18.40. **Visualize:** Please refer to Figure P18.40 in the textbook.
Solve: **(a)** The most probable speed is 4 m/s.
(b) The average speed is

$$v_{\text{avg}} = \frac{2\times 2\text{ m/s} + 4\times 4\text{ m/s} + 3\times 6\text{ m/s} + 1\times 8\text{ m/s}}{2+4+3+1} = 4.6\text{ m/s}$$

(c) The root-mean-square speed is

$$v_{\text{rms}} = \sqrt{\frac{2\times(2\text{ m/s})^2 + 4\times(4\text{ m/s})^2 + 3\times(6\text{ m/s})^2 + 1\times(8\text{ m/s})^2}{2+4+3+1}} = 4.94\text{ m/s}$$