

Different Way (calculus)

(Pyramid way is not as good)

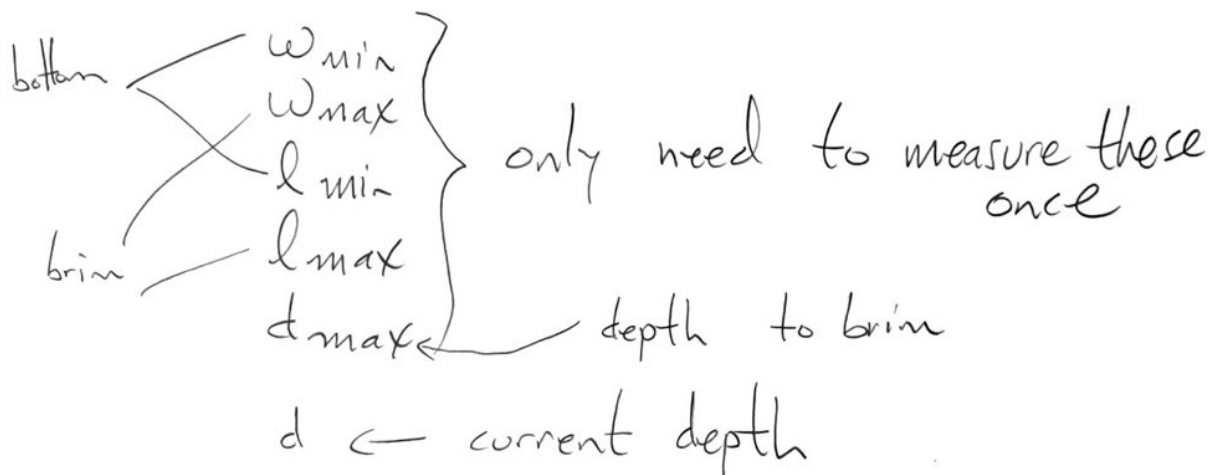
$$\begin{aligned}
 V &= \int_0^d w \cdot l \, de = \int_0^d \left[ w_{\min} + \frac{e}{d_{\max}} (w_{\max} - w_{\min}) \right] \left[ l_{\min} + \frac{e}{d_{\max}} (l_{\max} - l_{\min}) \right] de \\
 &= w_{\min} l_{\min} d + \left[ w_{\min} \frac{l_{\max} - l_{\min}}{d_{\max}} + l_{\min} \frac{w_{\max} - w_{\min}}{d_{\max}} \right] \frac{1}{2} d^2 \\
 &\quad + \frac{w_{\max} - w_{\min}}{d_{\max}} \frac{l_{\max} - l_{\min}}{d_{\max}} \frac{1}{3} d^3
 \end{aligned}$$

The first term corresponds to the rectangular core. The second corresponds to the four sides. The third corresponds to the four corners.

TOP VIEW:



Things we need to measure



If we measure in feet, answer will be in cubic feet. Have to multiply by about 7.5 to convert to gallons.