Torque, Rotational Equilibrium and Statics.

1. Find the torque provided by each force about the pivot indicated. (Diagram not to scale)

A

24o

45N

D 0.50

130N 0.25m

B 0.35m

C 36o 0.20m

0.40m

a. The 130N force, Pivot A

b. The 130N force, Pivot B

c. The 130N force, Pivot C

d. The 45N force, Pivot A

e. The 45N force, Pivot B

f. The 45N force, Pivot C

g. The 130N force, Pivot D

h. The 45N force, Pivot D

2. The beam shown is in static equilibrium. Determine the magnitude of F1. Assume the beam is rigid and that its mass is negligible.

49o F1

600.0g

0.50m 1.20m

3. Find ∑ **τ** on the object shown. 6.0N

(Each force is perpendicular to the lever) 14N

0.50m

11N 1.0m

0.60m 0.60m 8.0N

PIVOT

4. A 1.00kg, 2.0m long, uniform beam is resting on two supports as shown below. A 3.00kg mass sits on the beam. Find the normal force that each support applies to the beam.

0.71m

3.00kg

0.82m

0.88m

5. A 2.00kg, 2.0m long, uniform beam is resting on two supports as shown below. A mass sits on the beam. The normal force from the left hand support on the beam is 51.45N. Find M.

0.71m

M

0.82m

0.88m

6. The sign in front of Steamy Gene’s House o’ Cheese is 11.0kg and hags from the end of a 3.0kg, 1.80m long uniform beam. The beam is attached to the wall with a horizontal cable and a base.

28o

Steamy Gene’s House o’ CHEESE

Cable

0.50m

Base

a. Find the tension in the cable.

b. Find the force applied to the beam by the base.