

Force, Mass and Acceleration Activity

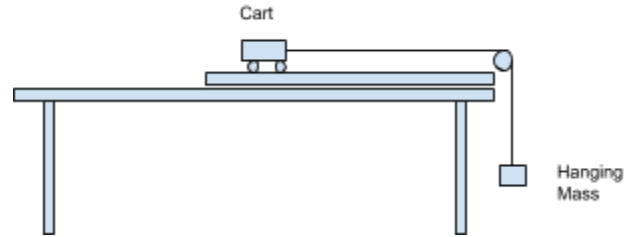
Research Question: What is the relationship between Force, Mass and Acceleration in the system pictured at the right?

Setup:

- Turn ON SPARK; Select 'SPARKvue' > Sensor Data > open photogate settings > photogate only > photogate & picket fence > .
- Set band spacing to 1cm (.01m)
- Check "velocity" > on right, select 'Table and Graph'
- when trial is prepared, click 'Start' at bottom of tablet

Prelab Question:

Which **force** will make the **system** accelerate?



1. A. What will happen to the acceleration of the system if you keep the **hanging mass constant** but **change** the **total mass of the system**? IV = _____ DV = _____

Hypothesis #1 :

- B. Write the **steps** of an experiment you could perform to test **Hypothesis #1**.

Procedure #1 :

2. A. What will happen to the acceleration of the system if you **change** the **mass hanging** on the end but keep the **total mass of the system constant**? IV = _____ DV = _____

Hypothesis #2 :

- B. Write the **steps** of an experiment you could perform to test **Hypothesis #2**.

Procedure #2 :

1. C. Perform your **Procedure #1** and record your data in the table provided.

Total Mass ()	Hanging Mass ()	Acc 1 ()	Acc 2 ()	Acc 3 ()	Acc Avg ()

D. Graph your data from **Procedure #1** on a separate sheet of paper

E. Interpret and explain your data to define the relationship between mass and acceleration in Procedure #1

2. C. Perform your **Procedure #2** and record your data in the table provided.

Total Mass ()	Hanging Mass ()	Acc 1 ()	Acc 2 ()	Acc 3 ()	Acc Avg ()

D. Graph your data from **Procedure #2** on a separate sheet of paper

E. Interpret and explain your data to define the relationship between mass and acceleration in Procedure #2