**Vertical Motion Under Gravity**

The downwards acceleration under gravity is ms-2.

ALWAYS state the positive direction in your calculations.

Quote final answers to 2 or 3 s.f. – you may be penalised if you quote more.

**Example**

A ball is thrown vertically upwards with a velocity of 14.7ms-1 from a platform 19.6m above the ground. Find:

a) The time taken for the ball to reach the ground

b) The velocity of the ball when it hits the ground

**Example**

A ball is projected vertically upwards from ground level at a speed of 20 ms-1.

Determine the amount of time the ball is at least 10m above ground level.

**Example – When Two Particles are in Motion**

Two stones are thrown from the same point at the same time - one vertically upwards with speed 30ms-1 and one vertically downwards at 30ms-1. Find how far apart the stones are after 3 seconds.

**Test Your Understanding** *(EdExcel M1 May 2013 (R) Q4)*

Exercise 9E Page 151

Mixed Exercise 9 Page 152