62. We neglect air resistance, which justifies setting $a = -g = -9.8$ m/s^2 (taking *down* as the $-y$ direction) for the duration of the stone's motion. We are allowed to use Table 2-1 (with Δx replaced by y) because the ball has constant acceleration motion (and we choose $y_o = 0$).

(a) We apply Eq. 2-16 to both measurements, with SI units understood.

$$\begin{aligned} v_B^2 = v_0^2 - 2gy_B \quad &\Longrightarrow \quad \left(\frac{1}{2}v\right)^2 + 2g(y_A + 3) = v_0^2 \\ v_A^2 = v_0^2 - 2gy_A \quad &\Longrightarrow \quad v^2 + 2gy_A = v_0^2 \end{aligned}$$

We equate the two expressions that each equal v_0^2 and obtain

$$\frac{1}{4}v^2 + 2gy_A + 2g(3) = v^2 + 2gy_A \quad \Longrightarrow \quad 2g(3) = \frac{3}{4}v^2$$

which yields $v = \sqrt{2g(4)} = 8.85$ m/s.

(b) An object moving upward at A with speed $v = 8.85$ m/s will reach a maximum height $y - y_A = v^2/2g = 4.00$ m above point A (this is again a consequence of Eq. 2-16, now with the "final" velocity set to zero to indicate the highest point). Thus, the top of its motion is 1.00 m above point B.