General Format for Solving Problems

Problem #: _____ Course: _____ Name: _____

Given

Either write out the complete problem statement, including all sketches, graphs, circuits, etc., or summarize the given information by showing as much of the given information as possible on a sketch, such as dimensions, weight, forces, angles, or density, and listing any other significant information. Do not add any new or calculated information to this section.

Find

List all information that is to be determined in the problem. If the problem is lengthy and has multiple parts, state what is to be found before each part.

Solution

Show completely all steps necessary for the solution.

Hints for clear solutions:

1. Always include units.
2. Maintain at least 3 significant digits in all calculations.
3. Use SI prefixes with answers whenever possible.
4. Underline or box the required answers.
5. Express the formula being applied before substituting actual values into the formula.

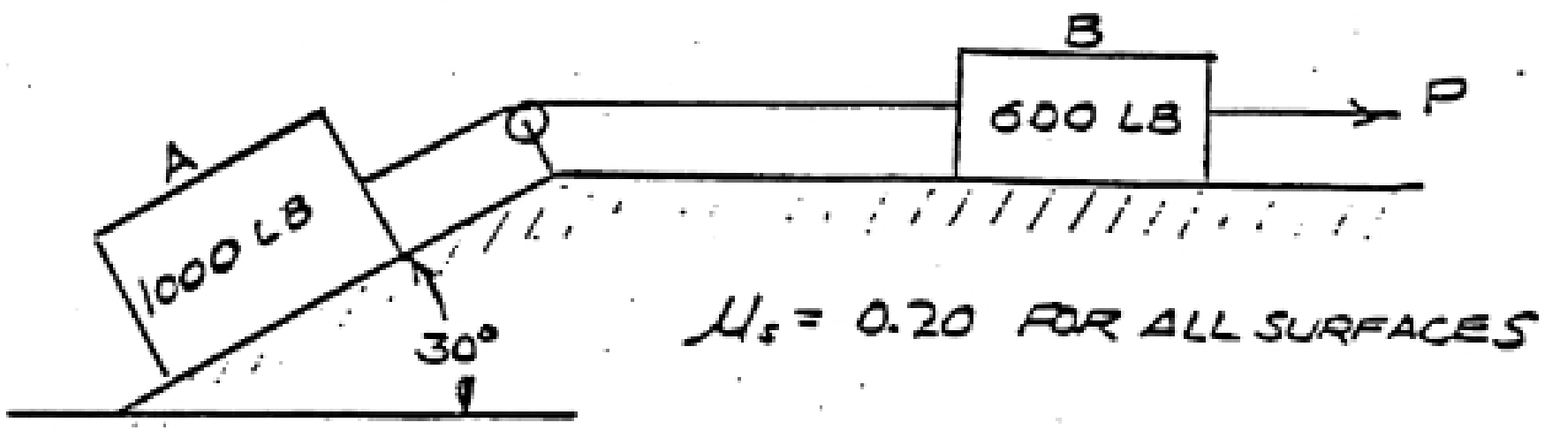
   Poor example:
   24/8 = 3.4

   Good example:
   x = 24 m
   t = 7 ms
   v = x/t = 24/7
   v = 3.43 km/s
6. Whenever possible, the variables in a solution should be shown on a corresponding figure. For example, if you are solving for a force F applied to a beam at an angle β, both F and β should be labeled on the beam.
7. Be neat!
8. Use pencils rather than pens. Erase any mistakes.

SAMPLE

PROBLEM 8-2 EGR 140 SMITH J.T.

GIVEN

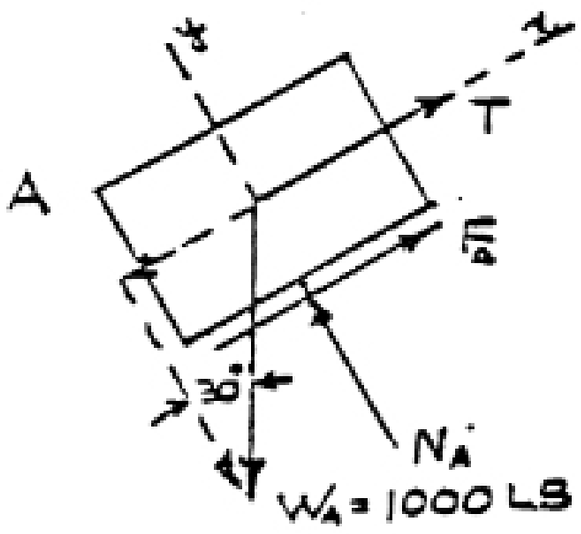


$\mu_s = 0.20$ FOR ALL SURFACES

FIND

DETERMINE THE MAGNITUDE OF FORCE P TO PREVENT BLOCK A FROM SLIDING DOWN THE PLANE.

SOLUTION



$\Sigma F_y = 0$

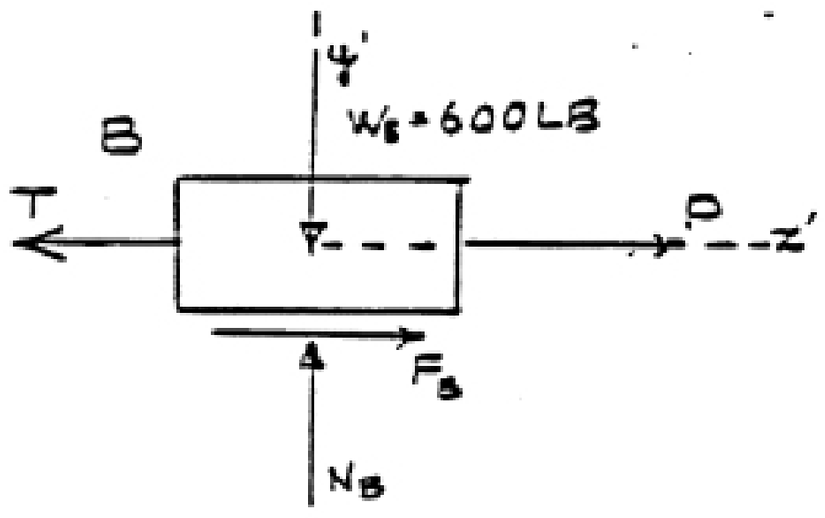
$N_A - 1000 \cos 30° = 0 \quad N_A = 866$ LB

$F_A = \mu N_A = (0.2)(.866) = 173.2$ LB

$\Sigma F_y = 0$

$T - 1000 \sin 30° + F_A = 0$

$T = 1000 \sin 30° - 173.2 = 326.8$ LB



$\Sigma F_y = 0$

$N_B - 600 = 0 \quad N_B = 600$ LB

$F_B = \mu N_B = (0.2)(600) = 120$ LB

$\Sigma F_x = 0$

$P + F_B - T = 0$

$P + 120 - 326.8 = 0$

$\boxed{P = 206.8 \text{ LB} \longrightarrow}$