

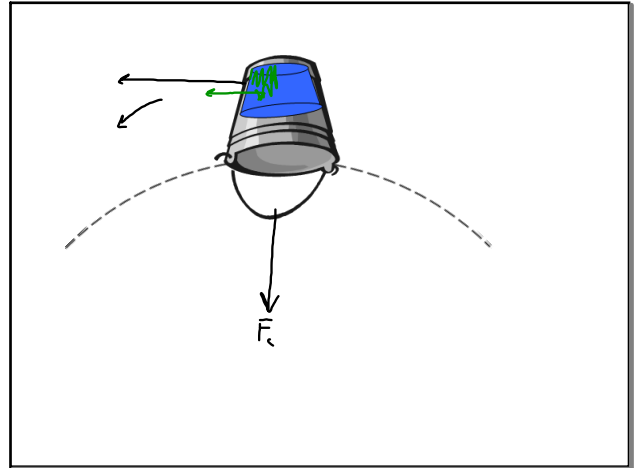
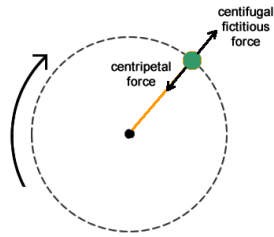
# Centrifugal Force

## Centrifugal Force

### Objectives

Explain why centrifugal force is a fictitious force.

Solve for centripetal acceleration, centripetal force and tangential velocity.



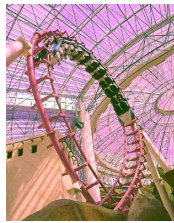
## Centrifugal Force

"center fleeing"

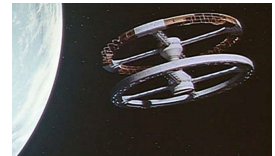
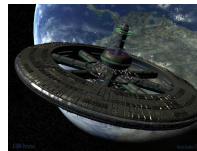
NOT a real force!

special case of inertia for circles

object appears to "push" against the outside of the circle



## Future Space Stations?



$$A_c = \frac{v^2}{r}$$

$$9.8 \frac{m}{s^2} = \frac{v^2}{100m}$$

$$v = 32 \frac{m}{s} \text{ spin rate}$$

<http://www.howstuffworks.com/space-station1.htm>

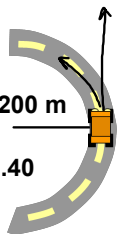
## Centripetal Force

$$r = 200 \text{ m}$$

$$\mu = .40$$

$$m = 1000 \text{ kg}$$

$$v_t = ?$$



$$F_c = m a_c \quad F_c = m \cdot \frac{v^2}{r}$$

same!

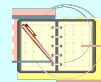
$$F_f = \mu F_N$$

$$4000N = (.4) (10,000N)$$

$$4000N = \frac{1000kg \cdot v^2}{200m}$$

$$v_t = 28 \frac{m}{s}$$

## Assignments . . .



- Chapter 8 Homework # 13 - 16

