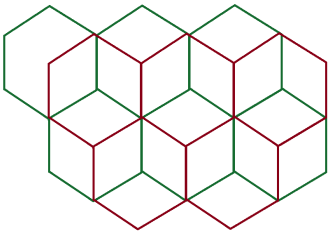
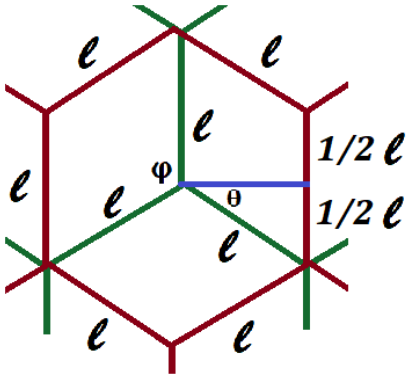
Honeycomb is a tiling of regular polygons, meaning hexagons with each side being the same length. If we overlap two honeycombs pictured in green and red, we see one side gets cut in half, labeled in the bottom figure.





$\phi = 360°/3 = 120°$

$\theta = \phi - 90° = 120° - 90° = 30°$

$sin(30°) = \frac{opposite}{hypotenuse} = \frac{1/2l}{l} = 1/2$

$adjacent^2 + opposite^2 = hypotenuse^2$

$adjacent^2 + (l/2)^2 = (l)^2$

$adjacent = \frac{\sqrt{3}}{2}l$

$cos(30°) = \frac{adjacent}{hypotenuse} = \frac{\frac{\sqrt{3}}{2}l}{l} = \frac{\sqrt{3}}{2}$