$$Q = mC\Delta T$$

$C \rightarrow 4.186 \frac{J}{g \cdot °C}$

$T_R = 24°C$

- Q → Energy in (J)
- m → Mass (kg)
- C → Specific Heat
- ΔT → (°C)

~~K~~Wh = 3,600 J

$1{,}000\ \frac{J}{s} \cdot 3600\ s$ 1 KWh = 3.6 MJ

$$\frac{3{,}600{,}000\ J}{\$0.25} = \frac{38{,}000\ J}{x}$$

$3{,}600{,}000x = 9500$

$x = \$0.0026$

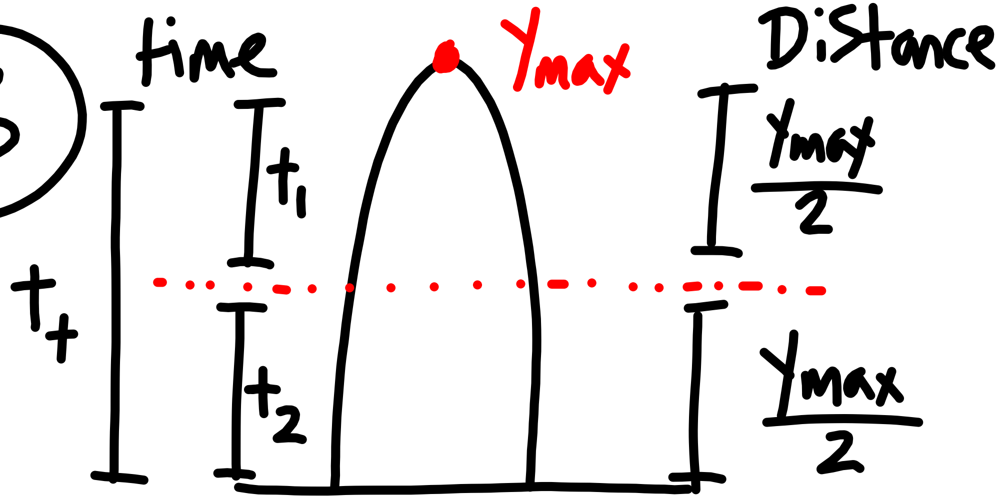
Coffee Grinder

$$125\,W = 125\,\frac{J}{s} \times 10\,s = 1{,}250\,J$$

$$\frac{3{,}600{,}000\,J}{\$0.25} = \frac{1{,}250\,J}{x}$$

$$x = \$0.000087$$

(3)



$\rightarrow t_2 = t_t - t_1$

$$d = v_i t + \frac{1}{2}at^2$$

We want

$$\frac{2t_1}{t_2}$$

$$d = v_i t^{0} + \frac{1}{2}at^2$$

$$d = \frac{1}{2}at^2$$

$$\left(\frac{y_{max}}{2} = \frac{1}{2}gt_1^2\right)2$$

$$y_{max} = gt_1^2$$

$$\sqrt{\frac{y_{max}}{g}} = t_1$$

$$d = v_i t^{\,0} + \frac{1}{2}at^2$$

$$d = \frac{1}{2}at^2$$

$$y_{max} = \frac{1}{2}g t_t^2$$

$$\sqrt{\frac{2y_{max}}{g}} = t_t$$

$$\frac{2t_1}{t_2} = \frac{2t_1}{t_t - t_1} = \frac{2\sqrt{\frac{y_{max}}{g}}}{\sqrt{\frac{2y_{max}}{g}} - \sqrt{\frac{y_{max}}{g}}}$$

$$\sqrt{2}\sqrt{\frac{y_{max}}{g}} - 1$$

$$\frac{2}{\sqrt{2}-1} = 4.83$$