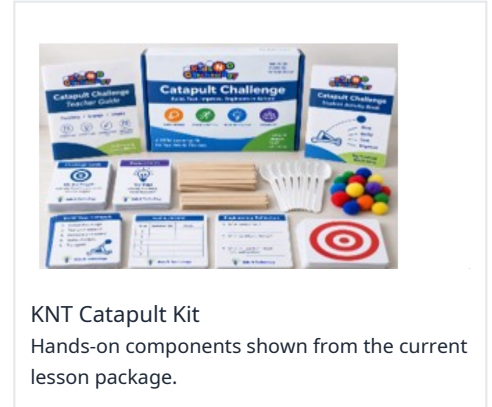


CATAPULT ENGINEERING CHALLENGE

INSTRUCTOR GUIDE

KNT Kit & Classroom Materials



KNT KIT - PER STUDENT / TEAM	SHARED CLASSROOM MATERIALS
7 craft sticks 4 rubber bands 1 plastic spoon or bottle cap - Double-sided adhesive/tape 1 soft projectile (pom-pom recommended) - Student Engineering Data Sheet - Pencil	- Measuring tapes or rulers - Floor tape / launch line - Optional targets - Facilitator demonstration catapult - Facilitator device with AI access - Projector/screen if available

Safety Standard

Use soft, non-food projectiles only. Establish a launch line and clear landing zone. Students never aim toward people. Double-sided adhesive is preferred over student use of hot glue.

Key Vocabulary

Force A push or pull that can change an object's motion.	Potential Energy Stored energy that is ready to be released.
Kinetic Energy Energy an object has because it is moving.	Lever A simple machine that moves around a fixed point.
Variable Something intentionally changed during an investigation.	Prediction What we think may happen before testing.
Evidence Information collected through observation or measurement.	Iteration Improving a design by testing, changing, and testing again.

Collaboration

Recommended team size: 2-4 students. Rotate roles when possible.

ROLE	RESPONSIBILITY
Builder	Assembles and modifies the design.
Launcher	Conducts controlled launches from the launch line.
Data Scientist	Measures and records results.
Reporter	Shares the team's evidence and conclusion.

Access & Differentiation

GRADES 3-4	GRADES 5-6	ACCESS SUPPORTS
Visual build directions Compare farther/shorter Focus on potential vs. kinetic energy Sentence starters for reflection	Measure launch distance Calculate averages Optional percent improvement Stronger variable-control discussion Evidence-based written conclusion	Partner/team roles Pre-labeled data table Read-aloud directions Reduced writing option Verbal or drawn reflection Extension challenge for advanced students

Responsible AI Connection

Students should leave the lesson understanding that AI is not the experiment. AI may suggest, predict, explain, or brainstorm. Humans still build, observe, measure, test, verify, and make the final engineering decision.

Career Connection

Test Engineer - Test engineers evaluate products, collect performance data, identify problems, and help improve designs. Ask: "How is what you did today similar to the work of a test engineer?"

Facilitator Close: "A prediction can help us decide what to test. Evidence tells us what actually happened."