75. (a) Comparing with Eq. 16-3, we see $\omega = 10$ rad/s in this problem. Thus, $f = \omega/2\pi = 1.6$ Hz.

(b) Since $v_m = \omega x_m$ and $x_m = 10$ cm (see Eq. 16-3), then $v_m = (10\,\text{rad/s})(10\,\text{cm}) = 100$ cm/s or 1.0 m/s.

(c) Since $a_m = \omega^2 x_m$ then $v_m = (10\,\text{rad/s})^2(10\,\text{cm}) = 1000$ cm/s^2 or 10 m/s^2.

(d) The acceleration extremes occur at the displacement extremes: $x = \pm x_m$ or $x = \pm 10$ cm.

(e) Using Eq. 16-12, we find

$$\omega = \sqrt{\frac{k}{m}} \implies k = (0.10\,\text{kg})(10\,\text{rad/s})^2 = 10\ \text{N/m}\ .$$

Thus, Hooke's law gives $F = -kx = -10x$ in SI units.