Q9

y-direction:

$v_f^2 - v_i^2 = 2a \cdot \Delta y$

$v_f^2 - 0 = 2g \cdot \Delta y$

$v_f = \sqrt{2g\Delta y}$

$\Delta y = \frac{1}{2}(v_i + v_f)t$

$\Delta y = \frac{1}{2} v_f t$

$t = \frac{\frac{1}{2}v_f}{\Delta y} = \frac{\frac{1}{2}\sqrt{2g\Delta y}}{\Delta y}$

$t =$

x-direction:

$\Delta x = v t$

$v = \frac{\Delta x}{t}$

$v =$

Energy

$\frac{1}{2}kx^2 + mgh = \frac{1}{2}mv^2$