Light is incident normally on the short face of a 30-60-90 degree prism as shown. A drop of liquid is placed on the hypotenuse of the prism. If the index of refraction of the prism is 1.65 find the maximum index that the liquid may have if the light is to be totally reflected as shown.

\[
\theta_{\text{refracted}}
\]

\[
\begin{align*}
\text{from Snell's Law for TIR} \\
ng \sin \theta_c &= n_e \sin 90^\circ \\
ng \sin 60^\circ &= n_e \\
n_e &= 1.65 \sin 60^\circ = (1.65)(0.866) = 1.43
\end{align*}
\]