Directions: Draw a diagram for each situation, label key points, write the equation for the "law of torques" and then solve each problem, showing all of your work, Label all units, Circle final answers

1.   A wheelbarrow is 1.8 m long from handle to the wheel's axle. A load of 500 N is placed in the wheelbarrow and is .35 m from the axle. What is the force needed to lift handles, assuming force is perpendicular to the handles?
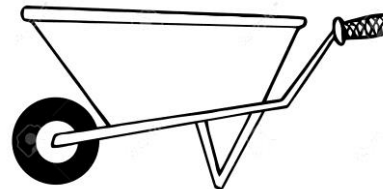
2.   Paul and Henry carry a sack weighing 600 N on a pole between them. If the pole is 2.0 m long and has a mass of 10 kg (its center of gravity is 0.8 m from Henry), and the load of 600 N is 0.5 m from Paul, what force does each of them exert?

3. A beam 2.0 m long is supported at both ends. A weight of 150.0 N is attached 0.4 m from end "A": a weight of 800 N is attached 0.75 m from end "A": and a weight of 300 is attached 0.8 m from end "B". Calculate the force exerted by the supports a each end of the beam if the beam has a weight of 100.0 N, with its center of gravity 1.2 m from end "A".

4. A light bamboo fishing pole 3.6 m long is supported by a horizontal string as shown in the diagram below. A 3 kg fish hangs from the end of the pole, and the pole is pivoted at the bottom. What is the tension in the 1.2 m supporting string, and what are the components of the force f the pivot on the pole?

1.6 m

1.2 m

1.6 m   2.0 m

2.16 m
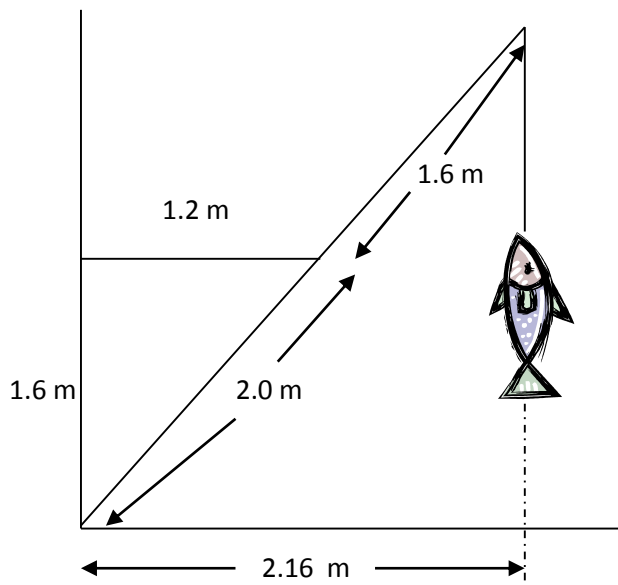
1. Force handles = 97.2 N
2. Henry = 208.8 N
   Paul = 489.2 N
3. Force at "A" = 780 N
   Force at "B = 570 N
4. Force on string = 39.7 N