

## Core Skills Analysis

### Science

- Understanding of physics principles such as motion, speed, and acceleration through designing and testing the obstacle course.
- Learning about energy transfer and conversion as they evaluate the impact of different obstacles on the car's battery life.
- Exploration of engineering concepts like structural stability when constructing the obstacles for the course.
- Application of scientific method through hypothesis testing and result analysis during trial runs of the car.

### Mathematics

- Utilization of measurement skills to gauge distances for setting up the obstacle course accurately.
- Engagement with geometry through planning and positioning of obstacles at specific angles to challenge the car's navigation.
- Practice of problem-solving by calculating optimal speeds and trajectories for the car to navigate the course efficiently.
- Application of time and distance calculations while recording and comparing the car's performance in each trial.

### Tips

To further enhance the learning experience, encourage the student to experiment with adjusting the height and width of obstacles, incorporate elements of coding to automate specific features of the course, collaborate with friends to create a more complex course, and document the entire process through photos or videos to reflect on improvements.

### Book Recommendations

- [Remote-Control Cars Inside and Out](#) by Elizabeth Verdick: This book provides insights into the mechanics of remote-controlled cars and offers tips for designing custom courses.
- [Math Adventures with Remote-Control Cars](#) by Anna Johnson: A math-focused book that explores concepts like distance, speed, and angles through the lens of remote-controlled car activities.
- [Science Experiments with RC Cars](#) by David Oaks: A hands-on guide that merges science experiments with remote-controlled car projects to deepen understanding of physics and engineering.