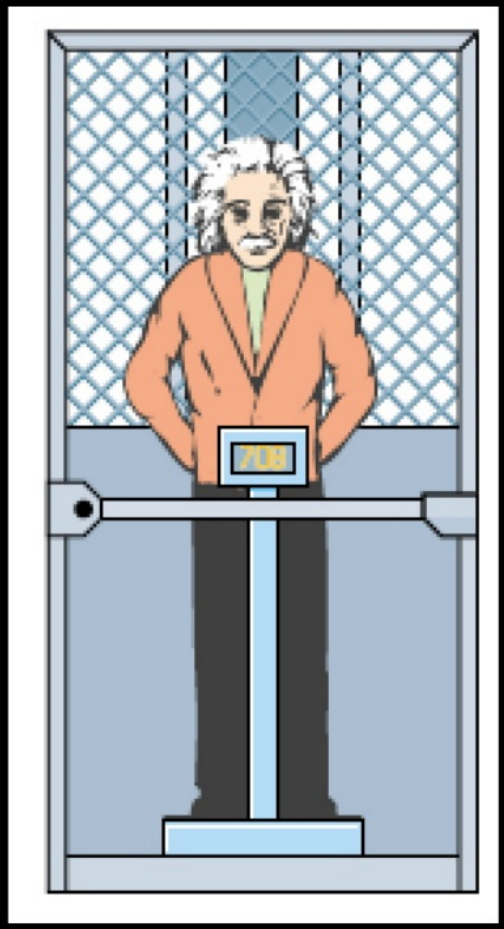
5.20.20

Newton's Laws: Weight on Other Planets

Today's Objectives

- Recap the difference between weight and mass
- Calculate weight on other planets
- Bonus: How to be weightless here on Earth



Isaac Newton Fact of the Day:

21. Newton played a significant role in recovering Britain from financial crises in the 17th century. At that time, almost 10% of Britain's currency was forged. Newton had to recall the old currency and issue a more reliable one. He kept a database of offenders and prosecuted them. Later, he was appointed as **Master of the Mint in 1700** and held this post for the rest of his life.

Mass or Weight?

1. Stays the same everywhere Mass
2. Changes based on your planet W
3. Is also known as the force of gravity (Fg) Weight
4. Measures how much matter is in something Mass
5. Is equal to normal force when you are still Weight.

$F_g = mg$

Weight (N) = Mass (kg) · Gravity (m/s^2)

Bob has a mass of 80 kg. How much does he weigh in Newtons...

A) on Earth (g = 9.8) $80 \cdot 9.8 = 784$ N

B) on the Moon (g = 1.6) $80 \cdot 1.6 = 128$ N

C) on the sun (g = 274) $80 \cdot 274 = 21,920$ N

JFF Bonus: Parabolic Flight