

C14 CQ (6, 7, 8, 9)

$$\textcircled{6} \quad \frac{1}{2} k A^2 = \frac{1}{2} m (v_{\max})^2$$
$$U_{\text{sp, max}} = K_{\max}$$

The maximum spring potential energy (occurs at $\Delta x = \text{Amplitude}$) is equal to the maximum kinetic energy. Conservation of Energy.

- $\textcircled{7}$
- a) 20 cm
 - b) 14 cm & 26 cm
 - c) 7 J
 - d) ~ 12 cm & 28 cm
(14 J)

$$\textcircled{8} \quad \frac{1}{2} k A^2 = U_{\text{sp, max}} = E_{\text{Total}}$$

$$\sqrt{2} A \quad (\sqrt{2})(20 \text{ cm})$$
$$\underline{28.3 \text{ cm}}$$

$$\frac{1}{2} k (\sqrt{2} A)^2 = 2 E_{\text{Total}}$$

$$\textcircled{9} \quad \frac{1}{2} m (v_{\max})^2 = K_{\max} = E_{\text{Total}}$$

$$\sqrt{2} (20 \text{ cm/s})$$
$$\underline{28.3 \text{ cm/s}}$$

$$\frac{1}{2} m (\sqrt{2} v_{\max})^2 = 2 K_{\max} = 2 E_{\text{Total}}$$

~~Handwritten scribble~~

(18, 0) (0, 18)

(2) $\frac{1}{2} \times 18 \times 18 = 162$

Area of square = side \times side
= $18 \times 18 = 324$
Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height}$
= $\frac{1}{2} \times 18 \times 18 = 162$

(3) $\frac{1}{2} \times 18 \times 18 = 162$
Area of square = $18 \times 18 = 324$
Area of triangle = 162

(4) $\frac{1}{2} \times 18 \times 18 = 162$
Area of square = $18 \times 18 = 324$
Area of triangle = 162

Area of square = $18 \times 18 = 324$

(5) $\frac{1}{2} \times 18 \times 18 = 162$

Area of square = $18 \times 18 = 324$

Area of triangle = 162

