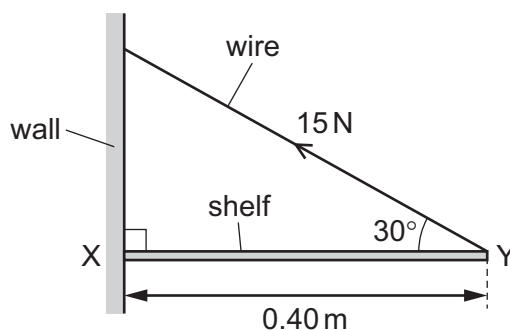


- 12** A shelf XY is 0.40 m long and is attached to a wall at end X.

It is kept horizontal by a wire attached to Y and to the wall, as shown.



The tension force in the wire is 15 N at an angle of 30° to the horizontal.

What is the moment of this force about point X?

- A** 3.0 Nm      **B** 5.2 Nm      **C** 6.9 Nm      **D** 12 Nm
- 13** A statement about the principle of moments with some words omitted is shown.
- ‘For an object in a state of rotational equilibrium, the sum of the clockwise moments about any point is equal to the sum of the anticlockwise moments about .....’
- Which words correctly complete the statement?
- A** any point  
**B** the centre of gravity of the object  
**C** the pivot  
**D** the same point
- 14** A bird dives to a depth of 1.50 m below the surface of a lake. Atmospheric pressure is 101 kPa. The density of water is  $1000 \text{ kg m}^{-3}$ .
- What is the pressure at this depth?
- A** 14.7 kPa      **B** 86.3 kPa      **C** 103 kPa      **D** 116 kPa
- 15** Which statement about energy is **not** correct?
- A** Energy is never lost but it may be transferred between different forms.  
**B** In an inelastic collision, the total energy is constant.  
**C** The efficiency of a system is the ratio of the useful energy output to the total energy input.  
**D** When a machine does work, friction reduces the total energy.