Mousetrap Car Race

Materials Needed Per Group:
1 mousetrap
4 3/8" screw-eye hangers
6 large round balloons
2 hollowed out pens
2 large paper clips
1 foot of string
4 CDs

Procedure:

1. Break into groups of four.

2. Cut the top and bottom off on two of the balloons. Stretch them over two of the CDs, which will later be the back wheels. (This will help traction a great deal as CDs are otherwise pretty slippery.)

3. Tie the string to the center of the white hollowed out pen at the middle of the pen.

4. Screw the four screw-eye hangers into the mousetrap along the short sides. (The holes have already been drilled for you). Try to get them to be roughly the same depth so that the axle that will later go through them is somewhat straight. Also, take care to not crack the trap too much.

5. Insert the front axle (i.e. the blue pen without the string) pushing it through both eyelets of the screw-eye hangers.

6. Wrap a balloon around the end of the blue pen, trying to fold it so that it's somewhat wedge-like toward the edge of the pen. Gently rotate one of the CDs on the pen wrapped with the balloon. (The balloon should keep the CD firmly in place). Attempt to get it to point fairly straight and not wobbly in relation to the trap. Repeat for the other end of the pen.

7. Push the white pen with the string into the back eyelets. Pull the string through the eyelets so that it's between them. Tie the string to the tip of the flap that will move as the trap springs.

8. Attach the back wheels in the same way the fronts were done. (The balloon holding the wheel only firmly so the axle and wheels turn together).
9. Gently turn the back wheels backwards (if you're unsure of the direction, put it on a surface and pull it backwards). When it starts to catch, lift the flap slightly and keep turning until the trap is starting to load. Keep going until it's pulled all the way back, then hitch it as one normally would setting a mouse trap.

**CAUTION:** Take a bit of care, because if the string snaps the trap will indeed close (quickly) and anything you have in the way will get hit. It's not exactly deadly, but not pleasant either these things do pack enough power to make you go "Ouch".

10. Tap the trigger and watch it go. Readjust the wheels (which are a bit flimsy with the low-rent balloon support) to get them straighter and retry.

**Calculations:**

1. Determine the average speed for your group’s car and record.

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\text{velocity} = \frac{\text{distance}}{\text{time}}
\]

2. Determine the acceleration for your car, using the equation below.

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\text{acceleration} = \frac{\text{velocity}}{\text{time}}
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