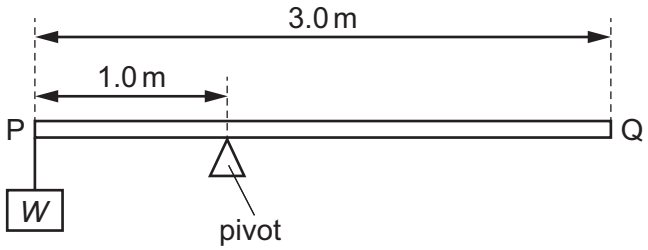
13 The diagram shows a uniform beam PQ. The length of the beam is 3.0 m and its weight is 50 N. The beam is supported on a pivot 1.0 m from end P. A load of weight *W* is hung from end P. The beam is in equilibrium.



What is the value of *W*?

A 25 N **B** 50 N **C** 75 N **D** 100 N

14 In a high-wire circus act, a man of mass 85 kg is standing at rest at the midpoint of the wire.

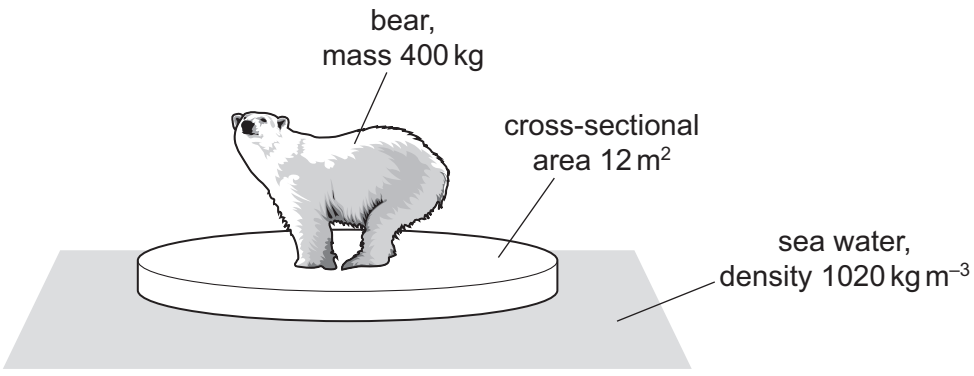
The wire on either side of the man is at an angle of 20° to the horizontal.

What is the tension *T* in the wire?

A 0.44 kN **B** 0.89 kN **C** 1.2 kN **D** 2.4 kN

15 A cylindrical block of ice of cross-sectional area 12 m^2 is floating, partially submerged, in the sea.

The density of the sea water is 1020 kg m^{-3}. A polar bear of mass 400 kg steps onto the block of ice.



The block of ice sinks a vertical distance *d*.

What is the value of *d*?

A 3.3 mm **B** 3.3 cm **C** 0.32 m **D** 3.1 m