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| ESK 3.1  FBD’s and Newton’s Laws Vocab |
| A friend calling from the Moon, tells you she has just won 1 N of gold in a contest. You tell her that you entered the Earth’s version of the same contest and also won 1 N of gold. Who won the prize of greatest value? |
| A skydiver is descending with terminal velocity. Diagram the forces acting upon the skydiver. Find the net force. Is it in equilibrium? Explain  What would the free body diagram look like before the skydiver reaches terminal velocity? |
| A hot air balloon is accelerating upward. Diagram the forces on the balloon. Find the net force. Is it in equilibrium? What other forces would you need to add to find get the net force to zero?  3. |
| A physics student applies a constant force on a cart while a motion sensor plots the position of the cart over time. Assuming the force of friction is negligible, which graph best fits the scenario? Explain |
| When you drop a hammer and a feather at the same time on Earth, the hammer falls first. What happens if you do this on the moon? Draw a free body diagram and explain. |
| A skier is accelerating down a snowy hill. Diagram the forces on the skier. Find the net force. Is it in equilibrium? If the skier were skiing down the hill at a constant speed, how would the free body diagram be different? |
| If an elephant were chasing you, its enormous mass would be most threatening. But if you zigzagged, its mass would be to your advantage. Why? If you are running straight, could you be in equilibrium? |
| You have two eggs and you want to find out which one is raw, and which one is hard boiled. One of them spins a lot, and one of them stops right away. Explain which one is which. What does the inertia of an object depend on? Draw a diagram of all the forces on the eggs. |
| A tennis ball and a solid steel ball the same size are dropped at the same time. Diagram the forces on each ball. Explain the speed of each object as they fall and why this happens. |
| When a soccer ball is rolling along a grassy field, it does not continue moving forever, but a hockey puck slides almost forever on ice. Explain why this happens. Draw a free body diagram of each object. Are they in equilibrium, why or why not? |
| What property determines how much inertia an object has. Give examples of two objects with different inertias, and explain how you can test their inertia. |
| A football is moving upwards towards its peak after having been booted by the punter. Diagram the forces acting upon the football as it is kicked and also as it rises upward towards its peak. Find the net force. Is it in equilibrium? Explain |