

Topic: Forces	Year 6/7 Transition Age 10-12	Title: Lolly stick catapults
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Working Scientifically Review: interpret observations and data, identifying patterns and using data to draw conclusions	Concept context Recognise that some mechanisms, including levers, allow a smaller force to have a greater effect (KS2) Forces cause objects to stop or start moving, or to change their speed or direction of motion (KS3)
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Assessment Focus

- Can children draw conclusions from their data?
- Can children identify patterns in their data?

Activity *Today we will be mechanical engineers*
 Make and explore a catapult made with lolly sticks and elastic bands (as pictured) to consider how adjustments could affect its performance. Ask groups (e.g. mix of Y6 and Y7 pupils) to discuss what variables could be changed about the catapult and how they will find out if what they change makes the catapult 'better'.
 Give groups time to test prototypes and decide on their own success criteria for judging the performance of the catapult (e.g. furthest, highest, over an obstacle, hit a target), perhaps noting a 'baseline' result before adjusting the design. Discuss how to test the catapults safely. Groups should record results to enable them to draw conclusions from their data.



Adapting the activity
Support: Reduce variety of variable options. Provide recording formats or measuring equipment.
Extension: Provide further range of equipment to develop catapults. Increase expectation for data collection e.g. target/set distance/reliability over number of throws.



Other ideas: Relate to trebuchets, build different versions of catapults and find general rules for cause and effect, or make mechanical releases.

- Questions to support discussion**
- What makes a 'good' catapult?
 - What are the key things that could be changed on your catapult (indep Vs)?
 - How will you know if what you have changed has had an impact?
 - How are you keeping a record of your findings?
 - What do you think is happening? What are you/did you find out?
 - What does your data show? Have you found a pattern in your results?

Assessment Indicators
Not yet met: Pupils find it difficult to draw conclusions, perhaps because of a lack of evidence, for example, because they have not systematically changed one variable, or recorded their results.
Meeting: Pupils can identify what was changed about the catapult and have made a systematic attempt to collect data to inform conclusions. They can describe and begin to explain what their data shows, either in terms of a pattern/trend or evidenced outcomes. I think that happened because...
Possible ways of going further: Children have analysed comprehensive data and drawn conclusions that fit the trend of their data, generalising and/or noting causal links: if you... then... Reasoned explanations of the likely effect of changes lead to further questions and predictions. They evaluate the trustworthiness of data collected and suggest improvements to their method.

