Part 1:

Leading Question: How is force related to acceleration?

Hypothesis: I think force and acceleration are directly proportional. If you apply more force to an object, the acceleration of the object increases by the same factor. All in all, force equals mass times acceleration.

Materials:

- Push Pull Spring Scale
- 2 meter sticks
- Masking tape
- Hall's carriage cart
- Timer

Data:

Amount of Force Exerted (in Newtons)	Time (in Seconds)	Distance (in Centimeters)
1 Newtons	2.18 Seconds	34.5 Centimeters
1 Newtons	1.92 Seconds	31.5 Centimeters
2 Newtons	2.19 Seconds	49 Centimeters
2 Newtons	2.19 Seconds	45 Centimeters
3 Newtons	2.71 Seconds	70 Centimeters
3 Newtons	2.79 Seconds	66 Centimeters
4 Newtons	2.84 Seconds	76 Centimeters
4 Newtons	2.83 Seconds	82 Centimeters
5 Newtons	2.02 Seconds	94 Centimeters
5 Newtons	2.81 Seconds	100 Centimeters

Conclusion: Throughout this experiment we proved that the more force we exert to an object, the farther it went, therefore acceleration will increase with more force.

Part 2:

Leading Question: What is the relationship between acceleration and mass?

Hypothesis: The acceleration of the object is produced by a net force (mass) and is directly proportional to its magnitude

Materials:

- Weights (each 42.9 grams)
- Push Pull Spring Scale
- 2 meter sticks
- Masking tape
- Hall's carriage cart
- Timer

Data:

Number of Weights	Distance (in Centimeters)	Time (in Seconds)
0 Weights	95 Centimeters	2.82 Seconds
0 Weights	100 Centimeters	2.24 Seconds
1 Weights	85 Centimeters	1.86 Seconds
1 Weights	75 Centimeters	1.71 Seconds
2 Weights	65 Centimeters	1.73 Seconds
2 Weights	67 Centimeters	1.75 Seconds
3 Weights	65 Centimeters	1.83 Seconds
3 Weights	60 Centimeters	1.81 Seconds
4 Weights	54 Centimeters	1.90 Seconds
4 Weights	50 Centimeters	1.93 Seconds

Conclusion: As the weight increases, the distance starts to decreases, thus as the more mass an object has the acceleration decreases as well.