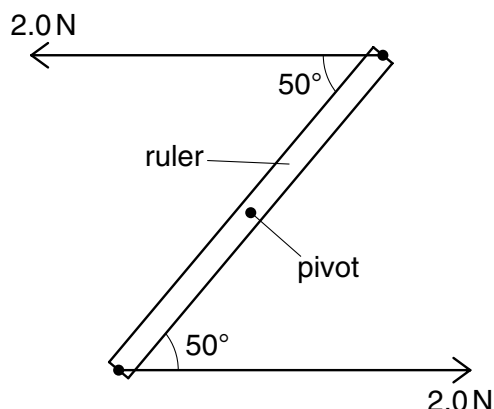


- 13 A ruler of length 0.30 m is pivoted at its centre. Equal and opposite forces of magnitude 2.0 N are applied to the ends of the ruler, creating a couple as shown.

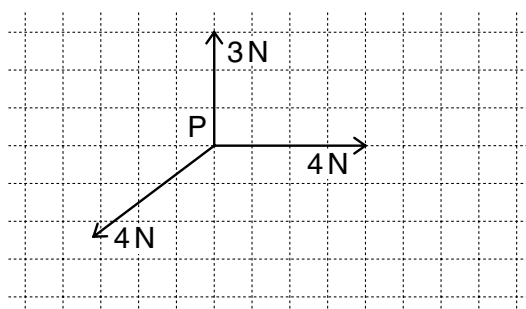


What is the magnitude of the torque of the couple on the ruler when it is in the position shown?

- A 0.23 Nm      B 0.39 Nm      C 0.46 Nm      D 0.60 Nm
- 14 A cylindrical block of wood has a cross-sectional area  $A$  and weight  $W$ . It is totally immersed in water with its axis vertical. The block experiences pressures  $p_t$  and  $p_b$  at its top and bottom surfaces respectively.

Which of the following expressions is equal to the upthrust on the block?

- A  $(p_b - p_t)A + W$   
 B  $(p_b - p_t)$   
 C  $(p_b - p_t)A$   
 D  $(p_b - p_t)A - W$
- 15 The vector diagram shows three coplanar forces acting on an object at P.



The magnitude of the resultant of these three forces is 1 N.

What is the direction of this resultant?

- A  $\downarrow$       B  $\searrow$       C  $\swarrow$       D  $\nearrow$