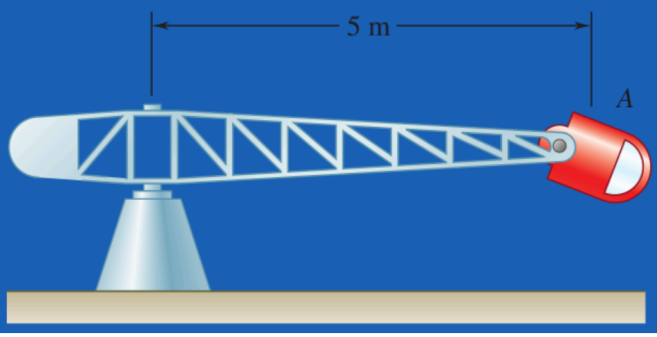
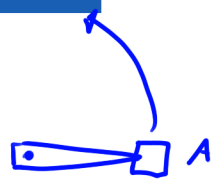
Human centrifuges are often used to simulate different acceleration levels for pilots and astronauts. Pilots typically face inward toward the center of the gondola in order to experience a simulated forward acceleration. Knowing that the pilots sits 5 m from the axis of rotation and experiences 5 g's inward, determine her velocity.





$$\vec{a} = \frac{dv}{dt}\vec{e}_t + \frac{v^2}{r}\vec{e}_n$$

$\frac{dv}{dt} \to 0$

$$|\vec{a}| = \frac{v^2}{r}$$

$$\vec{a} = 5g\,\vec{e}_n = \frac{v^2}{r}\vec{e}_n$$

$$5g = \frac{v^2}{r}$$

$$5gr = v^2$$

$$\sqrt{5gr} = v$$

$$\sqrt{5 \cdot 9.8\ m/s^2\ 5\ m} = v$$

$$\boxed{15.7\ m/s = v}$$