Staple in upper left

ON WHITE PAPER

List of all problems on top of page 1

Hw #1: 1.1, 1.5, 1.11, 2.5, 2.7, 2.11

John Doe ← Name
E 235 ← Class
hw #1 ← Hw # on 1st page

My prob # | Book prob # | Brief prob descriptor

#1) Problem 1.1 - P is applied to mass. Friction exists

Given → Given: m (2 kg), μ (.4), θ (30 deg), g (9.81 m/s^2)

Find → Find: max P for equib

WRITE THIS!! Calcs:

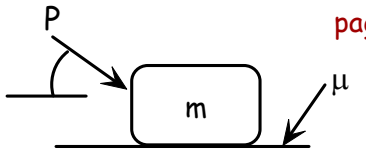
WRITE THIS!!

EQNS EQUIB

Equations of equilibrium (written out clearly)

$\pm\rightarrow \Sigma Fx:$ $P\cos\theta - Ff = 0$

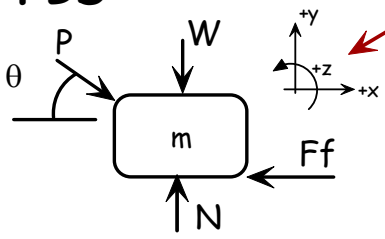
$+\uparrow \Sigma Fy:$ $-P\sin\theta - mg + N = 0$



Space diagram

label FBD

FBD



coordinate system showing (+) directions

Free-body diagram

Show work →

$P = Ff/(\cos\theta)$ — fm x eqn

$N = P\sin\theta + mg$ — fm y eqn

$Ff = \mu N = \mu(P\sin\theta + mg)$ — Friction

$P = \mu(P\sin\theta + mg)/\cos\theta$ — fm x eqn

$P = \mu P\tan\theta + (\mu mg/\cos\theta)$ — algebra

$P(1-\mu\tan\theta) = (\mu mg/\cos\theta)$

Explain where eqn comes from

$$P = \frac{\mu mg}{(\cos\theta - \mu\sin\theta)}$$

← "variable" solution (when possible). Very important
Contains only GIVEN variables, is simplified.
Often not possible in statics.

$$P = \frac{0.4 \cdot (2\text{kg})(9.81\ \text{m/s}^2)}{\cos 30 - 0.4 \cdot \sin 30}$$

Plug in values with units

P = 11.78 N

BOX final numerical answer with units, proper sig figs on separate line

F = 10.2 N ∠ 20°

report 2D F's as shown

F = (100, -90, 40)
report 3D F's in (x,y,z)

#2) Problem 1.2 - Next problem descriptor.....

Big fat line before next problem

Don't start problems lower ~ 2/3 of way down the page (a bit lower than middle hole punch)