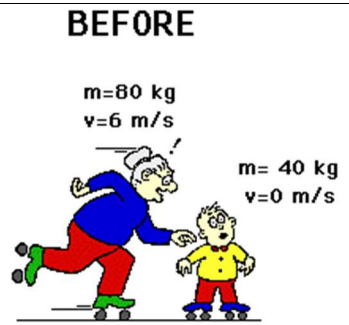
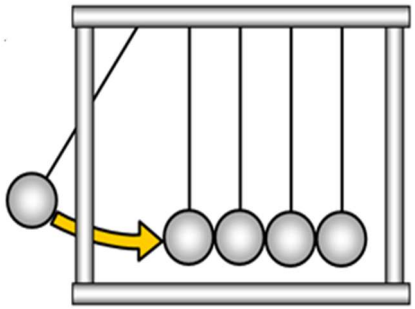
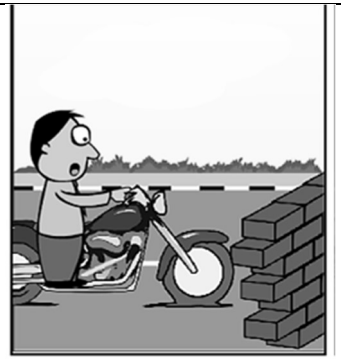
Analysis of Newton's Laws of Motion







1st Law -

2nd Law -

3rd Law -

1st Law -

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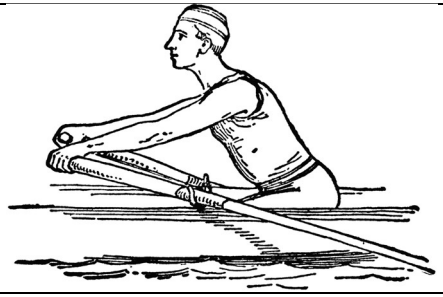

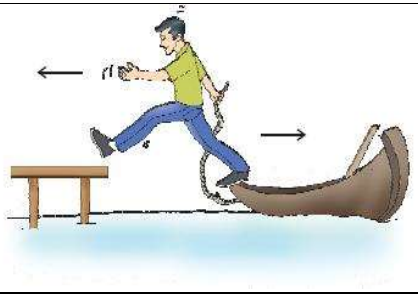

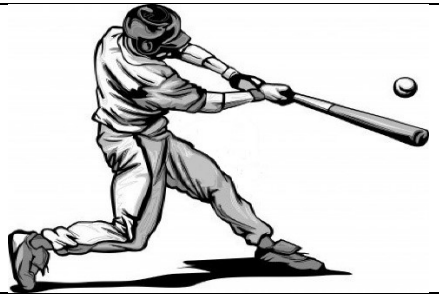

1st Law -

2nd Law -

3rd Law -

1st Law -

2nd Law -

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1st Law -

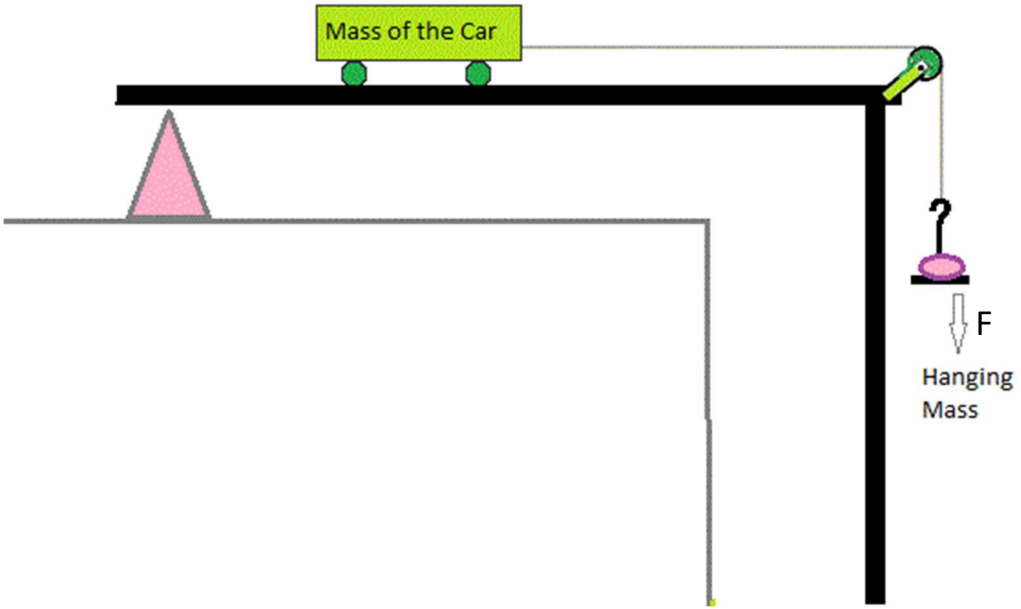
2nd Law -

3rd Law -

Beneath each item, cite evidence from the illustration that supports the claims presented in Newton's laws of motion.

Experimental Data Analysis

An experiment was set-up as seen in the illustration below to explore Newton's 2nd Law of Motion. A hanging mass was connected to a cart to provide a constant force (F) on the cart causing it to accelerate. Mass was added incrementally to the cart and the resulting acceleration was measured. The data from this experiment can be seen in the table below. Analyze the data. Write an explanation of the relationship between force, mass, and motion citing evidence from the experiment.



Force	Mass (kg)	Acceleration (m/s^2)
2.45 N	0.250	9.80
2.45 N	0.300	8.17
2.45 N	0.350	7.00
2.45 N	0.400	6.13
2.45 N	0.450	5.44
2.45 N	0.500	4.90
2.45 N	0.550	4.45
2.45 N	0.600	4.08
2.45 N	0.650	3.77

Explain the relationship between force, mass, and acceleration.

Consider another approach to this experiment. If the mass of the cart were kept constant, and the hanging mass increased incrementally, how would this affect the acceleration of the cart?