1. A short circuit is needed at point A at 461 MHz. Can do this with \( \frac{\lambda}{4} \) or lumped resonant circuit.

   a) \( \frac{\lambda}{4} \) element at (A): need \( \lambda \), \( \lambda = \frac{V_p}{f} \), \( V_p = \frac{c}{V}r \) = \( 1.98 \times 10^8 \text{ m/s} \)
   
   \[ \lambda = \frac{1.98 \times 10^8 \text{ m/s}}{461 \frac{\lambda}{4}} \]
   
   \[ \frac{\lambda}{4} = 0.1073 \text{ m} \]
   
   \[ \frac{\lambda}{2} = 0.2145 \text{ m} \]

   \( \frac{\lambda}{4} \) line input looks like short circuit when far end is open circuit.
   
   \( \frac{\lambda}{2} \) line input looks like short circuit when far end is shorted.

   ![Diagram of \( \frac{\lambda}{4} \) and \( \frac{\lambda}{2} \) elements.]

   b) Need a short circuit to ground, a series resonant circuit exhibits zero impedance at resonance.

   \[ f_0 = \frac{1}{2\pi \sqrt{LC}} \]

   \[ 461 \times 10^6 = \frac{1}{2\pi \sqrt{10^{-12} \times L}} \]

   \[ 2.897 \times 10^9 = \frac{1}{\sqrt{10^{-12} \times L}} \]

   \[ L = 11.9 \text{ nH} \]