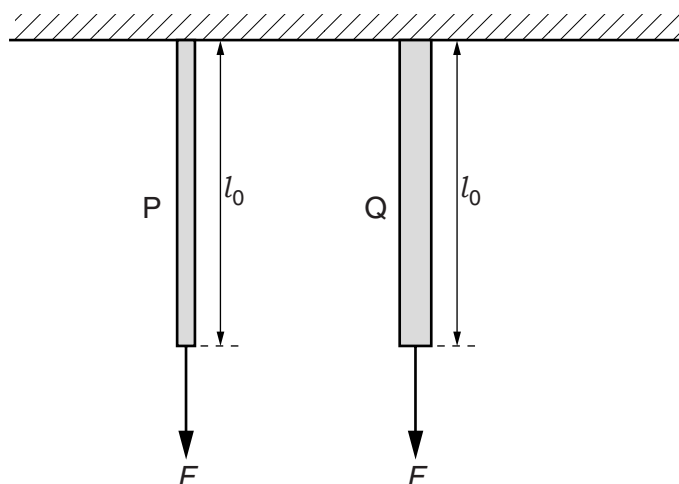


- 5 (a) Define the *Young modulus*.

.....  
 ..... [1]

- (b) Two wires P and Q of the same material and same original length  $l_0$  are fixed so that they hang vertically, as shown in Fig. 5.1.



**Fig. 5.1** (not to scale)

The diameter of P is  $d$  and the diameter of Q is  $2d$ . The same force  $F$  is applied to the lower end of each wire.

Show your working and determine the ratio

- (i)  $\frac{\text{stress in P}}{\text{stress in Q}}$ ,

ratio = ..... [2]

- (ii)  $\frac{\text{strain in P}}{\text{strain in Q}}$ .

ratio = ..... [2]