Rocket Racer

**Purpose**
To observe Newton's Third Law of Motion to understand the principles behind rockets

**Procedure**
1. Using scissors cut out the wheel patterns.
2. Place the patterns on the foam meat tray and trace around the edges.
3. Use the metric ruler to draw a rectangle 7.5 cm by 18 cm on the foam meat tray. See diagram 1.
4. Blow up the balloon a few times to stretch it out.
5. Place the end of the straw with the bend inside the open neck of the balloon.
6. Use a small piece of tape to seal the balloon to the straw. The balloon should inflate when you blow through the straw.
7. Lay the straw in the center of the rectangle, having the end without the balloon hanging 1 cm over the front edge. Bend the straw upward at the bendable section and tape the entire straw into place. See diagram 2.
8. Push the pins through the hubcaps into the wheels and then into the edges of the rectangle. See diagram 3.
9. Make a starting line by placing a piece of masking tape on the floor.
10. Blow up the balloon and pinch the end of the straw to hold in the air.
11. Place the racer on the floor at the starting line and release. See diagram 4.
12. Measure the distance that your racer traveled and record in your science journal.
13. Discuss how you could improve your Rocket Racer so that it might go farther.
14. Make any changes decided upon and repeat steps 10-13.
15. Repeat for two more trials.
16. Find the average distance your Rocket Racer traveled in all four trials.

**Conclusion**
1. Did your Rocket Racer travel the same distance each time? Why or why not?
2. Explain how the Rocket Racer got its power to travel.
3. What could you do to improve your Rocket Racer?

**Materials**
- foam meat tray
- tape
- flexible straw
- scissors
- 4 pins
- marker
- rounded balloon
- metric ruler
- pencil
- wheel pattern (p. 52)
- masking tape

![Diagram 1](image1)
![Diagram 2](image2)
![Diagram 3](image3)
![Diagram 4](image4)
Rocket Racer (concluded)

Wheel Patterns
Crosses mark the centers

[Diagram of wheel patterns with crosses marking the centers]

Hubcap Patterns
Crosses mark the centers

[Diagram of hubcap patterns with a single cross marking the center]