5. This problem differs from the first one in that it has a non-zero value for the initial velocity. We use the same equation as was used in the first problem with a positive value for the initial velocity because the rock was initially thrown upward.

$$v = v_o + a\,t$$

$$v = 5 \text{ m/s} + (-9.8 \text{ m/s})(2 \text{ s})$$

$$v = 5 \text{ m/s} - 19.6 \text{ m/s} = -14.6 \text{ m/s}$$

Note the negative sign indicating that the velocity is downward at time 2 seconds after launching. The initial velocity was in the positive, upward direction, but the object was in the air long enough to reach the peak of its travel and to start moving downward. To check your understanding you might repeat this problem using an initial velocity of 25 m/s to obtain a velocity at two seconds of + 5.4 m/s or 5.4 m/s upward.