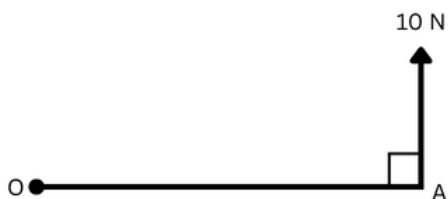


# Maths Rules

## Moments

### Section A

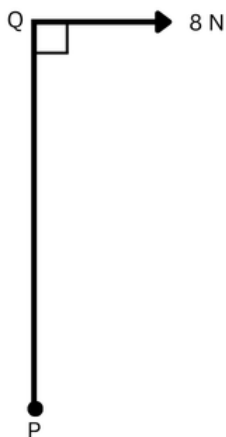
1. In the diagram below the distance OA is 10 metres.



Find the moment of the 10 Newton force about the point O.

Include the units of the moment and the direction of the rotation.

2. A force of 8 N acts perpendicularly to the rod PQ at the point Q as shown in the diagram below.



The force produces a moment of 2 Nm clockwise about P.

Find the distance PQ.

3. A force of 10 N acts on the rod AB, of length 5 m, in the direction parallel to AB.



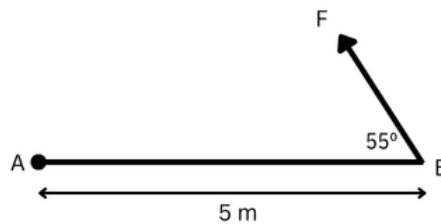
Write down the moment the force produces about the point A.

4. A force of 22 N produces a moment of 15 Nm anticlockwise about the pivot A.



Find the value of  $d$ .

5. A force of  $F$  N acts at the point B of a rod AB, of length 5 metres, as shown in the diagram below.

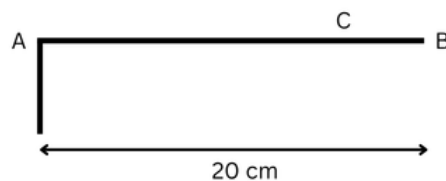


The moment of the force  $F$  about the point A is 10 Nm anticlockwise.

Find the magnitude of the force  $F$ .

### Section B

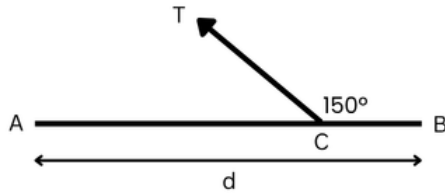
1. A model for a diving board is created with a rod AB, of length 20cm, which rotates around A as shown in the diagram below.



A model human, of mass 20g, is placed at C.

Calculate the moment of the weight of the model about A. Give your answer correct to 2 significant figures.

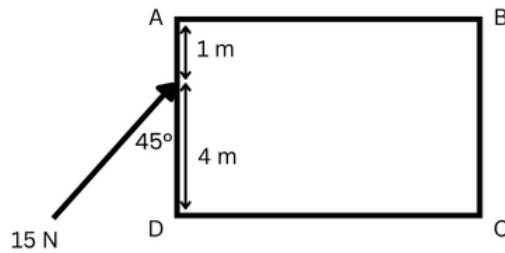
2. A light, inextensible string is attached to the rod AB at the point C as shown in the diagram below.



The point C lies 1 metre from A. The force  $T$  produces a moment of 0.5 Nm clockwise about B and a force of 2 Nm anticlockwise about A.

Find the value of  $T$  and  $d$ .

3. ABCD is a rectangular lamina as shown in the diagram below.



A force of 15 N acts on the lamina between A and D at an angle of  $45^\circ$  to the vertical.

- Find the moment of the 15 N about D.
- Find the moment of the 15 N force about A.