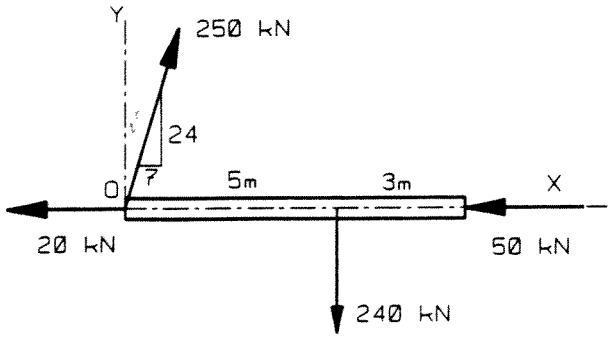
STATICS REVIEW

1. In the analysis of rigid bodies the force system shown is:



   a. ___ in static equilibrium.

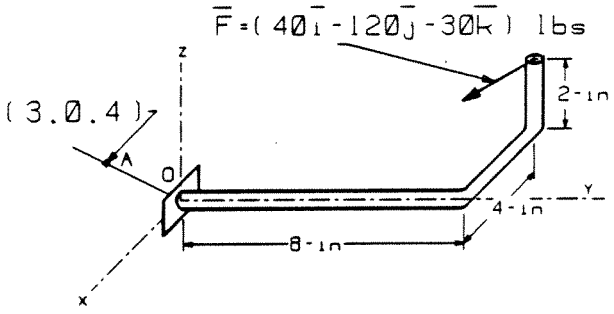
   b. ___ equivalent to a 1200 kN force acting vertically downward and intersecting the x-axis 1 m to the right of 'O'.

   c. ___ equivalent to a 1200 kN-m counterclockwise couple.

   d. ___ equivalent to a 1200 kN-m clockwise couple.

   e. ___ equivalent to a single 240 kN force acting vertically downward 5 m to the right of the origin 'O'.

2. The moment of the force F about the z-axis has a magnitude of:



   a. ___ zero.

   b. ___ 160 in-lb.

   c. ___ 320 in-lb.

   d. ___ 800 in-lb.

   e. ___ 480 in-lb.

3. The magnitude of the moment of the force F (see figure above) about the line OA is:

   a. ___ 200 in-lb.

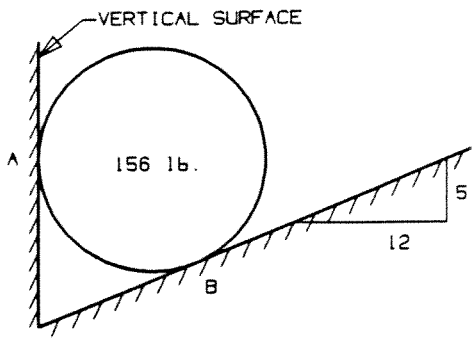
   b. ___ 165 in-lb.

   c. ___ zero.

   d. ___ 1191 in-lb.

   e. ___ 128 in-lb.

4. A 156 pound homogeneous cylinder rests against smooth surfaces as shown. The normal force at B is:



a. __ 156 lb.

b. __ 144 lb.

c. __ 169 lb.

d. __ 60 lb.

e. __ 405.6 lb.

5. The normal force at A (see figure above) is:

a. __ zero.

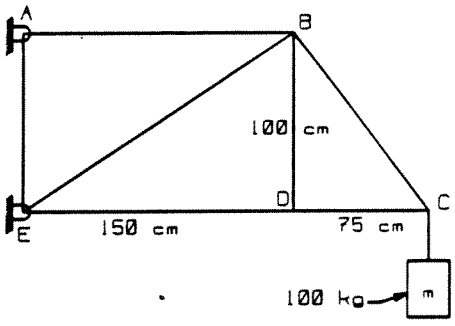
b. __ 60 lb.

c. __ 144 lb.

d. __ 65 lb.

e. __ 156 lb.

6. The pin connected truss supports a mass of 100 kilograms as shown. The load carried by member BE is:



a. __ 1770 newtons compressive.

b. __ 1770 newtons tensile.

c. __ 180 newtons compressive.

d. __ 180 newtons tensile.

e. __ 1.77 MN compressive.

7. The load carried by member BD of the pin connected truss (see figure above) is:

a. __ 981 newtons compressive.

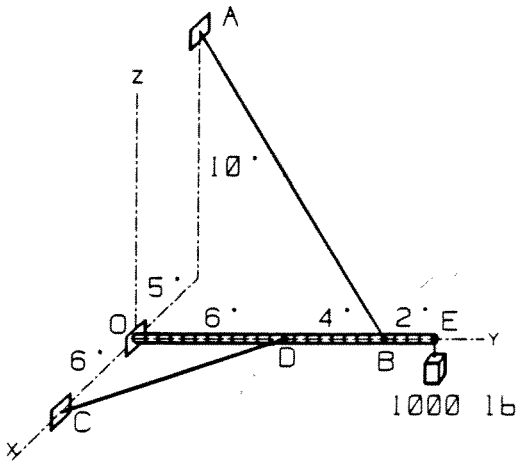
b. __ 981 newtons tensile.

c. __ zero.

d. __ 100 newtons compressive.

e. __ 981 kN compressive.

8. The horizontal boom of negligible weight supports a 1000 pound load as shown. The boom is supported by cables and a ball and socket joint at 'O'. The tensile load carried by cable AB is:



a. __ 1500 lb.

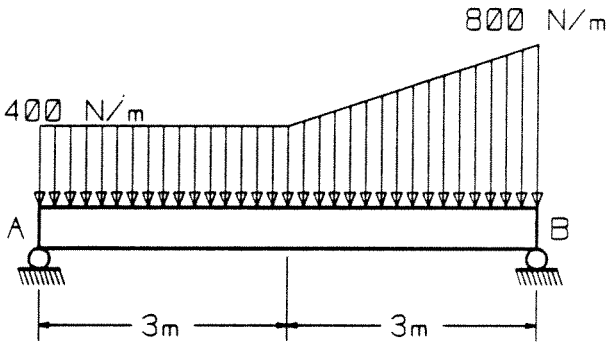
b. __ 1800 lb.

c. __ 667 lb.

d. __ 1200 lb.

e. __ 1000 lb.

9. The distributed loading shown is statically equivalent to a single downward load of:



a. __ 1.2 kN at 4 m to the right of A.

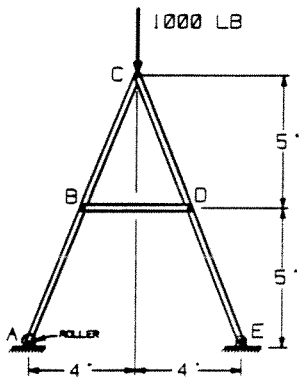
b. __ 3.6 kN at 3.4 m to the right of A.

c. __ 3.6 kN at 3.8 m to the right of A.

d. __ 3.0 kN at 3.6 m to the right of A.

e. __ 3.0 kN at 3.4 m to the right of A.

10. The pin connected 'A' frame carries a vertical load of 1000 pounds as shown. Member BD must carry a load of:



a. __ 400 lb. in tension.

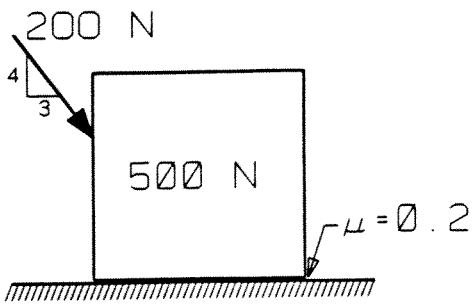
b. __ 400 lb. in compression.

c. __ no load (it is a zero force member).

d. __ 500 lb. in tension.

e. __ 500 lb. in compression.

11. The 500 newton crate is initially at rest and the 200 newton force is then applied. The coefficient of friction is 0.2 between the crate and the floor. After the 200 N load is applied: (Assume the block can not tip).



a. __ the crate will slide to the right.

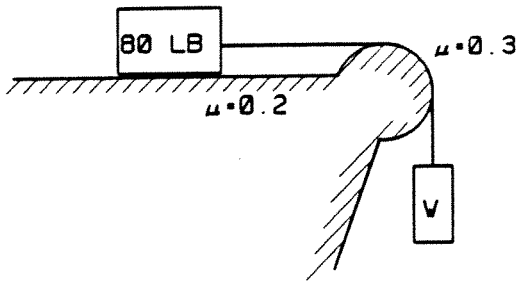
b. __ the frictional force will be 100 N.

c. __ the frictional force will be 132 N.

d. __ the frictional force will be 120 N.

e. __ the frictional force will be 140 N.

12. The system shown is at rest and has values of coefficient of friction shown. A flexible cord connects the two weights. The maximum weight that can be supported without upsetting the equilibrium of the system is:



a. __ 25.6 pounds.

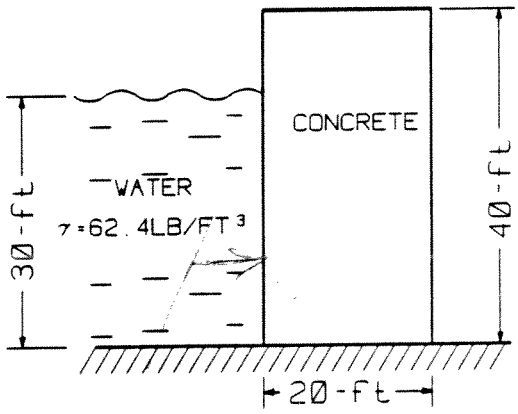
b. __ 10.0 pounds

c. __ 16.0 pounds.

d. __ 20.8 pounds.

e. __ 111.1 pounds.

13. The hydrostatic force on the concrete dam per foot of width is:



a. __ 62.4 lb/ft.

b. __ 1872 lb/ft.

c. __ 936 lb/ft.

d. __ 28,080 lb/ft.

e. __ 56,160 lb/ft.

Ans: 1-d, 2-b, 3-e, 4-c, 5-d, 6-a, 7-c, 8-b, 9-e, 10-a, 11-d, 12-a, 13-d