EGR 1
STATICS

HOMEWORK I

DUE DATE

WED

MONDAY

Eng. & Math. Library

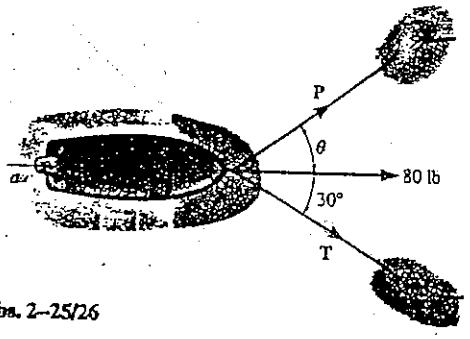
1/1

CIVE 210

*1-12. The specific weight (wt./vol.) of brass is 520 lb/ft^3. Determine its density (mass/vol.) in SI units. Use an appropriate prefix.

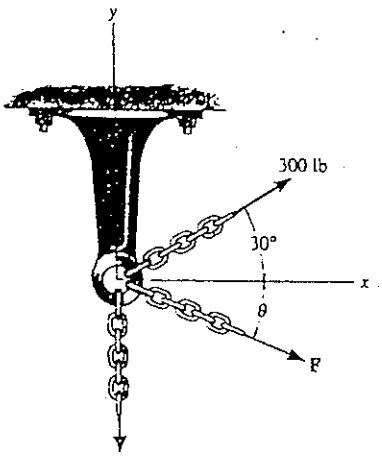
1-17. Using the base units of the SI system, show that Eq. 1–2 is a dimensionally homogeneous equation which gives F in newtons. Compute the gravitational force acting between two identical spheres that are touching each other. The mass of each sphere is 150 kg, and the radius is 275 mm. EQ 1-2 $F = G m_1 m_2 / R^2$

2-26. The boat is to be pulled onto the shore using two ropes. If the resultant force is to be 80 lb, directed along the keel *aa* as shown, determine the magnitudes of forces T and P acting in each rope and the angle θ of P so that the magnitude of P is a *minimum*. T acts at 30° from the keel as shown.



Probs. 2–25/26

2-29. Three chains act on the bracket such that they create a resultant force having a magnitude of 500 lb. If two of the chains are subjected to known forces, as shown, determine the orientation θ of the third chain, measured clockwise from the positive x axis, so that the magnitude of force F in this chain is a *minimum*. All forces lie in the x–y plane. What is the magnitude of F? *Hint:* First find the resultant of the two known forces. Force F acts in this direction.



Prob. 2–29