

## QUESTION

Figure 1 shows a rectangular frame with a diagonal member. The frame is subjected to a uniformly distributed load of  $10 \text{ kN/m}$  acting vertically downwards on the top horizontal member. The frame is supported by a pin support at the bottom left corner and a roller support at the bottom right corner. The dimensions of the frame are  $4 \text{ m}$  by  $3 \text{ m}$ . The diagonal member is a circular rod with a diameter of  $20 \text{ mm}$ . The frame is made of a material with a yield stress of  $250 \text{ MPa}$ . Determine the maximum bending moment in the frame.

Figure 1: Rectangular frame with diagonal member.



ANSWER

The maximum bending moment in the frame is  $12 \text{ kNm}$ .

Figure 1: Rectangular frame with diagonal member.