

3QExtension - Quiz on Quantitative Energy Analysis of Bungee Jump

Learning Target

Name: _____

Period:

Date: _____

$$E_{\text{Total before}} = E_g + E_k + E_e = E_{\text{Total after}}$$

$$E_g = mgh$$

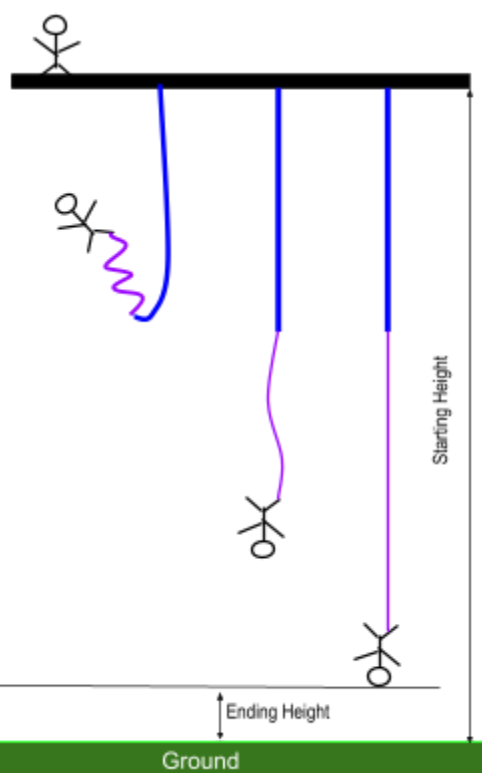
$$E_k = \frac{1}{2}mv^2$$

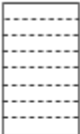
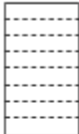
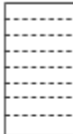
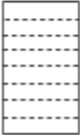
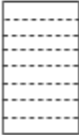
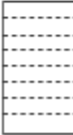
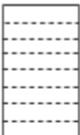
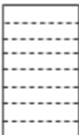
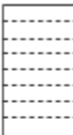
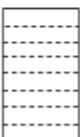
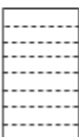
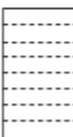
$$E_e = \frac{1}{2}kd^2$$

$$g = 10 \text{ m/s}^2$$

1. A jumper with a mass of 0.2 kg is on top of a 4-meter tall platform. The bungee cord has a spring constant of $k = 3 \text{ N/m}$.

- Fill in the bar charts below.
- Calculate the E_g at each point.
- Determine the E_k and E_e at each point.



System Component:	<u>Jumper</u>	<u>Bungee Cord</u>	<u>Total System</u>
Position 1: (4 m)			
	E_g E_k	E_c	E_{Total}
Position 2: (3 m)			
	E_g E_k	E_c	E_{Total}
Position 3: (2 m)			
	E_g E_k	E_c	E_{Total}
Position 4: (1 m)			
	E_g E_k	E_c	E_{Total}

Eg =

 $E_k =$ $E_e =$
$$\overline{Eg} =$$
$$E_k =$$
$$E_e =$$
$$\overline{Eg} =$$
$$E_k =$$
$$E_e =$$

stretch = 1 m

$$\overline{E_g} =$$
$$E_k =$$
$$E_e =$$

2. Determine the stretch at Position 4 (ending height) and clearly communicate your calculations: