

8. We equate  $E_F$  with  $\frac{1}{2}m_e v_F^2$  and write our expressions in such a way that we can make use of the electron  $mc^2$  value found in Table 38-3:

$$v_F = \sqrt{\frac{2E_F}{m}} = c\sqrt{\frac{2E_F}{mc^2}} = (3.0 \times 10^5 \text{ km/s})\sqrt{\frac{2(7.0 \text{ eV})}{5.11 \times 10^5 \text{ eV}}} = 1.6 \times 10^3 \text{ km/s} .$$