

Falling Shuttle

(A) What is the acceleration due to gravity at the 300 km altitude (distance above the surface of the Earth) of the shuttle?

(B) How many pounds does a 170 pound astronaut weigh on the shuttle?

(C) How far does the space shuttle fall in one second?

(D) How fast is the space shuttle moving?

(E) How long does it take the shuttle to orbit the Earth once?

Data: $G = 6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2$, $M_{\text{Earth}} = 5.98 \times 10^{24} \text{ kg}$, $R_{\text{Earth}} = 6,370 \text{ km}$.