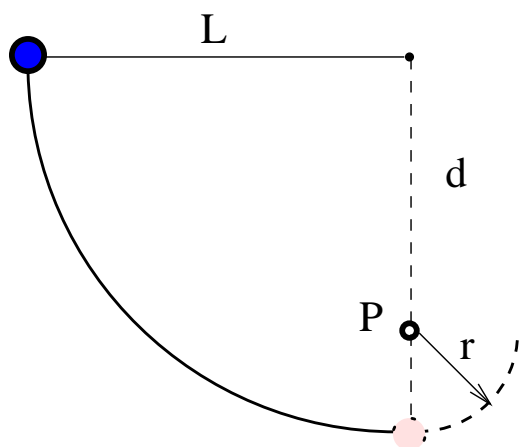


Ex : A pendulum with a length of **120 cm** is released from rest in its horizontal position. The distance d to the fixed peg at point P is **75 cm**.



a). What is the bob's speed at its lowest point?

b). What is the bob's speed at its highest point after the string catches on the peg?

Write down the energy at A, B, and C. $E = K + U$

$$E_A = 0 + mgL$$

$$E_B = \frac{1}{2}mv_B^2 + 0$$

or, $v_B = \sqrt{2gL} = \sqrt{2(9.81 \text{ m/s}^2)(1.2 \text{ m})} = 4.9 \text{ m/s}$

$$E_C = \frac{1}{2}mv_C^2 + mg(2r) \quad (r = L - d)$$

Solve for v_C ,

$$v_C = \sqrt{2g(2d - L)} = \sqrt{2g(2 \cdot 0.75 \text{ m} - 1.2 \text{ m})} = 2.5 \text{ m/s}$$