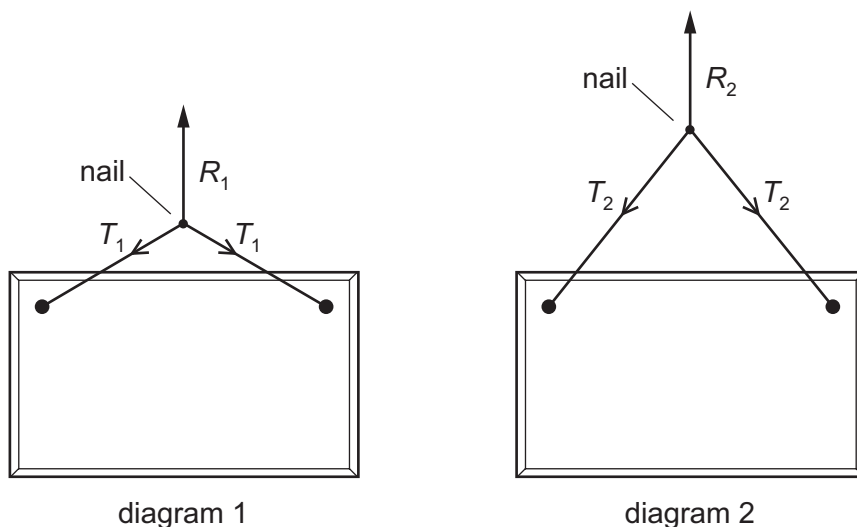


12 The diagrams show two ways of hanging the same picture.



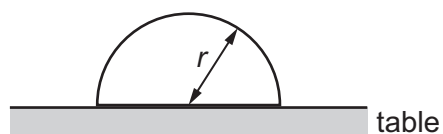
In both cases, a string is attached to the same points on the picture and looped symmetrically over a nail in a wall. The forces shown are those that act on the nail.

In diagram 1, the string loop is shorter than in diagram 2.

Which information about the magnitude of the forces is correct?

- A  $R_1 = R_2$        $T_1 = T_2$
- B  $R_1 = R_2$        $T_1 > T_2$
- C  $R_1 > R_2$        $T_1 < T_2$
- D  $R_1 < R_2$        $T_1 = T_2$

13 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  $\frac{2}{3}\rho r g$