

I.D.E. 50 STATICS
FINAL EXAMINATION
FALL Semester 2005

STUDENT'S NAME (please print): _____

STUDENT'S SIGNATURE: _____

STUDENT NUMBER: _____

IDE 50 SECTION: _____

INSTRUCTOR'S NAME: _____

Do **not** turn this page until instructed to start. Work each problem in the space provided. Write your name on each sheet. Do **not** fold papers. Please box and/or clearly indicate your answer for each problem. **GOOD LUCK!**

DO NOT WRITE BELOW THIS LINE. FOR GRADING ONLY.

PROBLEM 1 _____ 25 POINTS

PROBLEM 2 _____ 25 POINTS

PROBLEM 3 _____ 25 POINTS

PROBLEM 4 _____ 25 POINTS

PROBLEM 5 _____ 25 POINTS

PROBLEM 6 _____ 25 POINTS

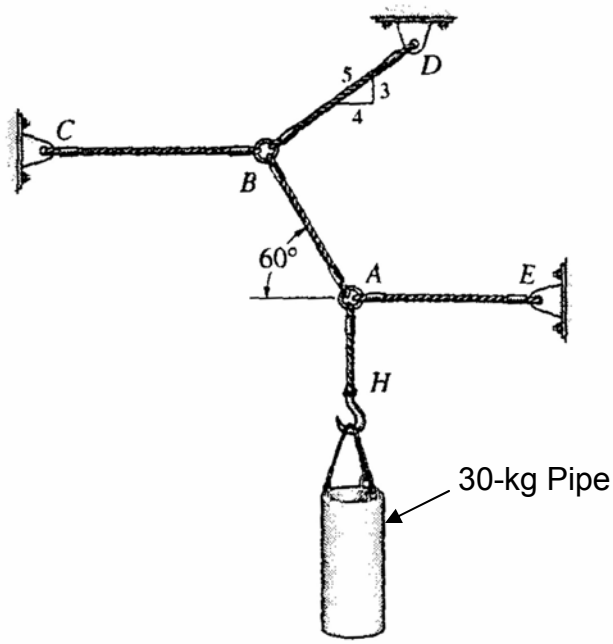
PROBLEM 7 _____ 25 POINTS

PROBLEM 8 _____ 25 POINTS

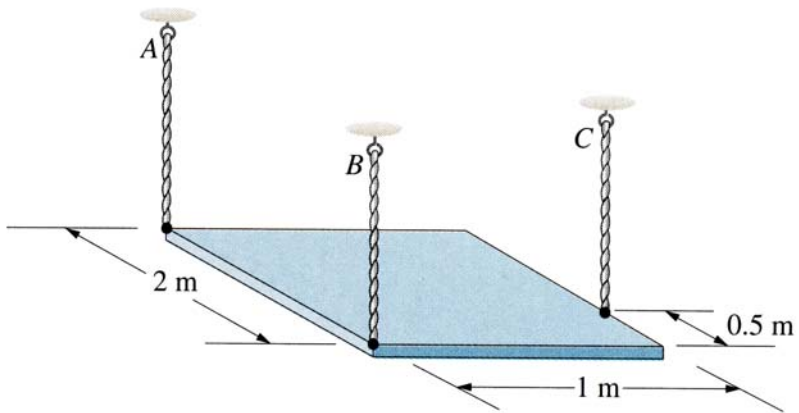
TOTAL _____ 200 POINTS

PERCENTAGE: _____

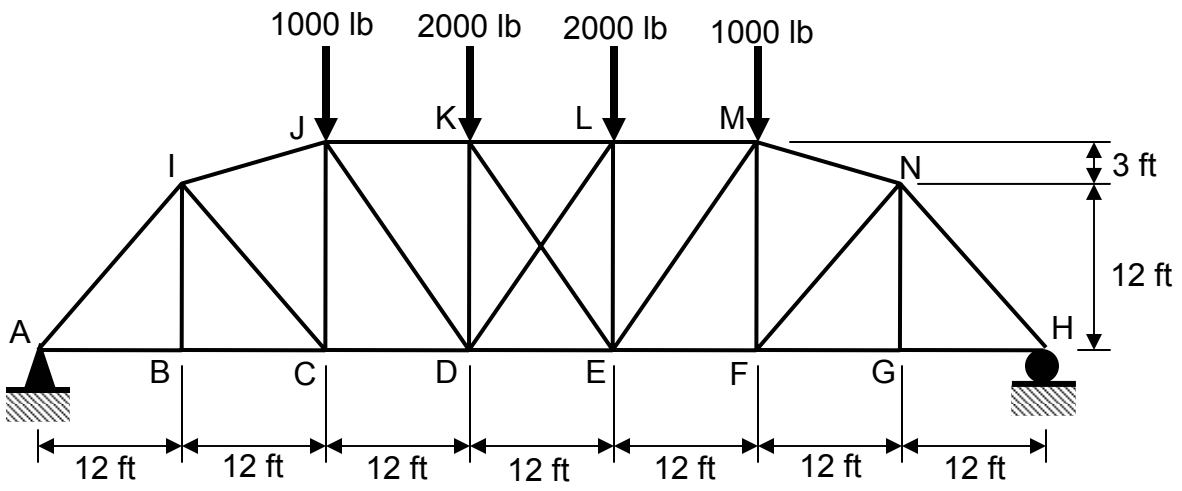
1. The 30-kg pipe is supported at H by a system of five cords. Determine the force in each cord for equilibrium.



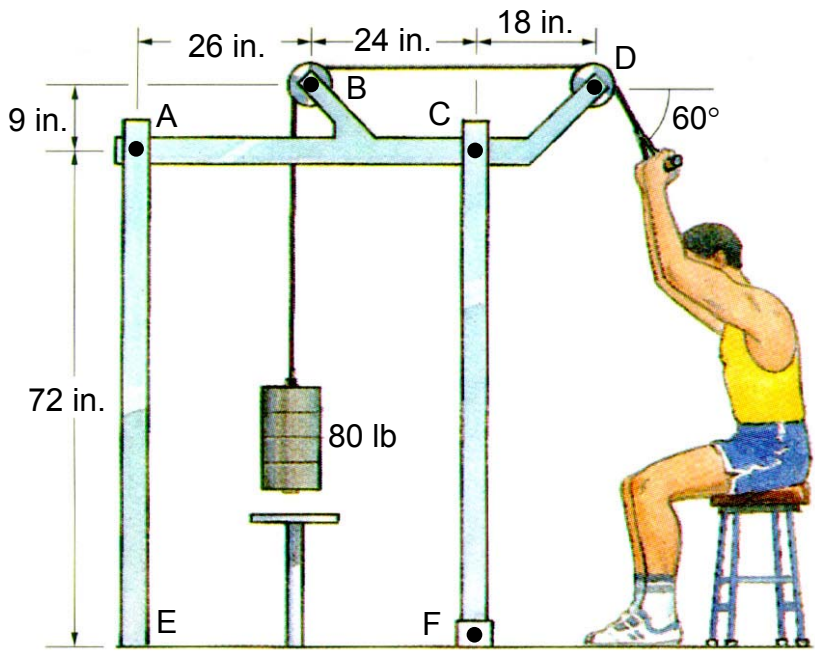
2. The uniform plate below has a weight of 800 N and is supported by cables at A, B and C as shown in the figure. Find the force in each cable.



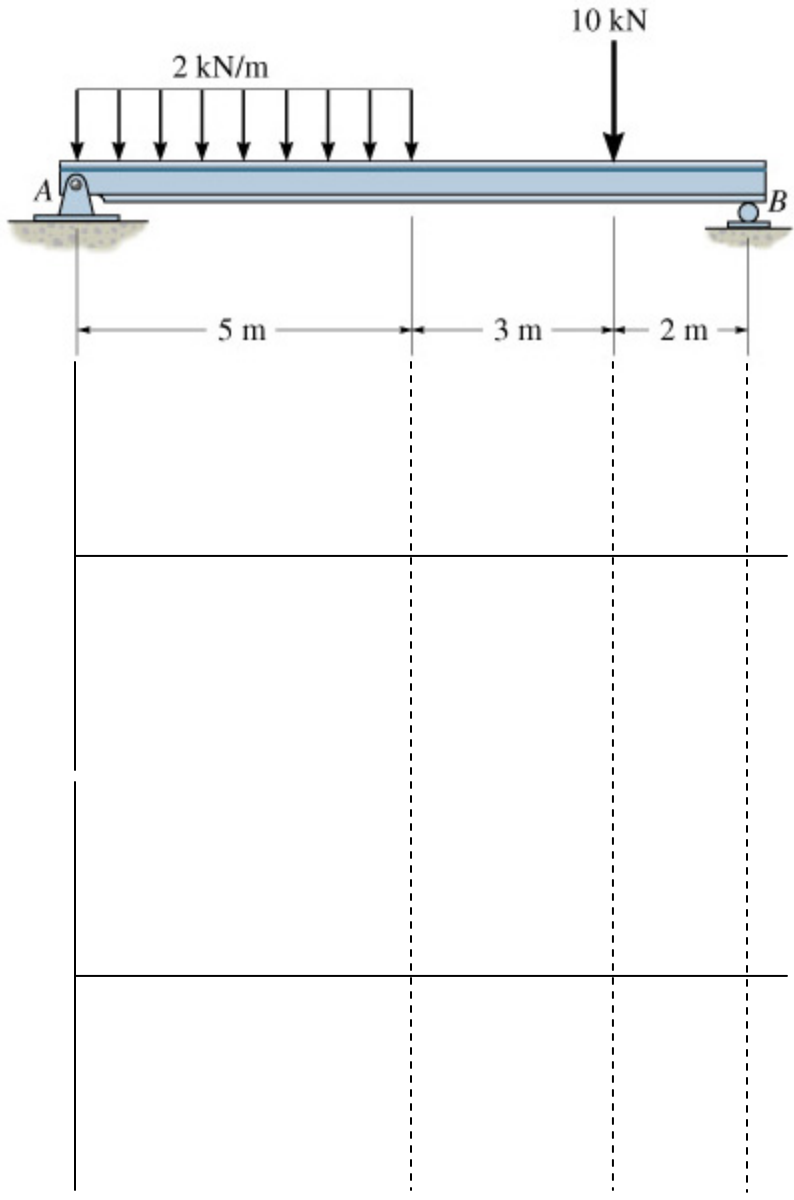
3. Find the forces in members AI, CJ and CD and state whether they are in tension or compression.



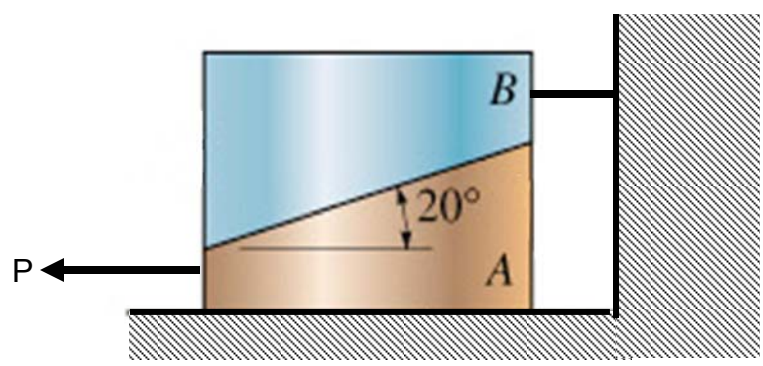
4. The man using the exercise machine is holding the 80-lb weight stationary in the position shown. What are the reactions at the built-in support E and the pin support F? (A and C are pinned connections.)



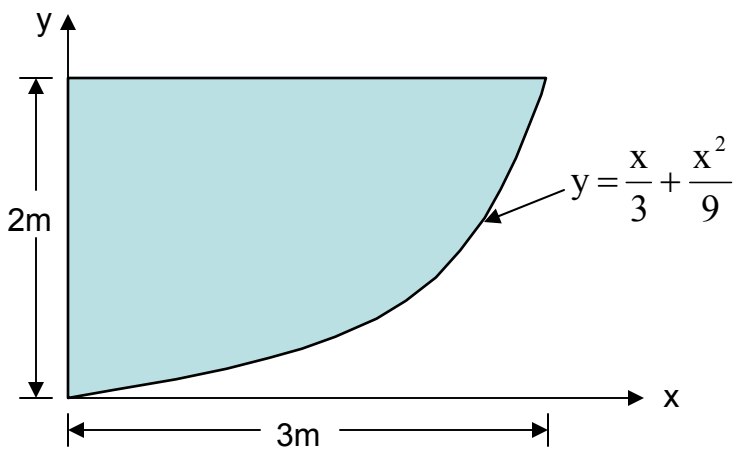
5. Draw the shear and moment diagrams for the beam shown. Be sure to label all important points and values. Note that the reactions at A and B are, respectively, 9.5 kN and 10.5 kN.



6. Blocks A and B weigh 50 pounds each and the coefficient of friction is 0.65 on all surfaces. Block B is tied to the wall with a cable as illustrated, and block A is being pulled to the left with a force P. Find the minimum force P required to cause block A to slide to the left.



7. Find the x and y centroid locations of the area illustrated below.



8. Calculate the second area moment of inertial around the x axis (I_x) for the area shown below.

