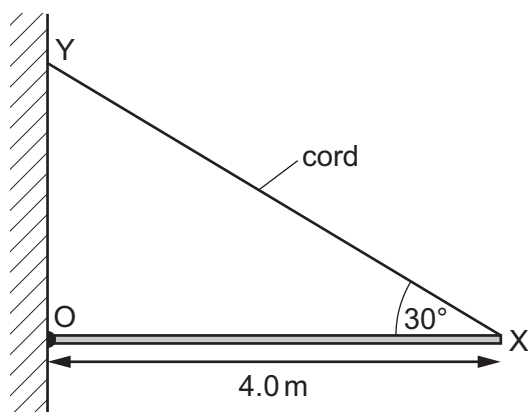
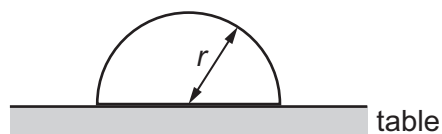


- 13 A uniform horizontal beam OX, 4.0 m long and weighing 100 N, is hinged at a wall at point O. It is supported by a cord XY which is attached to the wall at Y.



What is the tension in the cord?

- A** 50 N      **B** 58 N      **C** 86 N      **D** 100 N
- 14 An object shaped as a hemisphere rests with its flat surface on a table. The object has radius  $r$  and density  $\rho$ .



The volume of a sphere is  $\frac{4}{3}\pi r^3$ .

Which average pressure does the object exert on the table?

- A**  $\frac{1}{3}\rho r^2$       **B**  $\frac{1}{3}\rho r^2 g$       **C**  $\frac{2}{3}\rho r$       **D**  $\frac{2}{3}\rho r g$
- 15 Which statement best represents the principle of conservation of energy?
- A** Energy cannot be used faster than it is created.  
**B** The supply of energy is limited, so energy must be conserved.  
**C** The total energy in a closed system is constant.  
**D** The total energy input to a system is equal to the useful energy output.
- 16 A crane is being used to lift containers off a ship. One container has a mass of 14 000 kg and is being lifted vertically with a speed of  $3.2 \text{ m s}^{-1}$ .

The electric motor being used to supply the power to lift the container is using a current of 240 A at a potential difference of 2200 V.

What is the efficiency of the system?

- A** 8.1%      **B** 8.5%      **C** 48%      **D** 83%