# #82834, Physics / Astronomy | Astrophysics

Question:

Imagine that it is possible to travel to each planet in our solar system. After a space "cruise," a tourist returns to Earth. One of the ways he recorded his travels was to weigh himself on each planet he visited. Use the list of these weights on each planet to figure out the order of the planets he visited. On Earth he weighs 720 newtons. List of weights: 655 N; 1,872 N; 792 N; 36 N; and 661 N.

Solution:

Actually the weight is the gravitation force, acting at a planet surface, therefore the weights ratio

equals to $\dfrac{w_p}{w_e} = \dfrac{M_p R_e^2}{M_e R_p^2} = \dfrac{g_p}{g_e}$ .

First ratio equals to 0.91, thus it's Venus , second – 2.6, it's Jupiter, third – 1.1, i.e. Neptune, fifth – 0.92, and this is Saturn. With regard the weight of 36 N – evidently a scales was invalid.

The answer:

The order is the following: Venus , Jupiter, Neptune,  ???, Saturn.