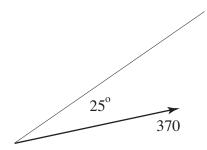**Quiz 2. February 5, 2014.   Name**

1) The diagram below depicts a force (of 370 pounds) and a direction (at an angle of 25° with the direction of the force). Draw carefully into the diagram the component of this force in the indicated direction. Compute the magnitude of this component.

25°

370

2) Consider a Roman arch with 5 identical voussoirs. Given that each voussoir weighs 250 pounds, estimate the horizontal force with which the keystone of the arch pushes outward in each direction.

Formulas: $H_0 = \frac{W}{2} \cdot \frac{1}{\tan \frac{\alpha}{2}}$, $H_1 = W \cdot \frac{1}{\tan \frac{3\alpha}{2}}$, $H_2 = W \cdot \frac{1}{\tan \frac{5\alpha}{2}}$, $P_0 = \frac{W}{2} \cdot \frac{1}{\sin \frac{\alpha}{2}}$, $P_1 = W \cdot \frac{1}{\sin \frac{3\alpha}{2}}$, $P_2 = W \cdot \frac{1}{\sin \frac{5\alpha}{2}}$.