1  Angles of a Polygon

**Problem 1.** The proof that we gave in class that the interior angle sum of an $n$-gon is $(n - 2)180\degree$ only works for convex polygons. Draw a concave heptagon, and show that the interior angle sum is still $(7 - 2)180\degree = 900\degree$. Describe how you might prove that the interior angle sum of any (convex or concave) polygon is always $(n - 2)180\degree$. 
2 Unknown Angle Proofs

Problem 2. For each of the following statements, write a formal geometric proof.

1. Give an elementary proof that $x + y = 90^\circ$. 
2. Here \( AC \parallel DF \). Give an elementary proof that \( x = y \).

3. Here \( AB \parallel CD \). Give an elementary proof that \( x + y = z \).
4. Here $ABCD$ is a parallelogram. Give an elementary proof that $a = b$ (DON’T use the opposite angles in a parallelogram fact).

3 Definitions

Study the following definitions from Section 4.2 of your textbook before the next class:

1. Correspondence
2. Congruent
3. Congruence Criteria

You should also preview the following triangle congruence tests:

1. Side-side-side test
2. Angle-side-angle test
3. Side-angle-side test
4. Right-hypotenuse-leg test