**Some Polygon Area Problems**

1. Derive a formula for the area of an equilateral triangle with side length $s$. Suggestion: Use the Pythagorean Theorem somehow.

2. Derive a formula for the area of a regular hexagon with side length $s$.

3. Derive a formula for the area of a regular $n$-sided polygon with perimeter $P$ and apothem $a$. The apothem is the (length of the) line segment from the center of the polygon to the midpoint of one side.

4. Derive formulas for the surface area and volume of a right prism of height $H$ whose base is an equilateral triangle with side length $s$.

5. Derive formulas for the surface area and volume of a right prism of height $H$ whose base is a regular hexagon with side length $s$.

6. Derive formulas for the surface area and volume of a right prism of height $H$ whose base is a regular $n$-sided polygon with side length $s$ and area $B$.

$s$

$s$

$a$