CATAPULT ENGINEERING CHALLENGE

INSTRUCTOR GUIDE

KNT Kit & Classroom Materials

KNT Catapult Kit
Hands-on components shown from the current lesson package.

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

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	Measure launch distance	Partner/team roles
Compare farther/shorter	Calculate averages	Pre-labeled data table
Focus on potential vs. kinetic energy	Optional percent improvement	Read-aloud directions
Sentence starters for reflection	Stronger variable-control discussion	Reduced writing option
	Evidence-based written conclusion	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.”