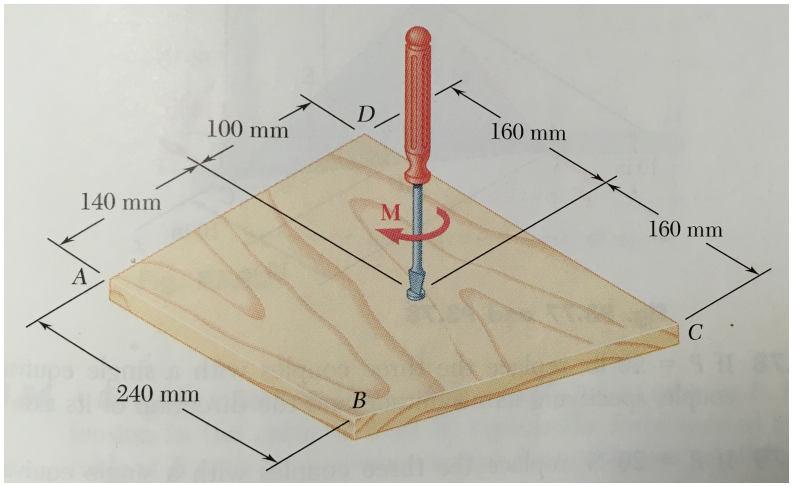
Name_____

Problem 1 (12 points)



A couple M of magnitude 18 N · m is applied to the handle of a screwdriver to tighten a screw into a block of wood. Determine the magnitudes of the two **smallest** horizontal forces that are equivalent to M if they are applied

(a) at corners A and D,

(b) at corners B and C,

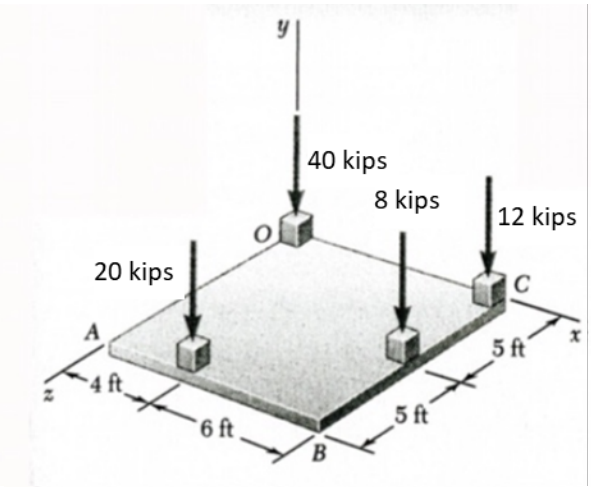
(c) anywhere on the block

Draw a sketch for each of the cases clearly indicating the forces and the distances you are considering.

Name_____

Problem 2 (12 points)

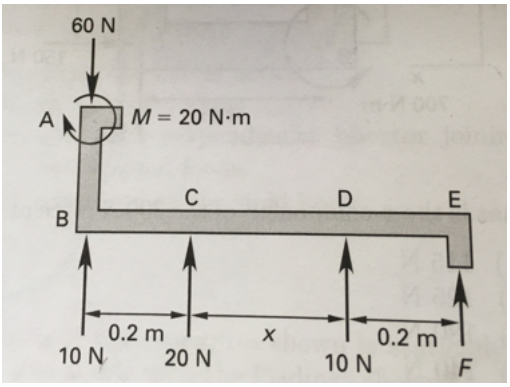
A square foundation mat supports the four columns shown. Determine the magnitude, direction and coordinates of the point of application of the resultant force.



Name_____

Problem 3 (6 points)

A bent beam is acted upon by a moment and several concentrated forces, as shown. Find the missing force F and distance x that will maintain equilibrium on the member shown.



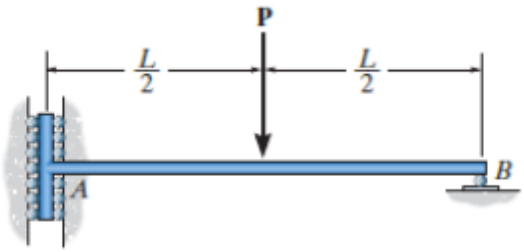
Name_____

Problem 4 (6 points)

Given beam AB subjected to the loading shown

a) Draw the FBD

b) Determine the reactions at supports A and B clearly showing their direction. A is a support that consists of a wall with rollers inside and B is a roller support.



Name_____

Bonus

1. (1 point) Something you have learned on a Fun Fact Friday

2. (1 point) Name on all pages