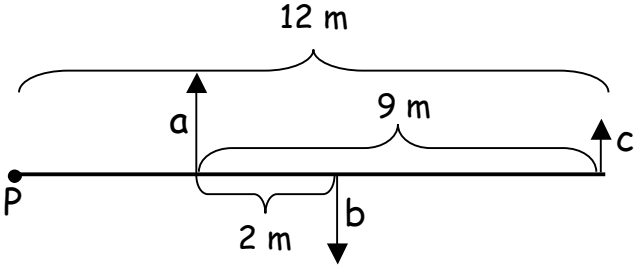
Worksheet: Torque **Name**_____

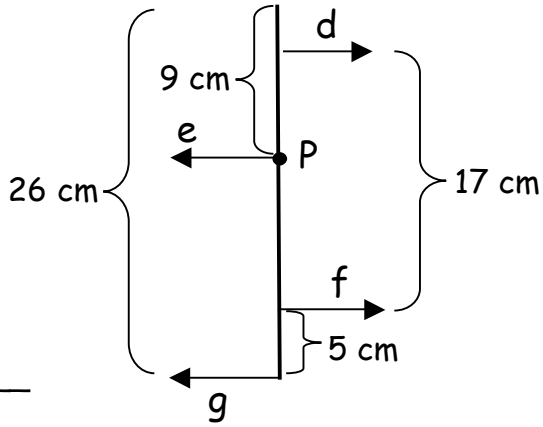
1. The formula for calculating torque is T = _____. What is the unit? _____

2. The direction for a torque is always either _____ or _____.

3. A *lever arm* is the distance from the _____ point to the point where the perpendicular _____ is applied.

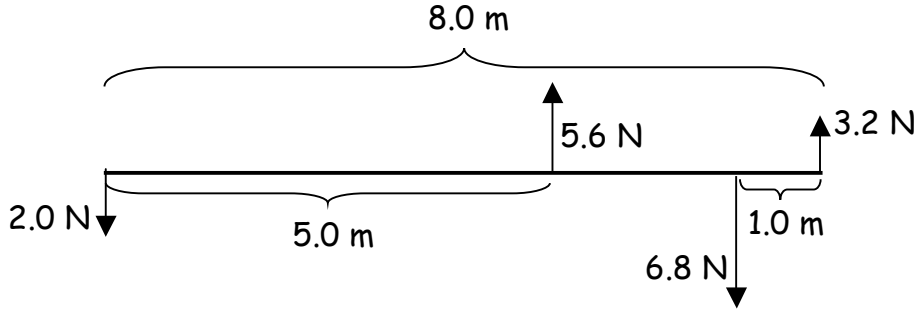
4. Find the lever arm for each of these forces and label the direction of each torque.





a. _____ b. _____ c. _____ d. _____
e. _____ f. _____ g. _____

5. Calculate the net torque. NOTE: You will need to place the pivot point.



6. To solve torque problems, diagrams must be drawn. Complete the diagram for each situation described below. Draw a bold dot for the pivot point. Draw and label each force vector. (Bars, boards, etc. are considered uniform unless stated otherwise.) Label each torque as "cw" or "ccw".
   a. A see saw weighs 500 N and is pivoted at the center.

   b. A railroad tie weighing 1200 N is lifted at the left end.

   c. A 3.0 m long board weighing 150 N is lifted at its ends by two people. A stack of bricks weighing 75 N is placed 1.0 m from the left end. To solve a problem, the pivot point is arbitrarily placed at the right end.

   In #6c, give the length of the lever arm for each force from left to right. (HINT: Four forces should be drawn.)

   _____, _____, _____, _____