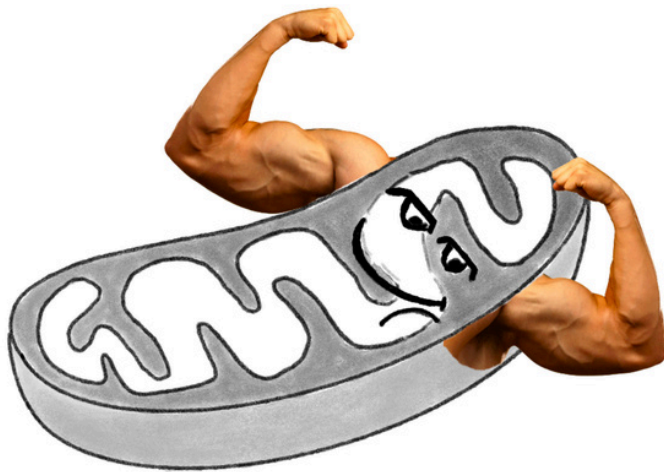


# AP PHYSICS 1

## CENTRIPETAL FORCE

REVIEW



**centripetal force:** the **NET** force  
that keeps an object moving  
in a **circular path**

→ points **TOWARD** center of circle

# FORMULAS

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

centripetal force

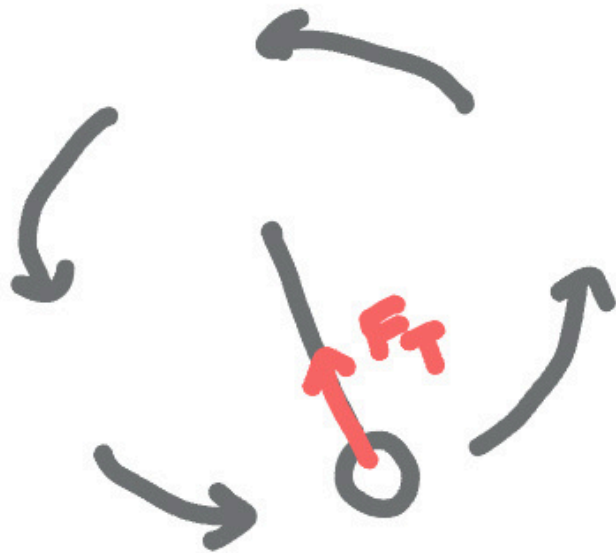
mass

radius of path/circle

velocity (tangential)

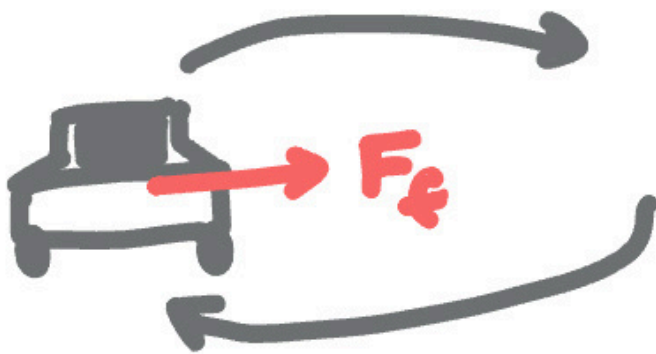
→  $F_c$  is not a new force,  
it's a combination of  
inward pointing real forces

# EXAMPLES



ball swinging on rope:

$$\rightarrow F_c = F_T \text{ (tension)}$$



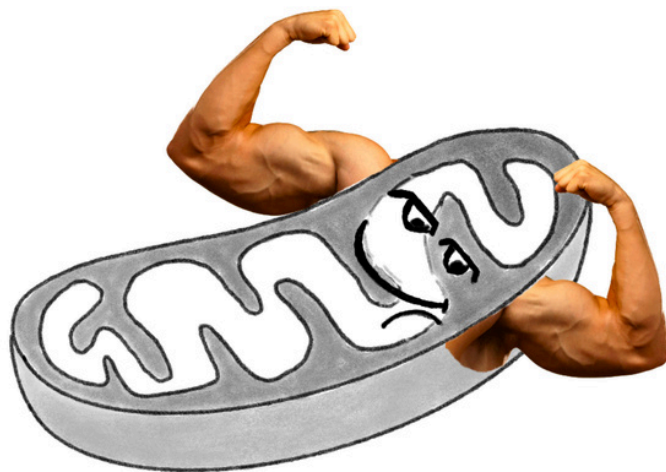
car turning on  
flat road:

$$\rightarrow F_c = F_f \text{ (friction)}$$

# AP PHYSICS

## FREE BODY DIAGRAMS

60 SECOND GUIDE



**Free body diagram:** a picture showing **ALL** forces acting on an object

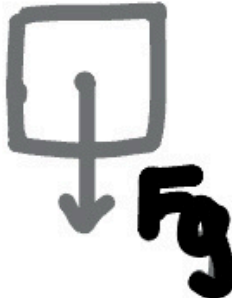
# HOW TO DRAW

1. Draw a box for object  $\Rightarrow$  

2. Draw an arrow for **EVERY** force acting on it  $\Rightarrow$  

arrow direction = force direction

arrow length  $\approx$  magnitude

3. label each force  $\Rightarrow$  

# KNOW YOUR FORCES

→ common forces in questions

weight ( $F_g$ ) → always straight down

normal force ( $F_n$ ) → perpendicular to surface

applied force ( $F_a$ ) → direction of push/pull

friction ( $F_f$ ) → opposite direction of motion

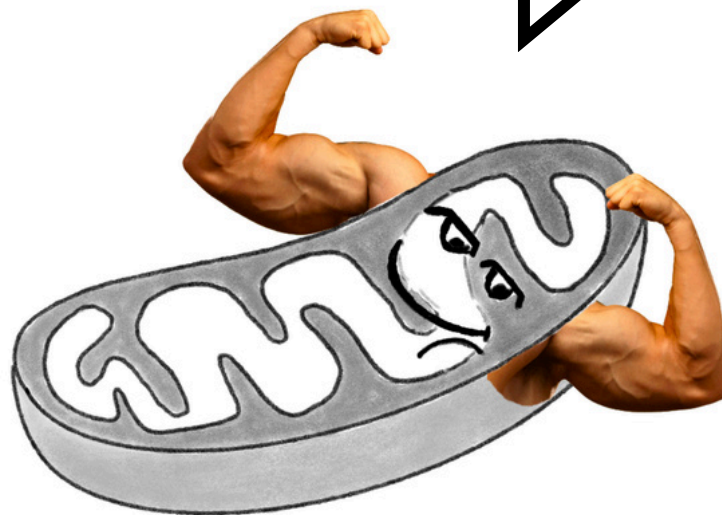
tension ( $F_t$ ) → along string/rope, pulling away

# EXTRA TIPS

→ arrow should be starting from the center of the box

→ don't draw forces the object exerts on other things

**follow for  
more!**



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