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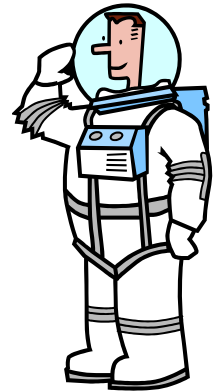
**Mass & Weight Thinking Problems**

Answer all questions as best you can. Use your notes or papers. Be specific. Be scientific.

On board the starship, *Starblazer*, First Mate Wilkins crashed his hover-lift into the gravity controls, shorting them out. (The *Starblazer* now has no gravity.) Answer the following questions.

1. If Wilkins has a **mass** of 80 kg. Now that the gravity is turned off, what is his **mass** now?

Explain how that works.



2. Wilkins **weighed** 80kg before the gravity went off. What is his **weight** now?

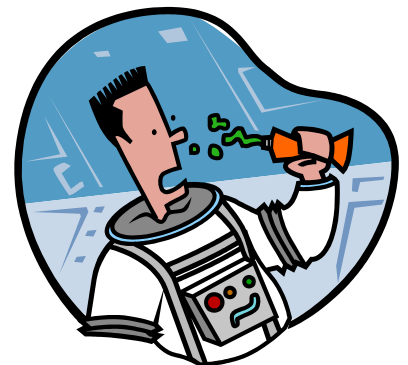
Explain how that works.

3. Engineer Farnstein was eating a Tic Tac just as the gravity went off. Each Tic Tac normally has a mass of 2 grams, and Farnstein **weighed** in at 58 kilograms before the gravity went off. How much does Farnstein **weigh** now that she has eaten the Tic Tac?

Explain how that works.

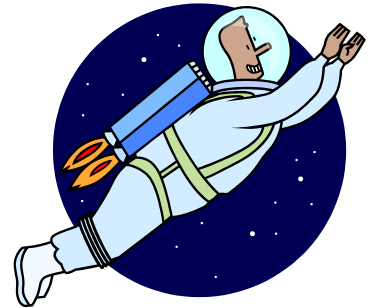
4. Since Engineer Farnstein ate the Tic Tac, did her **mass** change?

Explain how that works.



5. Isaac Newton showed that Force = **Mass** x Acceleration. Now that you know that, will First Mate Wilkins have to use *less* or *more* force to move himself across the ship's bulkhead to float over and talk to Farnstein than he would if gravity was on?

Explain how that works.



6. Sub-commander Nerp fixes the gravity controls without alerting the crew. Suddenly, the gravity comes back on and the crew members are crashing to the bulkhead. What is Engineer Farnstien's weight now?

Explain how that works.



7. Sub-commander Nerp realizes the gravity of the situation. He's forced to think about how he may have injured his shipmates by turning the controls back on without warning the crew. He now faces a massive decision of whether to tell the first mate, or wait for them to figure it out.

Circle the four mass and weight related words in the paragraph above. (One is a homonym.)

In the space below, explain why each of the words you circles is a mass or weight related word.