9.

Bobby:

Horizontal Distance Traveled $= 2.2m - 0.27m = 1.93m = d$

Time taken $= t$

Horizontal velocity $= \frac{d}{t} = 1.93m/t$

Compression $= x = 1.1cm = 0.011m$

$$\tfrac{1}{2}kx^2 = \tfrac{1}{2}mv^2$$

$$\tfrac{1}{2}k(0.011)^2 = \tfrac{1}{2}m\left(\frac{1.93m}{t}\right)^2$$

$$0.000121\,k = m\left(\frac{1.93m}{t}\right)^2$$

$$k = \frac{m\left(\frac{1.93m}{t}\right)^2}{0.000121} = m\cdot\left(\frac{176}{t}\right)^2$$

Rhonda:

Horizontal Distance Traveled $= 2.2m = d$

Time taken $= t$

Horizontal velocity $= \frac{d}{t} = 2.2m/t$

$$\tfrac{1}{2}kx^2 = \tfrac{1}{2}mv^2$$

$$kx^2 = mv^2$$

$$\left(m\cdot\left(\frac{176}{t}\right)^2\right)x^2 = m\left(\frac{2.2}{t}\right)^2$$

$$\left(\frac{176}{t}\right)^2 x^2 = \left(\frac{2.2}{t}\right)^2$$

$$x^2 = \left(\frac{2.2}{176}\right)^2$$

$$x = 0.0125cm = \boxed{1.25m}$$

Rhonda should compress the spring 1.25 cm.

$$x = \frac{2.2}{1.93}\cdot 1.1 = 1.25cm$$