3 A rod PQ is attached at P to a vertical wall, as shown in Fig. 3.1.

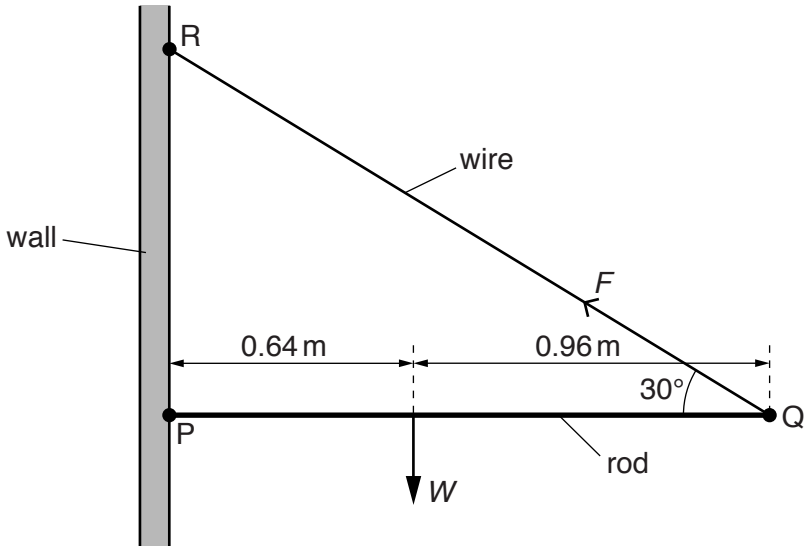

Fig. 3.1

The length of the rod is 1.60 m. The weight W of the rod acts 0.64 m from P. The rod is kept horizontal and in equilibrium by a wire attached to Q and to the wall at R. The wire provides a force F on the rod of 44 N at 30° to the horizontal.

(a) Determine

(i) the vertical component of F,

vertical component = ... N [1]

(ii) the horizontal component of F.

horizontal component = ... N [1]

(b) By taking moments about P, determine the weight W of the rod.

W = ... N [2]

(c) Explain why the wall must exert a force on the rod at P.

.....

.....

..... [1]

(d) On Fig. 3.1, draw an arrow to represent the force acting on the rod at P. Label your arrow with the letter S. [1]