$$2kx - 2kl_0 - 36kl_0 + 8kx + 6kx - 21kl_0 = m\ddot{x}$$

$$16kx - 59kl_0 = m\ddot{x}$$

$$x = A + B\cos\left(4\sqrt{\frac{k}{m}}\,t\right) + C\sin\left(4\sqrt{\frac{k}{m}}\,t\right)$$

$$= \frac{59}{16}l_0 + B\cos\left(4\sqrt{\frac{k}{m}}\,t\right) + C\sin\left(4\sqrt{\frac{k}{m}}\,t\right)$$

$$\frac{+7l_0}{2} = \frac{59l_0}{16} + B \qquad \left(t=0 \quad x = -\frac{7l_0}{2}\right)$$

$$B = \frac{-3l_0}{16}$$

$$t=0, \dot{x}=0 \Rightarrow C=0$$

$$x = \frac{59}{16}l_0 - \frac{3l_0}{16}\cos\left(4\sqrt{\frac{k}{m}}\,t\right)$$

g) $T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{m}{k}}$

$$\text{Amplitude} = \frac{3l_0}{16}$$