

a) find g on the sun's surface

$$F = ma = \frac{GMm}{r^2} \rightarrow a = \frac{GM}{r^2} = g_{\text{sun}}$$

$$g_{\text{sun}} = \frac{(6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2)(1.99 \times 10^{30} \text{ kg})}{\left(\frac{1.39 \times 10^9 \text{ m}}{2}\right)^2}$$

(From
Appendix
D)

$$g_{\text{sun}} = \frac{\cancel{68.7 \text{ m/s}^2}}{275 \text{ m/s}^2}$$

$1.39 \times 10^9 \text{ m}$
is a diameter

b) By factor would your weight increase?

$$\frac{g_{\text{sun}}}{g_{\text{earth}}} = \frac{\cancel{68.7 \text{ m/s}^2}}{9.8 \text{ m/s}^2} = \boxed{\cancel{7.0}} \boxed{28 \times}$$