

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**UNIT 1A**

**LESSON 8**

**AIM: HOW DO WE CONSTRUCT ANGLES AND TRIANGLES?**

*Do Now:* Construct a 60-degree angle using the line below using only a compass and a straight edge. (*HINT: Think of prior constructions we have discussed that involve 60-degree angles!*)



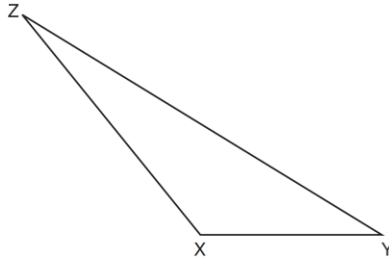
**CONSTRUCTING SPECIAL ANGLES/TRIANGLES!**

1. Use the Do-Now and your knowledge of constructions to construct a 30-degree angle (on the same diagram).

2. Construct a 90-degree angle.	3. Construct a 45-degree angle.
4. Construct a $30^\circ - 60^\circ - 90^\circ$ triangle.	5. Construct a $45^\circ - 45^\circ - 90^\circ$ triangle.

## CONSTRUCTING ANY TRIANGLE

1. Triangle  $XYZ$  is shown below. Using a compass and straightedge, on the line below, construct and label  $\triangle ABC$ , such that  $\triangle ABC \cong \triangle XYZ$ . [Leave all construction marks.]



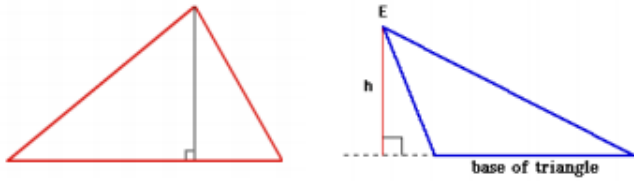
2. Construct a triangle with sides of lengths  $a$ ,  $b$ , and  $c$ , as shown below. Be sure the longest side of your triangle lies on  $\overline{PQ}$  and that point  $P$  is one of the triangle's vertices. [Show all arcs necessary for a valid construction.]

$a$  \_\_\_\_\_  
 $b$  \_\_\_\_\_  
 $c$  \_\_\_\_\_

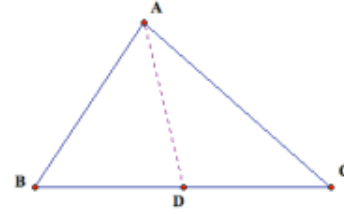


## ALTITUDES VS. MEDIANS

An altitude of a triangle is a line segment through a vertex and perpendicular to a line containing the base.



A median of a triangle is a line segment that joins the vertex of a triangle to the midpoint of the opposite side.

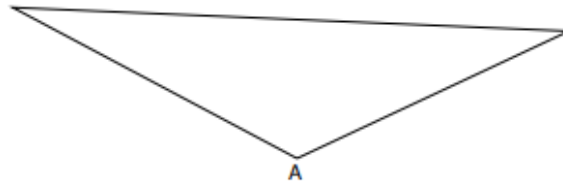


### CONSTRUCTING AN ALTITUDE

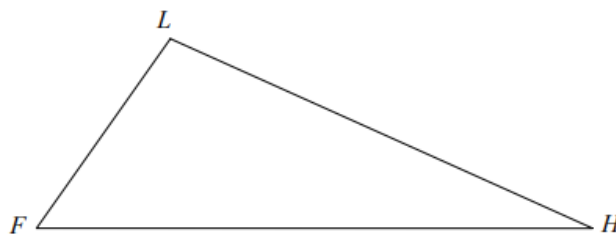
STEPS	EXAMPLE	CONCLUSIONS
<p>Draw an altitude to vertex B.</p> <ol style="list-style-type: none"> <li>1. With your straight edge, extend the side opposite.</li> <li>2. Construct a perpendicular line through vertex B.</li> </ol>		

#### PRACTICE:

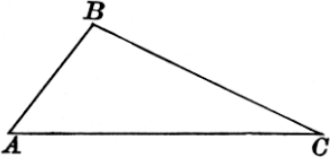
1. Construct the altitude to vertex A



2. Using a compass and straightedge, construct the altitude to  $FH$ . Label it  $A$ . [Leave all construction marks.]

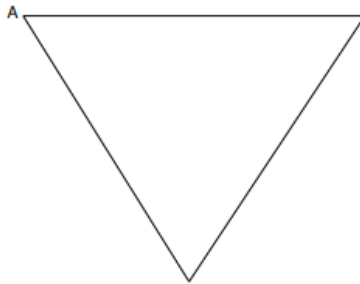


### CONSTRUCTING A MEDIAN

STEPS	EXAMPLE	CONCLUSIONS
<p>Draw a median to vertex B.</p> <ol style="list-style-type: none"><li>1. Construct the perpendicular bisector of the opposite side but only indicate the midpoint.</li><li>2. Connect the midpoint to vertex B.</li></ol>		

#### PRACTICE:

1. Construct the median for vertex A.



2. Using a compass and straightedge, construct the median to  $FH$ . Label it  $M$ . [Leave all construction marks.]

