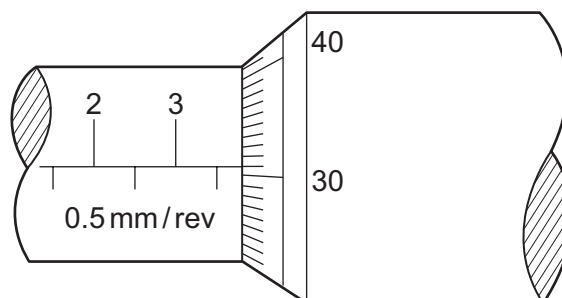


- 4 The diameter of a cylindrical metal rod is measured using a micrometer screw gauge.

The diagram below shows an enlargement of the scale on the micrometer screw gauge when taking the measurement.



What is the cross-sectional area of the rod?

- A** 3.81 mm^2 **B** 11.4 mm^2 **C** 22.8 mm^2 **D** 45.6 mm^2
- 5 A mass is dropped from rest, and falls through a distance of 2.0 m in a vacuum. An observer records the time taken for the mass to fall through this distance using a manually operated stopwatch and repeats the measurements a further two times. The average result of these measured times, displayed in the table below, was used to determine a value for the acceleration of free fall. This was calculated to be 9.8 m s^{-2} .

	first measurement	second measurement	third measurement	average
time / s	0.6	0.73	0.59	0.64

Which statement best relates to the experiment?

- A** The measurements are precise and accurate with no evidence of random errors.
- B** The measurements are not accurate and not always recorded to the degree of precision of the measuring device but the calculated experimental result is accurate.
- C** The measurements are not always recorded to the degree of precision of the measuring device but are accurate. Systematic errors may be present.
- D** The range of results shows that there were random errors made but the calculated value is correct so the experiment was successful.

Space for working