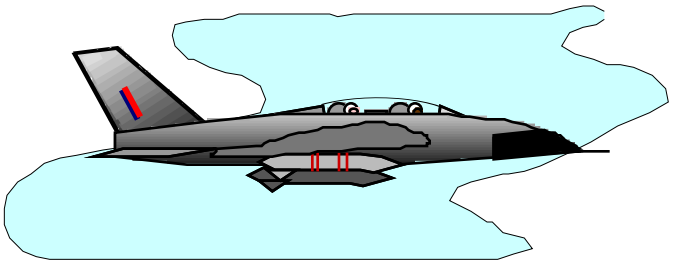

# acceptable answers for Newton's Laws Challenges

1. **Jet-Car Challenge**

Forces always occur in pairs, but in opposite directions.
Air from the balloon moves in one direction
and the balloon moves in the oppoiste direction with equal force.
A rocket does NTO depend on air to push against. The motion takes place because the aescaping air and the balloon are forced apart by equal and oppoiste forces.

2. **The Coin Challenge**

Things tend to keep doing what they are doing (remianing motionless or moving straight at a steady speed.
Anything with mass has inertia.
The more mass, the more inertia.
When the card moves out of the way, the coin resists the tendency to change what it's doing. It stays where it was and therefore falls into the beaker.

3. **The Push Me-Pull You Contest**

<u>On the Challenge Card</u>, (a) Explain student ending positions for both pulling the rope slowly and steadily, hand over hand. (b) Explain student ending positions when one student merely holds the rope and the other student pulls the rope steadily as before. (c) Explain student ending positions when one student weighs considerably more than the other student. Pulling as in (a). (d) Which Newton's Laws apply? Explain.

4. **The Weighted Meter Stick Challenge**

<u>On the Challenge Card</u>: (a) Which way is easier to balance the meter stick in the flat palm of your hand and why. Choices: Weight up or weight down. (b) Which Newton's Laws apply? Explain.

5. **Huff-Puff-Slide Challenge**

<u>On the Challenge Card</u>: (a) What is the relationship between the force applied and the distance moved? (b) What is the relationship between the force applied to the cup and the mass of the cup? (c) Which Newton's Laws apply? Explain.