A man of mass $m = 50\text{kg}$ carries a bag of weight $W_b = 40\text{N}$ on his shoulder. The force with which the floor pushes up his feet will be.

Solution:

The force with which the floor pushes up his feet is equal to the sum of the man's and bag's weights. Since the man's weight is given by $W_m = mg$ (where $g = 10\frac{\text{m}}{\text{s}^2}$ – is the acceleration due to gravity), we obtain that the force with which the floor pushes is

$$F = W_b + W_m = W_b + mg = 40\text{N} + 50\text{kg} \cdot 10\frac{\text{m}}{\text{s}^2} = 540\text{N}$$

Answer: 540N.