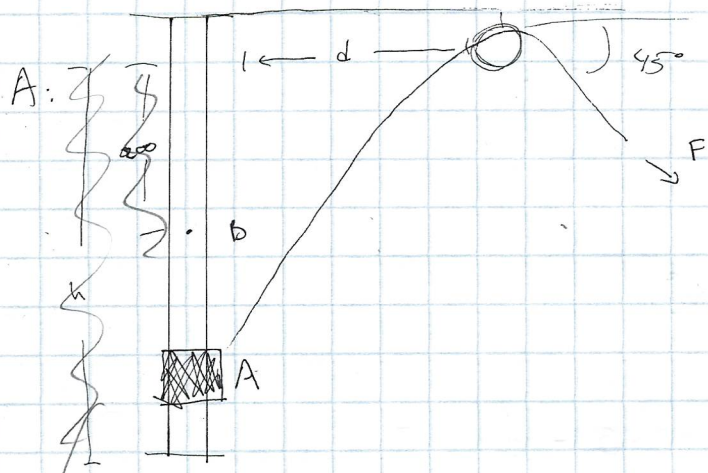
20-P-WE-AF-007

Principle of Work and Energy : Intermediate

Q: The cord is subjected to a constant force of F = A N. The smooth collar has a mass of M kg starts at and A at rest. Determine velocity when the collar reaches pt. B?

- neglect the size -



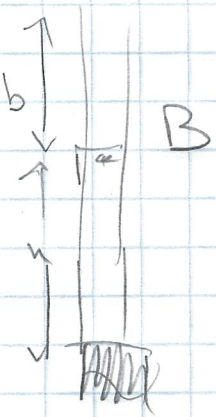
$$T_1 + \sum U_{1\to 2} = T_2$$

$$\tfrac{1}{2} m v_1^2 + \sum U_{1\to 2} = \tfrac{1}{2} m v_2^2$$

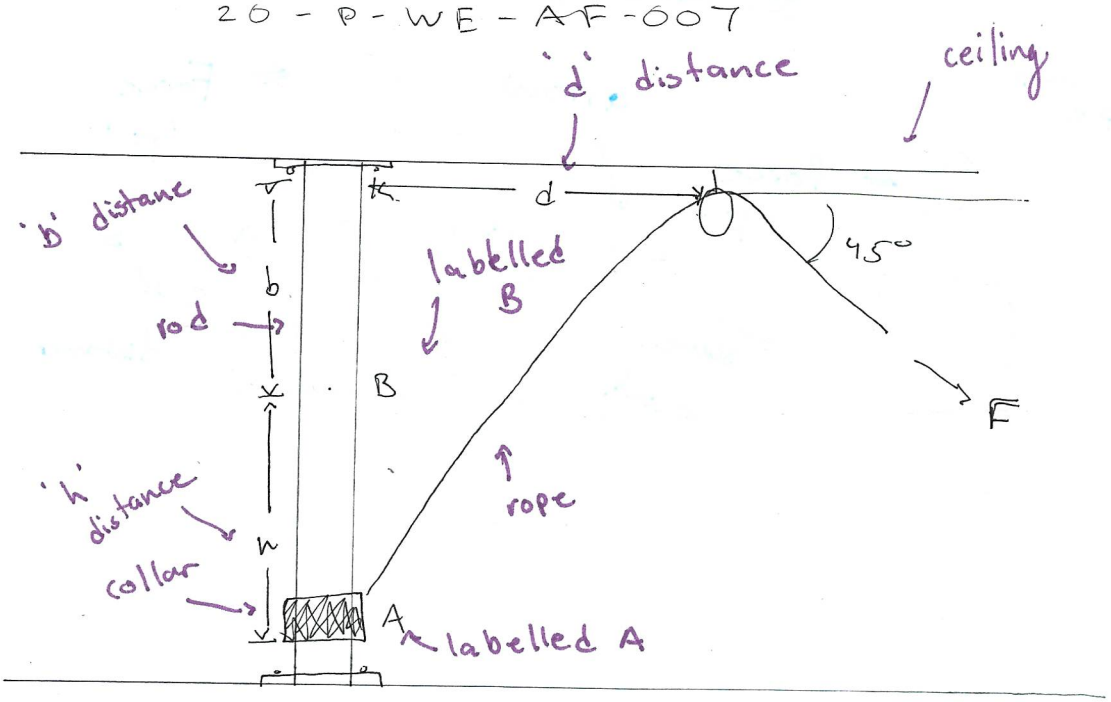
$$\sum U_{1\to 2} = -mgh + Fd$$

$$d = \sqrt{(h+b)^2 + d^2} - \sqrt{b^2 + d^2}$$

$$\sqrt{\frac{2}{M}\left[-Mg\,b \quad\quad + A \cdot d\right]} = v_2$$



20 - P - WE - AF - 007



for labelling