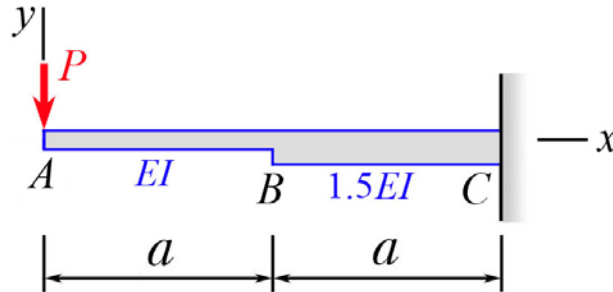
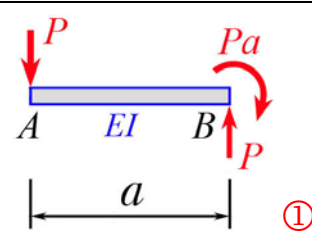
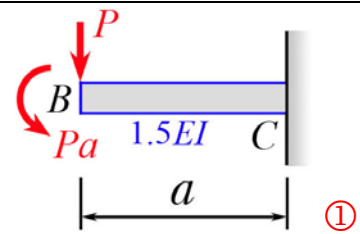


MEEG 3013 Quiz #9.m25.102

The segments AB and BC of the stepped beam shown has flexural rigidities EI and $1.5EI$, respectively. Using *method of model formulas*, determine the slope θ_A and deflection y_A at A .



<p>Segment AB:  ①</p>	<p>Segment BC:  ①</p>
<p>Eq. (3): $\theta_B = \theta_A - \frac{Pa^2}{2EI}$ ①</p>	<p>Eq. (3): $0 = \theta_B - \frac{Pa^2}{2(1.5EI)} - \frac{Pa(a)}{1.5EI}$ ①</p>
<p>Eq. (4):</p>	<p>Eq. (4):</p>
<p>$y_B = y_A + \theta_A a - \frac{Pa^3}{6EI}$ ①</p>	<p>$0 = y_B + \theta_B a - \frac{Pa^3}{6(1.5EI)} - \frac{Pa(a^2)}{2(1.5EI)}$ ①</p>

Solving the above four equations, we get

$$\theta_B = \frac{Pa^2}{EI} \quad \text{①}$$

$$y_B = -\frac{5Pa^3}{9EI} \quad \text{①}$$

$$\theta_A = \frac{3Pa^2}{2EI} \quad \text{①}$$

$$y_A = -\frac{17Pa^3}{9EI} \quad \text{①}$$