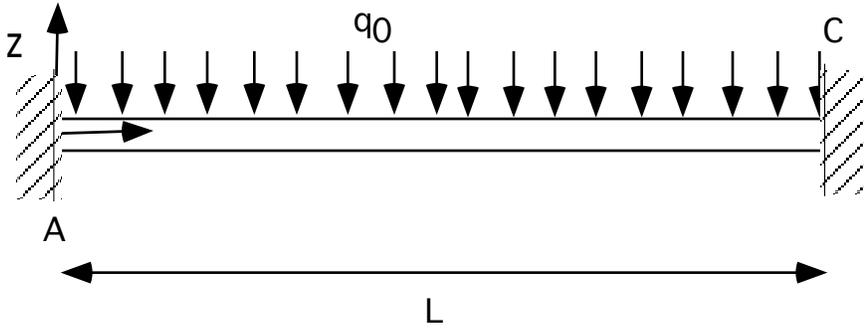
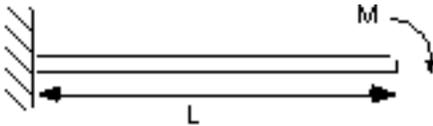
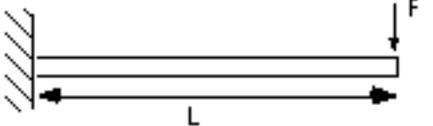
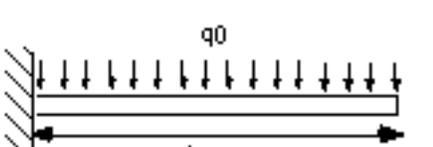
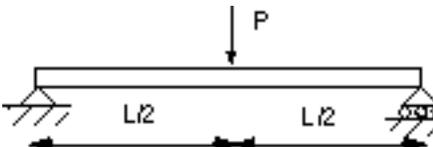
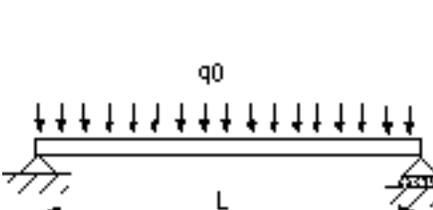


**Problem M9**

A beam of length  $L$  and flexural rigidity  $EI$  is clamped at each end. The beam has a continuous load of magnitude  $q_0$  applied along the beam. Using the “standard solutions” below, or by other means, solve for the reactions at A and C.



**Standard solutions for deflections of beams under commonly encountered loading**

| Configuration   | End slope<br>$dw/dx (x=L)$ | End deflection,<br>$w(L)$ | Central deflection,<br>$w(L/2)$ |
|---|----------------------------|---------------------------|---------------------------------|
|   | $\frac{ML}{EI}$            | $\frac{ML^2}{2EI}$        |                                 |
|  | $\frac{PL^2}{2EI}$         | $\frac{PL^3}{3EI}$        |                                 |
|  | $\frac{q_0L^3}{6EI}$       | $\frac{q_0L^4}{8EI}$      |                                 |
|  | $\frac{PL^2}{16EI}$        |                           | $\frac{PL^3}{48EI}$             |
|  | $\frac{q_0L^3}{24EI}$      |                           | $\frac{q_0L^4}{384EI}$          |