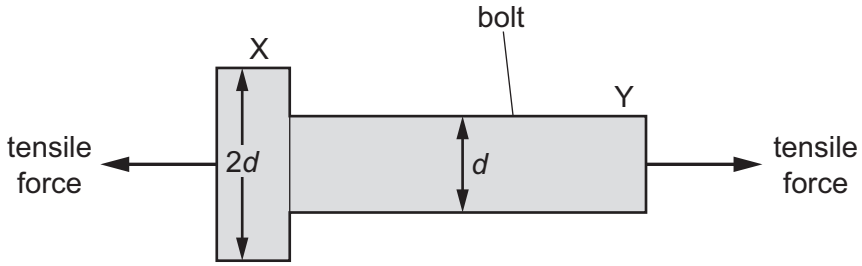
20 A bolt is subjected to a tensile force, as shown.



The bolt has a circular cross-section. At end X the diameter is $2d$. At end Y the diameter is d.

What is the ratio $\frac{\text{stress at Y}}{\text{stress at X}}$?

A 0.25 **B** 0.50 **C** 2.0 **D** 4.0

21 A rectangular block of steel supporting a very large component of a bridge has a height of 15 cm and a cross-section of 20 cm × 12 cm. It is designed to compress 1 mm when under maximum, evenly distributed, load.

The Young modulus of steel is $2.0 \times 10^{11}\,\text{N m}^{-2}$.

What is the maximum load it can support?

A 32 MN **B** 56 GN **C** 720 GN **D** 32 TN