

### EXAMPLE:

Plastic beam 200mm long.  $\rightarrow$  L

Simply supported at each end.

Point load,  $W$ , at centre span.

Same material as previous example.

If max. permissible strain in material is 1%  
what is the largest load that can be applied  
such that beam deflection,  $\delta$ , does not exceed  
5mm within 20000 hrs of use?

$$\delta = \frac{WL^3}{48EI}$$

$\rightarrow 2800 \text{ mm}^4$