

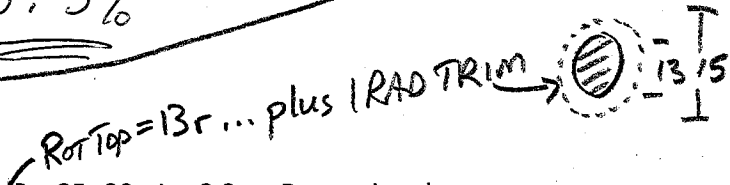
Name: Key

Show ALL calculations, including units.

A log has noticeable twist. You measure the twist over 15 rads and determine the offset to be 5 cm. Log dimensions are T = 30r, B = 35r 30r, L = 8.8m. What is the percent twist?

$$\begin{array}{l} \underline{5\text{ cm}} \text{ offset} \\ \underline{30\text{ RAD}} \text{ top} \end{array} \quad \text{twist} = \frac{\text{offset}}{\text{TOP}} \quad \left. \begin{array}{l} \text{in same units} \\ \text{(eg in cm} \\ \text{OR rads)} \end{array} \right\}$$

$$\frac{5\text{ cm}}{60\text{ cm}} = \underline{\underline{8.3\%}}$$



A log has heart rot at the top only. Measures are T = 30r, B = 35r 30r, L = 8.8m. Determine the proportion of the log available for lumber (%L). CAN DO EITHER METHOD:

"CORRECT" METHOD.

$$\frac{\text{VOL of ROT + TRIM}}{\text{VOL of log}} = \text{VOL NOT L}$$

① VOL of ROT + TRIM

$$\begin{array}{l} 15R/8m = 282 \\ 15R/0.8m = 282 \\ \hline \rightarrow 310.2 \text{ dm}^3 \end{array}$$

Half vol. of rot + trim for full length
EQUALS full vol for 1/2 length.

② VOL of Log

$$\begin{array}{l} 30R/8m = 1131 \\ 30R/0.8m = 1131 \\ \hline 1244.1 \text{ dm}^3 \end{array}$$

EQUALS 1/2 VOL, ∴ multiply by 2 = 2488.2 dm³

SHORTCUT (END) METHOD

① find "areas" of ROT + TRIM and log ends.

$$\begin{array}{l} 15R/2m = 71 \\ 30R/2m = 283 \end{array} \left. \begin{array}{l} \downarrow \\ \rightarrow \frac{71}{283} = 25\% \end{array} \right\} \text{TOP}$$

② AVE % TOP and % BUTT.

$$\frac{25\% + 0\%}{2} = 12.5\% \text{ NOT L} \dots 87.5\% \text{ L}$$

$$\frac{310.2 \text{ dm}^3}{2488.2 \text{ dm}^3} = 12.5\% \text{ NOT L}$$

87.5% L