

29. Assuming constant acceleration permits the use of the equations in Table 2-1. We solve $v^2 = v_0^2 + 2a(x - x_0)$ with $x_0 = 0$ and $x = 0.010$ m. Thus,

$$a = \frac{v^2 - v_0^2}{2x} = \frac{(5.7 \times 10^5)^2 - (1.5 \times 10^5)^2}{2(0.01)} = 1.62 \times 10^{15} \text{ m/s}^2 .$$