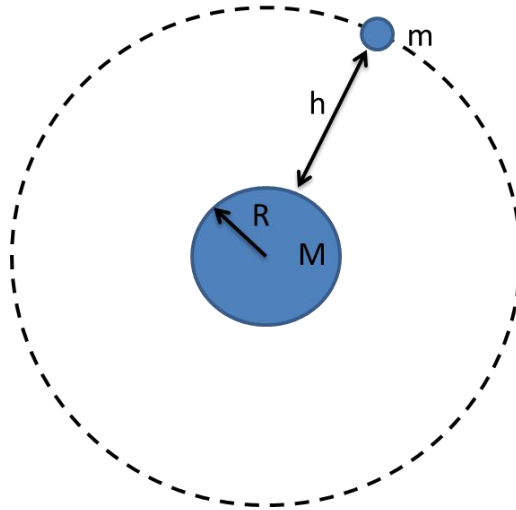


## Answer on Question #43410, Physics, Mechanics | Kinematics | Dynamics

With a mass of 560 kg, Anik A was placed in a geostationary orbit 35,800 km above the Earth's equator. What is Anik A's weight while in orbit?

**Solution.**



The relation for weight of object:

$$W = mg$$

Where  $g$  is gravitational acceleration. In the orbit force of gravitation is:

$$F_{grav} = \frac{GMm}{(R + h)^2} = mg = W$$

Where  $M$  is mass of Earth,  $m$  is mass of Anik A,  $R$  is radius of Earth.

So:

$$W = \frac{GMm}{(R + h)^2}$$

Numerically:

$$W = \frac{6.67 \cdot 10^{-11} \frac{m^3}{kg \cdot s^2} \cdot 5.97 \cdot 10^{24} kg \cdot 560 kg}{(6\,371\,000\,m + 35\,800\,000\,m)^2} \approx 126\,N$$

**Answer:** 126 N