Please get out the "What is a Newton" lab from yesterday

Mass

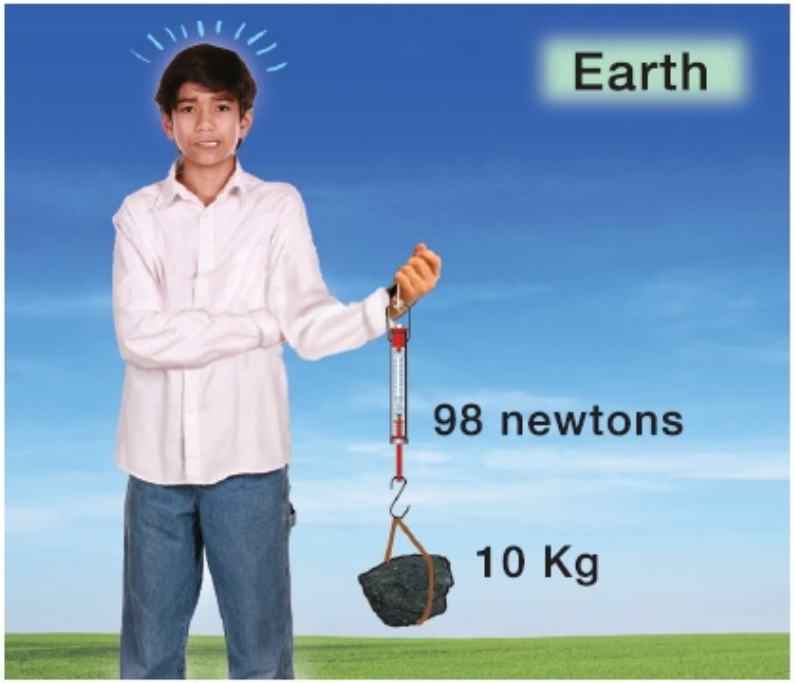
Section 5.1

- Mass: the amount of matter an object has
- Mass does not change when an object is moved from one place to another
- SI unit: kg

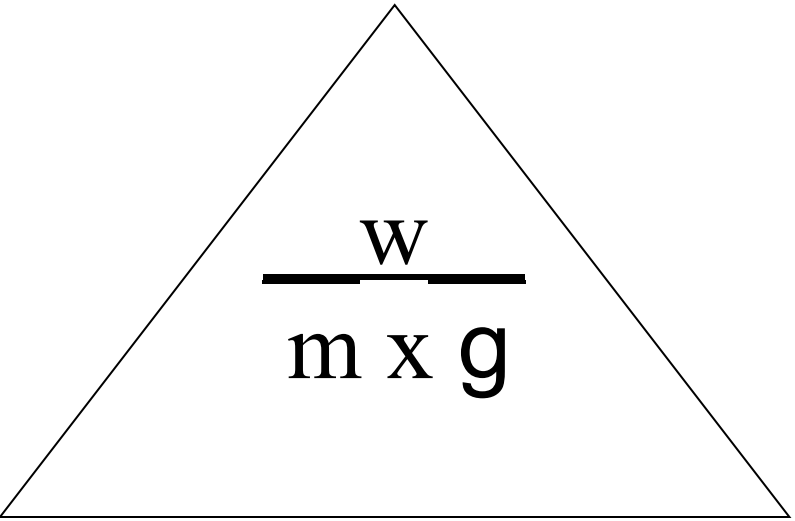
Weight

- weight = force of gravity pulling on the mass (unit: Newtons)
- weight = mass x strength of gravity
- Strength to gravity = 9.8 N/kg
- Mass ~ weight

Weight depends on mass and gravity



A 10-kilogram rock has the same mass no matter where it is in the universe. On Earth, the10 kg. rock weighs 98 N. On the moon, the same rock only weighs 16 N.



- Weight =
  - mass x strength of gravity
- Strength of gravity =
  - weight / mass
- Mass =
  - Weight / strength of gravity

- What is the SI unit for weight?
  - Newtons (N)

- What is the strength of gravity on Earth?
  - 9.8 N/kg

- What is the SI unit for mass
  - kg

- This kitten as a mass of ___ kg. What is its weight in Newtons?

- w = m x g

- This kitten as a mass of 3 kg. What is its weight in Newtons?

- w = m x g

- Weight = (3.0 kg)(9.8 N/kg) = 29 N

- True or false: If a cow gains weight, it also gains mass.
  - True

- If this cow went to the moon, would its weight or its mass change?
  - Weight (because there is less gravity on the moon.)

- A puppy has a mass of ___ kg. How much would it weigh on Jupiter? (g= 23.1 N/kg)

$w = m \times g$

- A puppy has a mass of 2.30 kg. How much would it weigh on Jupiter? (g= 23.1 N/kg)

$w = m \times g$

$w = 2.30\ kg \times 23.1\ N/kg$

$w = 53.1\ N$

- A toy that has a mass of _____ kg weighs _____ N on Venus. What is the strength of gravity on Venus?

- g = w/m

- A toy that has a mass of 4.5 kg weighs 40. N on Venus. What is the strength of gravity on Venus?

- g = w/m

- g = 40. N / 4.50 kg

- g = 8.9 N/kg

- A chair weighs _____ newtons on the moon, where the strength of gravity is _____ N/kg. What is the mass of the chair?

- m = w / g

- A chair weighs 55 newtons on the moon, where the strength of gravity is 1.6 N/kg. What is the mass of the chair?

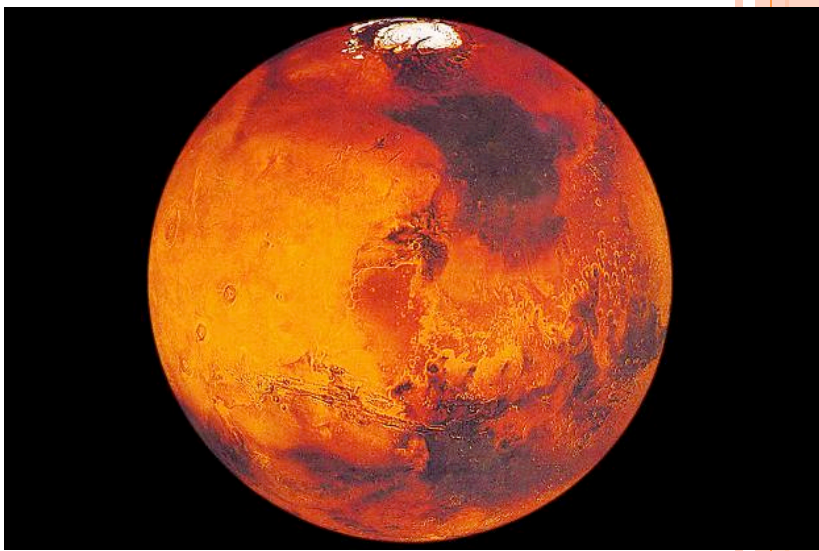
- m = w / g

- m = 55N / 1.6 N/kg

- m = 34 kg

- If a _____ kg candy bar weighs _____ N on Mars, what is the strength of gravity there?

- g = w/m

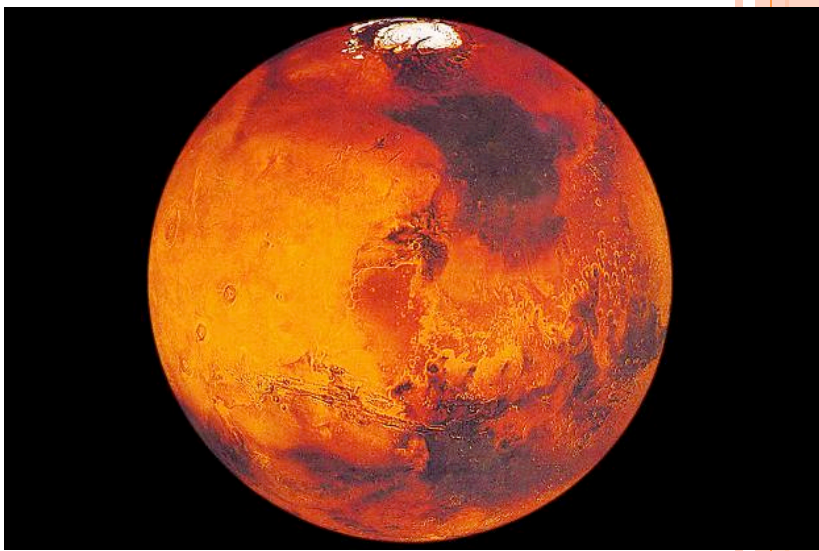


- If a 0.45 kg candy bar weighs 1.7 N on Mars, what is the strength of gravity there?

- g = w/m

- g = 1.7N / 0.45 kg

- g = 3.8 N/kg



- A camera weighs ____ N. What is it's mass?

- m = w/g

- A camera weighs 7.0 N. What is it's mass?

- m = w/g

- m = 7.0N / 9.8N/kg

- m = 0.71kg

Please get out the "What is a Newton" lab from yesterday

- Write your own questions for section 5.1 (p98-106)

- You should have a total of six questions with the answers on the back.