Calculate the gravitational force between two masses of $m_1 = 455$ kg and $m_2 = 625$ kg, that are separated by $r = 0.150$ meters.

Solution:

The gravitation force

$$F = G\frac{m_1 m_2}{r^2}$$

$$= 6.67 \times 10^{-11} \frac{455 \times 625}{0.150^2}$$

$$= 0.843 \times 10^{-3} \text{ N} = 0.843 \text{ mN}.$$

Answers: 0.843 mN.