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.