1. What is the equation for Weight?
2. Indicate the variable letter and units that you use for weight, mass, and gravity.

1. If a person weighs 500 N, what is her mass?
2. If a truck has a mass of 500kg, what is its weight?
3. A person has a mass of 75kg on Earth. What is its **mass** on the moon, knowing that the moon has 1/6 the gravity of Earth.
4. What is the magnitude of acceleration due to gravity?

1. What is an object’s speed after 1second of falling? (Use the acceleration equation that includes time)

**STAR WARS FORCES**

1. Han Solo pilots the Millennium Falcon. (It’s the ship that made the Kessel Run in less than 5 parsecs.) The Falcon is capable of accelerating at 1500 m/s2. If the total mass of the Falcon is 5700 kg, then what is the necessary force required to get to lightspeed?
2. When Luke lands on Dagobah to visit Yoda, he gets his X-wing stuck in the mud. Supposing the X-wing has a mass of 2800 kg, what force was required by Luke to accelerate the fighter at a rate of 2.0 m/s2 out of the mud?
3. The mighty Chewbacca is as strong as he is loyal. The bulking giant is capable of throwing an 81 kg storm trooper with a force of 18 N. What is the acceleration of the stromtrooper?
4. The Death Star has a tractor beam that is capable of capturing enemy ships which allows storm troopers to board the vessel. The beam pulls with a force of 25,000 N. If a rebel cruiser is caught and accelerating towards the Death Star at a rate of 14 m/s2, then what is the mass of the cruiser?
5. HONORS ONLY: Jabba the Hutt happens to be moving towards Leia at 3.2m/s. If he has 25600 kg\*m/s of momentum, what is Jabba the Hutt’s mass?
6. HONORS ONLY: A 75kg storm trooper is running at 8m/s and accidentally runs into R2D2. Assuming there is a perfect conservation of momentum, and R2D2 flies backward at 5.4m/s, what is R2D2’s mass?
7. HONORS ONLY: An AT-ST walker trips an ewok booby trap, crashing a log into the AT-ST. If the log (155kg) is traveling at a rate of 12m/s, what is the mass of the AT-ST after it is hit if it is knocked off at 2.6 m/s? Assume a perfect conservation of momentum.

**MULTIPLE CHOICE:**

1. The firefighter feels the hose pushing backwards. What is the most likely cause of this?
   1. The hose material is very elastic.
   2. Since the hose is at rest, it tends to stay at rest.
   3. The force exerted on the water equals the mass of the water times its acceleration.
   4. The escaping water exerts an equal and opposite force on the hose.
2. If the same force is applied to each of these balls, which one will have the LEAST acceleration?
   1. Baseball mass = 1.0kg
   2. Bowling ball mass = 7.3kg
   3. Golf ball mass = 0.75kg
   4. Tennis ball mass = 0.5kg
3. Which object has the greatest inertia?
   1. A baseball
   2. A bowling ball
   3. A golf ball
   4. A tennis ball
4. If the net force on an object is zero, then the object has:
   1. Reaction forces
   2. Action forces
   3. Balanced forces
   4. Unbalanced forces
5. When an unbalanced force acts on an object
   1. The objects motion does not change
   2. The object accelerates
   3. The weight of the object decreases
   4. The inertia of the object increases
6. The property of matter that resists changes in motion is called:
   1. Friction
   2. Gravity
   3. Inertia
   4. Weight
7. What is the unbalanced force that slows down a ball rolling across the floor?
   1. Force of friction
   2. Force of gravity
   3. Force of inertia
   4. Force of momentum
8. Earth pulls on the moon and holds the moon in its orbit. The moon pulls on Earth with an equal and opposite force. This is an example of:
   1. Newton’s 1st law
   2. Newton’s 2nd law
   3. Newton’s 3rd law
   4. None of the above
9. In the absence of air resistance, how would the acceleration of a 1.5kg book and the acceleration of a 15kg rock differ if the objects were dropped from the same height?
   1. The book would accelerate twice as fast as the rock
   2. The rock would accelerate twice as fast as the book
   3. The book would accelerate ten times as fast as the rock
   4. They would not differ, they would be the same
10. As you move from Earth (gravity = 9.8m/s2) to Jupiter (24.79m/s2), your weight will:
    1. Increase
    2. Decrease
    3. Stay the same
11. Mass will always be the \_\_\_\_\_\_\_\_\_\_\_ no matter where you are, while weight will be \_\_\_\_\_\_\_\_\_\_\_\_ no matter where you are.
    1. Same, different
    2. Different, same
    3. Similar, same
    4. Similar, different
12. The force that is equal and opposite to gravity (Earth pushing back upon you) is called the:
    1. Standard force
    2. Normal force
    3. Nuclear force
    4. Strong force
13. Which of the following will result in an unbalanced net force:
    1. A man sleeping in a recliner
    2. An door opening when it is pushed on
    3. A boy trying to pick up a car but neither of them moving.
    4. A book sitting on a shelf
14. As you move from the moon (gravity = 3.2m/s2) to Earth (gravity = 9.8m/s2), your mass will:
    1. Increase
    2. Decrease
    3. Stay the same