Chapter 17 Problem 90

$f = 262\ Hz$ $T = 20.0\ °C$

what is the length of the flute?

The flute is open at both ends.

The $\lambda = \frac{2L}{n}$

The fundamental is $\lambda_1 = \frac{2L}{1} = 2L$

from the wave velocity

$v = \lambda \cdot f \rightarrow v = 2L \cdot f$

solve for length gives

$L = \frac{v}{2f} = \frac{343\ m/s}{2(262\ Hz)} = \boxed{0.655\ m}$