

-comments on Test
 -new problem solving requirements

INTRO TO CHAPTER 6

-same tools, new Forces (friction, springs...)

-Newton's Nemesis: Friction

PROB SOLVING REQS

1. START w/ FBD

- ONLY DRAW FORCES EXERTED ON THE OBJECT (NOT BY)
- FORCES? - GRAVITY
 - WHAT'S TOUCHING

2. SUM THE FORCES IN X & Y
 (WRITE 2ND LAW FOR X & Y)

$$\sum F_x = ma_x \quad \sum F_y = ma_y$$

3. CIRCLE ANSWER & DON'T FORGET UNITS

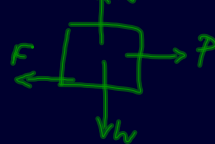
Apr 20-8:53 AM

Oct 22-1:08 PM

FIRST EX w/ FRICTION!



FBD



NOT MOVING

$$\sum F_x = ma_x$$

$$P - F = m \cdot 0$$

$$P - F = 0$$

$$P = F$$

$$\sum F_y = ma_y$$

$$N - W = m \cdot 0$$

$$N - W = 0$$

$$N = W \quad (W = mg)$$

FRICTION FORMULA

$$F_f \leq \mu N$$

DEPENDS ON SURFACES INVOLVED

"MYOO"
 GREEK LETTER μ
 $\mu \mu \mu \mu$

(R) RUBBER ON CONCRETE

$$\mu = 0.8$$

TEFLON ON TEFLON

$$\mu = 0.04$$

Oct 22-1:17 PM

Oct 22-1:35 PM

HOW TO USE $\mu \dots$

1000 kg

RUBBER

CONCRETE

E-BRAKE ON
PARK
IN GEAR

FIND MAX FORCE OF FRICTION

$F_f \leq \mu N$

NO UNITS!

$\Sigma F_y = ma_y$
 $N - W = 0$
 $N = W$
 $= mg$
 $N = 10000 \text{ N}$

$F_f \leq \mu N$
 $\leq (0.8)(10000 \text{ N})$
 $F_f \leq 8000 \text{ N}$

Oct 22-1:42 PM

KINETIC FRICTION (MOVING) \leq STATIC FRICTION (STATIONARY)

Oct 22-1:48 PM

FIND μ OF BRICK & WOOD

NOT MOVING

$\Sigma F_x = ma_x$
 $F - W_x = 0$
 $F = W_x$
 $\mu N = mg \sin \theta$
 $\mu = \frac{mg \sin \theta}{N}$
 $= \frac{mg \sin \theta}{mg \cos \theta}$
 $\mu = \tan \theta$

$\Sigma F_y = ma_y$
 $N - W_y = 0$
 $N = W_y$
 $N = mg \cos \theta$

Oct 22-1:51 PM