

CP - Jan 5.

CLT Go over gravitational Problems to explore what affects gravitational force.

1.

$W = 500 \text{ N}$   
 $m = \frac{500 \text{ N}}{9.8} = 51.02 \text{ kg}$   
 $G = 6.67 \times 10^{-11} \frac{\text{N m}^2}{\text{kg}^2}$   
 $F = \frac{G m_1 m_2}{d^2} = \frac{(6.67 \times 10^{-11}) (51.02 \text{ kg}) (30 \text{ kg})}{(1 \text{ m})^2}$   
 $= 1.02 \times 10^{-7} \text{ N}$

2. Earth Student

$5.98 \times 10^{24} \text{ kg}$        $70 \text{ kg}$   
 $6.37 \times 10^6 \text{ m} = d$

$$F = \frac{G M_E m_2}{d^2}$$

$$= \frac{(6.67 \times 10^{-11}) (5.98 \times 10^{24}) (70 \text{ kg})}{(6.37 \times 10^6 \text{ m})^2} = \frac{2.79 \times 10^{16}}{(6.37 \times 10^6)^2}$$

$$= 687.58 \text{ N}$$

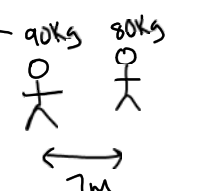
3.  $F = \frac{G m_1 m_2}{d^2}$

$$= \frac{(6.67 \times 10^{-11}) (5.98 \times 10^{24}) (70)}{(6.38 \times 10^6)^2} = \frac{2.79 \times 10^{16}}{(6.38 \times 10^6)^2}$$

$$= 685.42 \text{ N}$$

Extra

90kg    80kg     $F = ?$



$F = \frac{(6.67 \times 10^{-11}) (90\text{kg}) (80\text{kg})}{(0.7\text{m})^2} = \frac{4.8 \times 10^{-7} \text{N}}{(0.7\text{m})^2}$

$9.8 \times 10^{-7} \text{N}$

