Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_

**AP Physics 1: Torque and Static Equilibrium Quiz**

Consider the diagram below. Assume the inner and outer circles of the diagram are connected so that the object moves as one piece.

θ1

F1

R2

R1

F3

F5

F4

θ2

F2

1. If the only forces acting on the object are F3=*2F* and F5=*F*, what is the net torque?
2. If the only forces acting on the object are F3=*2F*, F4=*F*, and F5=*F*, what is the net torque?
3. If F1=*2F*, θ1=*60°*, F2=*2F*, θ2=*37°*, F3=*2F*, F4=*F*, and F5=*F*, what is the net torque?



x1

x2

x3

x4

x5

x6

x7

x8

*a*

*b*

*c*

*d*

1. Mr. Conger wants to make the mobile above for his daughter. The sea turtle has a mass of 200 grams, the sting ray a mass of 150 grams, the jelly fish 175 grams, the sea horse 100 grams, and the octopus is 250 grams. The top rod is 20 cm, the left rod is 15 cm, the middle rod is 10 cm and the right rod is 12 cm. Determine the locations of *a*, *b*, *c*, and *d*.
2. When buying a vehicle one of the main features discussed is torque. In a short paragraph explain why it is important for vehicles to have torque.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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x1

x2

x3

x4

x5

x6

x7

x8

*a*

*b*

*c*

*d*

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