Names: _____

Date: _____

Explorations of Force and Motion

Station #1

Balancing Balloon

Procedure: Using only a hairdryer, attempt to control a balloon directly above you.

Thinking Strategies: Ask your partner questions such as: what do you notice when you change the position of the hairdryer or what is your strategy for balancing the balloon with such control? Think about pressure and action – reaction. Share your observations with your partner.

Inferences: Infer why or how the balloon is balanced. Use a labeled diagram.

Notes:

Diagram:

Station #2
Balancing Stick

Procedure: Experiment with several sticks and with the positioning of the play dough around the stick in an attempt to conclude what is the easiest way to balance a stick in the palm of your hand without using the play dough as a base.

Thinking Strategies: Think about inertia and the time it takes you to adjust to imbalances. Use extremes in your positioning of the play dough to narrow your options for what works best. Share your observations with your partner. Is there consensus? Compare between balancing the stick with and without play dough.

Inferences and Conclusion: What is the easiest way to balance the stick? Why is it easier? Illustrate your conclusion.

Notes:	Diagram:

Station #3
Balloon Rocket

Procedure: Using tape, attach an inflated balloon to a straw on the string. Do not tie the balloon but hold it closed with your fingers. Once your partner is holding the string at a distance at shoulder level, release the balloon to propel the balloon rocket.

Thinking Strategies: Make a prediction. Think about thrust, sound, and action – reaction. Break what is happening down into steps. Make a connection - what does this remind you of in the world?

Inferences: How does this work? Use a similar example to explain your inference.

Notes:

Station #4
Catapult

Procedure: Using an elastic band, attach the spoon to the Styrofoam structure to create a functioning model of a catapult.

Thinking Strategies: Think about potential energy and kinetic energy. Ask yourself/your partner what happens if you adjust the tension of the elastic. Consider if there any other forces at play here.

Inferences: How can you use force to explain how a catapult works? What can you infer about potential energy?

Notes:

Station #5
Windmill

Procedure: Create a windmill out of paper, a pin, a pencil's eraser, and a bead to reduce friction between the eraser and the paper. Blow into your windmill.

Thinking Strategies: Think about rotational energy and air pressure. Consider the construction of your windmill in relation to the force applied to it. Brainstorm ways to improve your windmill's performance.

Inferences: How does this work? Use a labeled diagram to explain your deductions.

Notes:

Diagram:

Station #6
Spinning Chair

Procedure: Initially, your partner will spin you in Mme Romy's chair. Adjust your body's position by extending and retracting your arms and legs. Experiment by holding heavier objects in your hands.

Thinking Strategies: Think about momentum, speed and inertia. Make a connection - what does this remind you of in the world? Share your observations with your partner – what had the most effect on your speed?

Inferences: Explain how you keep spinning without your partner pushing on the chair. Explain variations in speed.

Notes:

Station #7

Gravity Guy

Procedure: Adjust the wire and add some play dough to the wire in order to balance the cork "Guy" on the toothpick on the rim of a glass. He should be standing vertically on the rim.

Thinking Strategies: Think about mass and the centre of gravity. Make it simpler – attempt to create balance on your finger before trying the glass. Rule out what doesn't work by experimenting.

Inferences: Why does the "Guy" balance on the edge of the glass? Draw a diagram of your Gravity Guy standing on the rim of the glass to illustrate how you achieved the balance.

Notes:

Diagram: