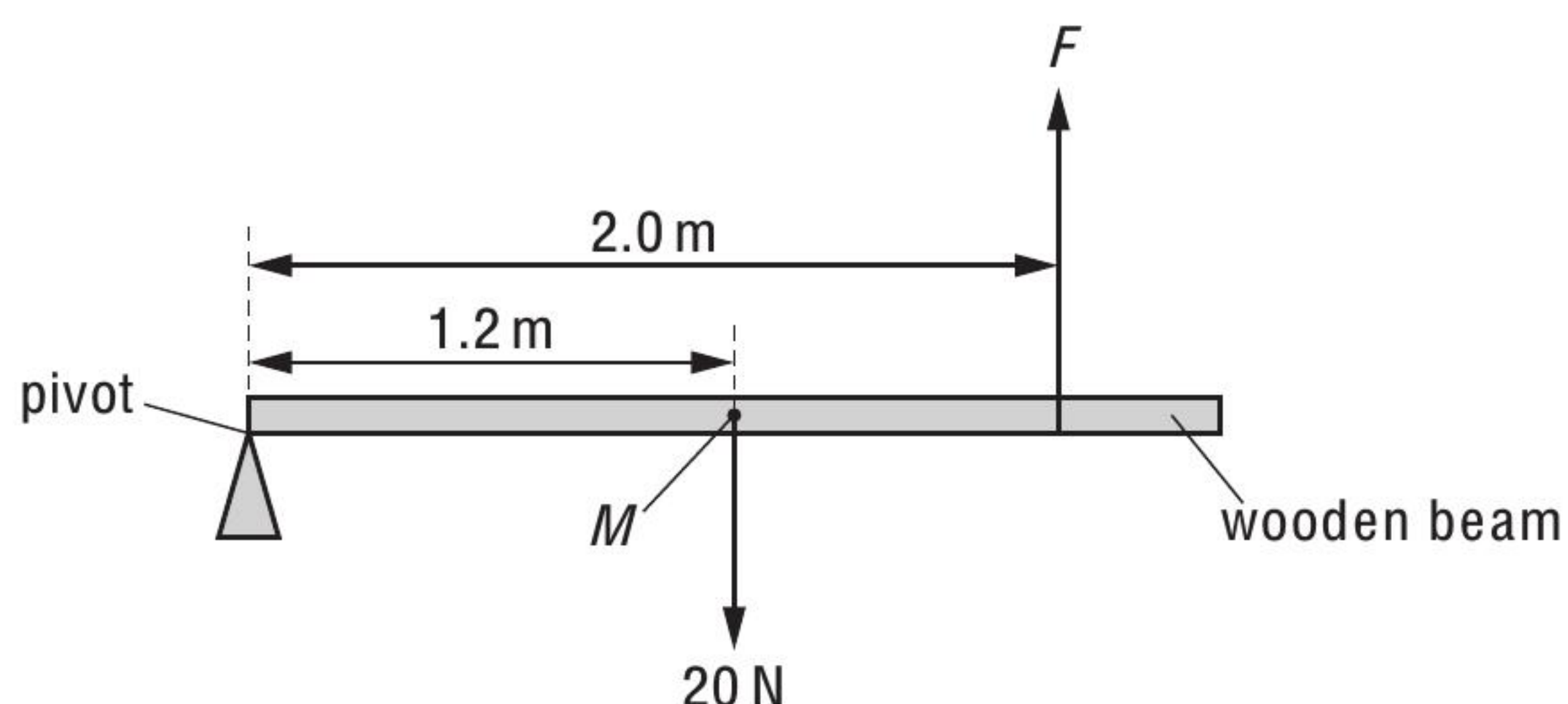**8.** The diagram shows a wooden beam of weight 20 N. The centre of mass of the beam is labelled *M*.

There is a pivot at one end of the beam. The beam is kept horizontal by an upward force, *F*.

What is the magnitude of *F*?

A 12 N **B** 20 N **C** 30 N **D** 33 N

9. A ball of mass 2.0 kg is travelling at a speed of 12 m/s. It moves towards an object of mass 3.0 kg which is at rest.

The ball hits the object and sticks to it.

Which row gives the total momentum, and the speed of both objects immediately after the collision?

	total momentum kg m/s	speed m/s
A	0	4.8
B	0	8.0
C	24	4.8
D	24	8.0