A uniform spring of force k is connected into two pieces of length in ratio 1:2 .What is the force constant of each piece in terms of k?

Solution:

Force constant is inversely proportional to the length of the spring (L_1 - length of the smaller part of the spring, L_1 - length of the bigger part of the spring):

$$k_1 = k\frac{L}{L_1} = k\frac{L}{\frac{1}{3}L} = 3k$$

$$k_2 = k\frac{L}{L_2} = k\frac{L}{\frac{2}{3}L} = 1.5k$$

Answer: Force constant of the part $\frac{1}{3}L$ (smaller part) is 3k, force constant of the part $\frac{2}{3}L$ (bigger part) is 1.5k