6 A single sheet of aluminium foil is folded twice to produce a stack of four sheets. The total thickness of the stack of sheets is measured to be (0.80 ± 0.02) mm. This measurement is made using a digital caliper with a zero error of (−0.20 ± 0.02) mm.

What is the percentage uncertainty in the calculated thickness of a single sheet?

A 1.0% **B** 2.0% **C** 4.0% **D** 6.7%

7 In an experiment to determine the acceleration of free fall *g*, a ball bearing is held by an electromagnet. When the current to the electromagnet is switched off, a clock starts and the ball bearing falls. After falling a distance *h*, the ball bearing strikes a switch to stop the clock which measures the time *t* of the fall.

If systematic errors cause *t* and *h* to be measured incorrectly, which error **must** cause *g* to appear greater than 9.81 m s^{-2}?

A *h* measured as being **smaller** than it actually is and *t* is measured correctly

B *h* measured as being **smaller** than it actually is and *t* measured as being **larger** than it actually is

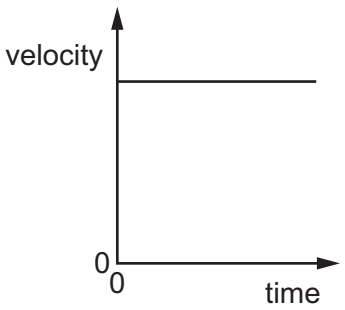
C *h* measured as being **larger** than it actually is and *t* measured as being **larger** than it actually is

D *h* is measured correctly and *t* measured as being **smaller** than it actually is

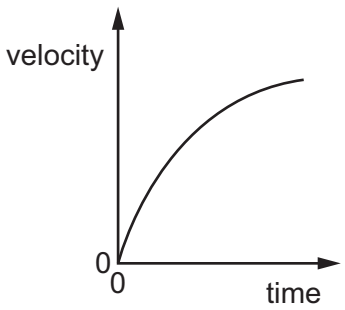
8 A stone is thrown horizontally from the top of a cliff. Air resistance is negligible.

Which graph shows the variation with time of the vertical component of the stone's velocity?

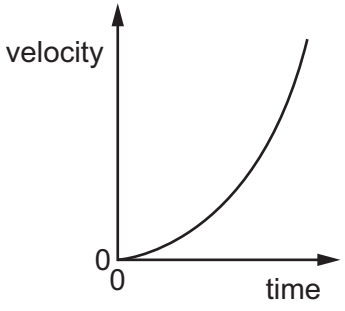
A



B



C



D