Balloon Car Lab

FORCE, MOTION + ENGINEERING DESIGN

What Students Do

Students build and test a car powered by escaping air, measure how far and how straight it travels, and investigate how wheel alignment, friction, mass, balloon inflation, and balloon position affect performance. Teams change one variable, retest the car, and compare physical evidence with an AI recommendation or prediction.

24	90	3-6	1
STUDENTS	MINUTES	GRADES	SHARED AI DEVICE

KNT Classroom Kit Includes

- Lightweight foam/Styrofoam car body
- Wooden dowel axles, straw axle guides, and four foam wheels
- Balloon, rubber band, paper/foam design pieces, and approved adhesive materials
- Student Car Design & Data Sheet plus facilitator resources
- Printed AI Prediction Card backup for no-internet settings
- Site supplies balloon hand pump, measuring tools, painter's tape, smooth test lane, and optional timer

Students Learn To

- Explain how escaping air creates a force that moves the car in the opposite direction
- Identify how wheels, axles, friction, mass, alignment, and inflation affect motion
- Conduct repeated trials using a consistent starting point
- Change one design variable while keeping other test conditions consistent
- Measure distance and observe straightness, wobble, stalling, or veering
- Compare AI recommendations with actual test evidence

How It Works

1. **BUILD**
   Assemble the body, straw axle guides, dowel axles, wheels, and rear-facing balloon.
2. **TEST**
   Complete two baseline road tests using the same START line and inflation method.
3. **REDESIGN**
   Change one approved variable such as alignment, mass, inflation, or balloon position.
4. **VERIFY**
   Run two redesign trials, compare the data, and decide whether the change improved performance.

AI Can Predict. Engineers Test. Evidence Decides.

AI can recommend which variable to test or predict what may happen, but it cannot know exactly how a specific car will behave on a specific surface until students test the physical system and compare the results.

Balloon safety: adult supervision and hand-pump inflation are recommended.

Kids N Technology

Hands-on AI + STEM learning for schools, afterschool, summer, and youth-serving programs.

Discuss Curriculum + Kits

kidsntechnology.net/contact