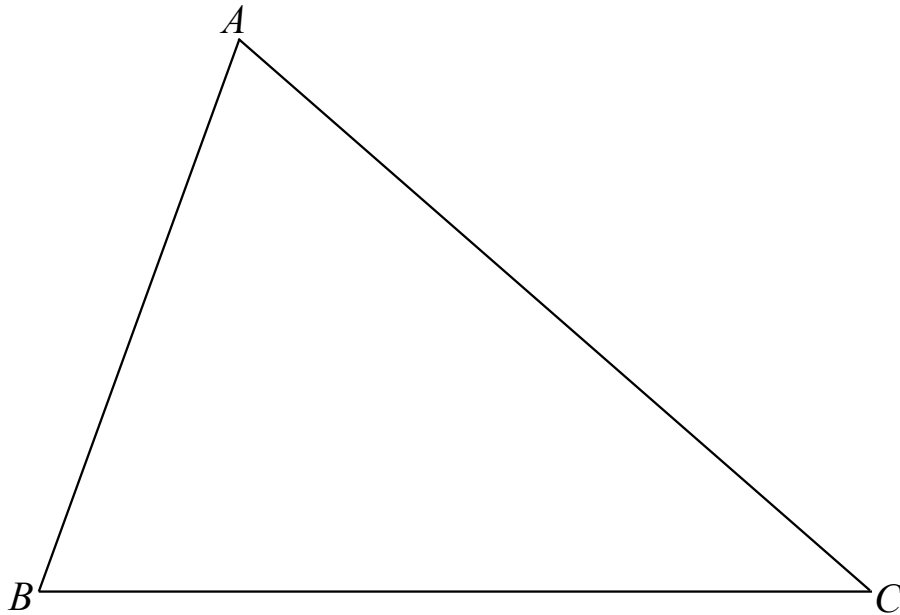
3. Two homes are built on a plot of land. Both homeowners have dogs, and are interested in putting up as much fencing as possible between their homes on the land, but in a way that keeps the fence equidistant from each home. Use your construction tools to determine where the fence should go on the plot of land.

$\bullet H_2$

$\bullet$
$H_1$

How will the fencing alter with the addition of a third home?

$\bullet H_2$

$\bullet$
$H_1$

$\bullet H_3$