EJERCICIO F2BE3207:

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A y B $\Rightarrow$ $E_{c_A} = E_{c_B}$

$$m_B = 2000 \cdot m_A$$

a) ¿Relación entre las λ de Broglie?

$$\lambda_{de\ Broglie} = \frac{h}{m \cdot v}$$

$$\frac{\lambda_A}{\lambda_B} = \frac{\frac{h}{m_A \cdot v_A}}{\frac{h}{m_B \cdot v_B}} = \frac{m_B \cdot v_B}{m_A \cdot v_A} = \frac{2000 \cdot m_A \cdot v_B}{m_A \cdot v_A} = \boxed{\frac{2000\, v_B}{v_A}}$$

...

$$E_{c_A} = E_{c_B} \Rightarrow \frac{1}{2} m_A \cdot v_A^2 = \frac{1}{2} m_B \cdot v_B^2$$

$$\frac{1}{2} m_A \cdot v_A^2 = \frac{1}{2} 2000 \cdot m_A \cdot v_B^2$$

$$v_A^2 = 2000\, v_B^2$$

$$v_A = \sqrt{2000\, v_B^2} = 20\sqrt{5} \cdot v_B$$

$$\frac{\lambda_A}{\lambda_B} = \frac{2000\, v_B}{v_A} = \frac{2000\, v_B}{20\sqrt{5}\, v_B} = \frac{2000}{20\sqrt{5}} = \frac{2000\sqrt{5}}{20\sqrt{5}\sqrt{5}} =$$

$$= \frac{2000\sqrt{5}}{20 \cdot 5} = \frac{2000\sqrt{5}}{100}$$

$$\boxed{\frac{\lambda_{A\ de\ Broglie}}{\lambda_{B\ de\ Broglie}} = 20\sqrt{5}}$$