

Age & weight on other planets

Age: 14

Weight: 120 lbs

$$P^2 = a^3 \rightarrow P = \sqrt[3]{a^3}$$

find Age

$$P = \sqrt[3]{\text{orbital Radius number goes here}}$$

then square it

The reciprocal

$\frac{1}{x}$ of ~~your age~~ Planet

$$P = \sqrt{\quad}$$

$$\frac{1}{\quad} =$$

Times (14) your age

$$P = \underline{\quad} \text{ yrs}$$

$$=$$

years old

Planet period

find weight

$$\frac{120 \text{ lbs}}{1} \times \frac{0.455 \text{ Kg}}{1 \text{ lbs}} = 54.6 \text{ Kg}$$

$$F = ?$$

$$F = G \left(\frac{M_1 M_2}{r^2} \right)$$

$$G = 6.6726 \times 10^{-11} \frac{\text{m}^3}{\text{Kg} \cdot \text{Sec}^2}$$

$$M_1 = \text{your weight } 54.6 \text{ Kg}$$

$$= \left(6.6726 \times 10^{-11} \frac{\text{m}^3}{\text{Kg} \cdot \text{s}^2} \right) \left(\frac{(54.6 \text{ Kg}) (\text{Planet mass})}{(\text{Planetary Radius})^2} \right)$$

$M_2 =$ mass of Planet see table

convert to meters by adding 3 zeros

$r^2 =$ radius of Planet squared
* must be in meters!

$$= \left(6.6726 \times 10^{-11} \frac{\text{m}^3}{\text{Kg} \cdot \text{s}^2} \right) \left(\frac{(54.6 \text{ Kg}) \left(\frac{\quad \times 10^{24}}{\quad} \right)}{\left(\quad \text{m} \right)^2} \right)$$

$$= \left(6.6726 \times 10^{-11} \right) \left(\frac{(54.6 \text{ Kg}) \left(\frac{\quad \times 10^{24}}{\quad} \right)}{\left(\frac{\quad \times 10 \text{ m}^2}{\quad} \right)} \right)$$

Multiply the top 2 then divide

$$= \left(6.6726 \times 10^{-11} \frac{\text{m}^3}{\text{Kg} \cdot \text{s}^2} \right) \left(\quad \times 10 \frac{\text{Kg}^2}{\text{m}^2} \right)$$

Multiply them together

$$F = \frac{\text{Kg} \cdot \text{m}}{\text{sec}^2} \Rightarrow \text{Newton}$$