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| ESK 3.2  Newton’s Second Law |
| How much force is needed for Wylie Coyote to accelerate a 45 kg boulder by 12 m/s2 if there is also a 3N frictional force? |
| What is the mass of a car that accelerates at a rate of 12.5 m/s2 after a force of 340 N is applied to the right and 12N is applied to the left? |
| 3. A pencil has a mass of .35 kg. What is the pencil’s weight in Newtons?  If this pencil weighed 1.4 N on the moon, what is the acceleration due to gravity on the moon? |
| If a dog has a weight of 120 N, what is its mass?  If we sent it to Mars, what would be it’s mass and weight there? (g on mars is 3.8 m/s2) |
| Dani and Gina are pushing on a 14 kg box. Dani pushes with 250 N of force and Gina pushes with 100 N of force.  a.What is the net force and acceleration if they both push in the same direction?  b.What is the net force and acceleration if they push in opposite directions? |
| Macintosh HD:Users:channouche:Desktop:Screen Shot 2016-11-27 at 7.15.06 PM.png  Find the acceleration of the 62 kg box to the left. Is the box in equilibrium? If not, what forces would need to be added for the box to be in equilibrium? |
| A bird drops and .25kg egg out of the tree. If the air resistance on the egg is 1 N, draw a free-body diagram and calculate the net force and acceleration of the egg. |
| A 6250N upward tension force is exerted on a 500 kg elevator.  Draw a free-body diagram and calculate the net force and acceleration the elevator. Is the elevator moving up, or down and how do you know? |
| At the end of the Giant Drop free fall ride, riders experience a large upward normal force to bring their falling bodies to a stop. Determine the normal force value required to accelerate a 52 kg physics student with an upward acceleration of 27.4 m/s2. |
| Determine the mass and the weight of 86 kg Neil Armstrong on the moon where the acceleration due to gravity is one-sixth that of the Earth. Explain why they would be the same or different. |
| Sophia, whose mass is 52 kg, experienced a normal force of 1800 N at the bottom of a roller coaster loop during her school's physics field trip to the local amusement park. Find the net force, then determine Sophia's acceleration at this location. |
| Captain John of the U.S. Air Force tested the human limits of acceleration by riding on a rocket sled of his own design, known as the Gee Whiz. What net force would be required to accelerate the 82 kg Captain at 450 m/s2? |
| A falling skydiver is accelerating in the downward direction at 3.29 m/s2. The mass of the skydiver is 67.2 kg. Determine the air resistance force on the skydiver for this acceleration to happen. |