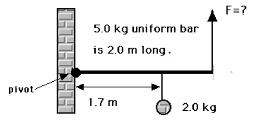
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**AP Physics 1: Torque and Static Equilibrium**

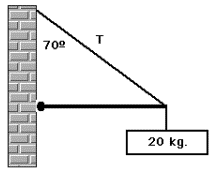
1. A boy and his cat sit on a seesaw. The cat has a mass of 4.2 kg and sits 1.6 m from the center of rotation. If the boy has a mass of 53 kg, how far from the fulcrum should he sit so that the seesaw will balance?
2. A 5.0 kg uniform bar is attached to the wall as shown, with a 2.0 kg weight hung in the indicated location. What minimum vertical force is needed to cause the system to be in rotational equilibrium?
3. Consider a 14 m bridge that weighs 570 N supported at both ends. A person who weighs 758 N is standing 2.4 m from one end of the bridge. What are the forces holding up either side of the bridge? Draw a free-body diagram of the scenario.
4. A uniform 0.122 kg rod of 0.90 m length is used to suspend two masses as shown below. At what distance x should the 0.20 kg mass be placed to achieve static equilibrium? Don’t forget to include the mass of the rod.





1. A uniform 16.0 kg boom of length 4.0 m is supported by a rope as shown. Find the tension in the rope.
2. A 25 kg droid rests on a 5.0 m long shelf supported by two cables as shown. The mass of the shelf is 12 kg. Find the tension in **each** cable.





1. In the following diagram, the 1.6 m long uniform bar has a mass of 5.0 kg. Calculate the tension "T" of the cable supporting the 20 kg mass hanging on the end of the beam.