



## Hooke's Law Problems

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Take  $g = 9,8 \text{ m/s}^2$

(don't forget Weight (force) = mass  $\times$  g)

1. Under a load of 13.2-kg mass is, the spring stretches 5.93 cm. Find the force constant of the spring. ( $k = 2181 \text{ N/m}$ )

2. A vertical spring stretches 10 cm under a load of 200 g.

a. Determine the spring constant.

b. How much mass is required to stretch the first 5 cm.

3. If a spring has a spring constant of  $400 \text{ N/m}$ , how much mass is required to compress the spring 25.0 cm from its undisturbed position?



***Answer to Hooke's law Problem***

1. From Hooke's Law:  $F = k \Delta x$

The force on the spring is the weight of the object,  $13.2 \times 9.8 = 129 \text{ N}$

$\Delta x = 5.93 \text{ cm} = 0.0593 \text{ m}$

$129 \text{ N} = k (0.0593 \text{ m})$

**$k = 2181 \text{ N/m}$**