Lesson Summary

All triangles have a sum of measures of the interior angles equal to 180°.

The proof that a triangle has a sum of measures of the interior angles equal to 180° is dependent upon the knowledge of straight angles and angle relationships of parallel lines cut by a transversal.

Problem Set

1. In the diagram below, line $AB$ is parallel to line $CD$, that is, $L_{AB} \parallel L_{CD}$. The measure of $\angle ABC$ is $28°$, and the measure of $\angle EDC$ is $42°$. Find the measure of $\angle CED$. Explain why you are correct by presenting an informal argument that uses the angle sum of a triangle.

2. In the diagram below, line $AB$ is parallel to line $CD$, that is, $L_{AB} \parallel L_{CD}$. The measure of $\angle ABE$ is $38°$, and the measure of $\angle EDC$ is $16°$. Find the measure of $\angle BED$. Explain why you are correct by presenting an informal argument that uses the angle sum of a triangle. (Hint: Find the measure of $\angle CED$ first, and then use that measure to find the measure of $\angle BED$.)
3. In the diagram below, line $AB$ is parallel to line $CD$, that is, $L_{AB} \parallel L_{CD}$. The measure of $\angle ABE$ is $56^\circ$, and the measure of $\angle EDC$ is $22^\circ$. Find the measure of $\angle BED$. Explain why you are correct by presenting an informal argument that uses the angle sum of a triangle. (Hint: Extend the segment $BE$ so that it intersects line $CD$.)

4. What is the measure of $\angle ACB$?

5. What is the measure of $\angle EFD$?
6. What is the measure of $\angle HIG$?

7. What is the measure of $\angle ABC$?

8. Triangle $DEF$ is a right triangle. What is the measure of $\angle EFD$?
9. In the diagram below, Lines $L_1$ and $L_2$ are parallel. Transversals $r$ and $s$ intersect both lines at the points shown below. Determine the measure of $\angle JMK$. Explain how you know you are correct.