1. Calculate the height above the Earth surface for a satellite with a speed of 7.55x10^3 m/s. Use values' on data sheet for your calculations and give your answer in meters?

$v = 7.55 \cdot 10^3 \frac{m}{s}$ $R = 6.37 \cdot 10^6\ m$ $h - ?$	*Solution.* The second Newtons' law for a satellite moving round the Earth: $m \cdot a = F\ ,$ (1) where the acceleration during a circular orbit is $a = \frac{v^2}{R+h}$ and the force of gravity is $F = G\frac{mM}{(R+h)^2}$ (M is the Earth's mass).

The force of gravity at the surface of the Earth is $mg = G\frac{mM}{R^2}$, so $GM = gR^2$.

The equation (1) becomes

$$m \cdot \frac{v^2}{R+h} = \frac{m}{(R+h)^2} \cdot gR^2.$$

One can find the height, at which satellite moves:

$$\boxed{h = \frac{gR^2}{v^2} - R}.$$

Let check the dimension: $[h] = \frac{\frac{m}{s^2} \cdot m^2}{\left(\frac{m}{s}\right)^2} - m = m$.

Let evaluate the quantity: $h = \frac{9.81 \cdot \left(6.37 \cdot 10^6\right)^2}{\left(7.55 \cdot 10^3\right)^2} - 6.37 \cdot 10^6 = 6.13 \cdot 10^5\,(m)$.

Answer: $6.13 \cdot 10^5\ m$.