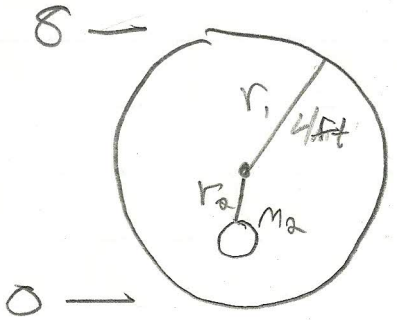
(3)

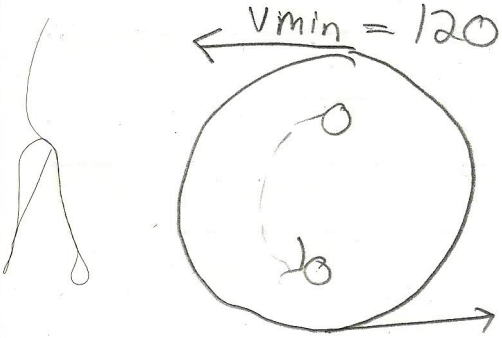


$m_1 = 40\,lb$

$m_2 = 20\,lb$

$r_1 = 4\,ft$

$r_2 = 2\,ft$



$v = r\omega$

$\omega = 30\,rpm$

$$\sum H = \sum r m v =$$

$$I_1 = \frac{1}{2} m r^2 = 20(4^2) = 320$$

$$W = 20(32.2)(6) - (20)(32.2)(2) =$$
$$= 2576\,J$$

$$KE_1 + W = KE_2$$

$$(30)^2 \tfrac{1}{2} 320 + 2576 = \tfrac{1}{2} 320\, \omega_f^2$$

$$146576 = \tfrac{1}{2} 320\, \omega_f^2$$

$$916.1 = \omega_f^2$$

$$\omega_f = 30.267 \qquad V_f = 121.068\ rpm$$