MA 241
Homework #4
Due Thursday, September 22, in class

1. Based on class discussion and the figure of the square of side length $a + b$, justify the formula for the area of a rectangle. Use good diagrams and full sentences.

2. Based on class discussion, justify the formula for the area of a triangle (there are three cases). Use good diagrams and full sentences.

3. Based on class discussion, justify the formula for the area of a parallelogram. Use good diagrams and full sentences.

4. Based on class discussion, justify the formula for the area of a trapezoid. Use good diagrams and full sentences.

5. Justify that the area of a kite with diagonals having lengths a and b, respectively, is $\frac{1}{2}ab$. Use good diagrams and full sentences.

6. Justify that the area of an equilateral triangle having side length s is $\frac{\sqrt{3}}{4}s^2$. Use good diagrams and full sentences.

7. Justify that the formula for the area of a regular n-sided polygon with perimeter P and apothem a is $\frac{1}{2}Pa$. The apothem is the (length of the) line segment from the center of the polygon to the midpoint of one side. Use good diagrams and full sentences.

8. Find and justify a formula for the surface area of a box (rectangular prism) having side lengths a, b, c. Use good diagrams and full sentences.