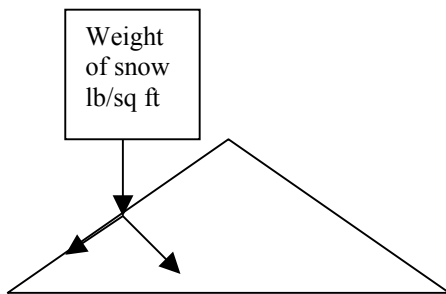


C. What is the angle of inclination of the roof?

D. If this same snow fell uniformly on a flat roof, how many pounds of pressure per square foot would be placed on the roof by the snow?

E. Now, let's think about the gable roof described above. See diagram below. What is the pressure in pounds per square foot acting in the direction perpendicular to the incline of the roof?



F. If instead the roof had been built with a pitch of $1/8$, find the pressure of the snow in pounds per square foot acting perpendicular to the incline of the roof.

G. If snow were the only consideration in building this roof, which of the three roofs discussed (flat, pitch $1/3$, pitch $1/8$) would be best suited for this location?

- H. Now, let's consider the effects of the wind. If a wind of 70 miles per hour is blowing in a horizontal direction, find the magnitude of the component acting perpendicular to a roof with a pitch of $1/3$.
- I. If a wind of 70 miles per hour is blowing in a horizontal direction, find the magnitude of the component acting perpendicular to a roof with a pitch of $1/8$.
- J. Which of these two pitches would be preferable, if only wind blowing in the horizontal direction were considered?
- K. We notice that steeper roofs are preferable for areas of high snowfall, but not for areas of high wind. What we have done above is a very simplistic look at how snow and wind can affect the construction of a roof. What other things do you think might come into play when designing a roof for a house?