



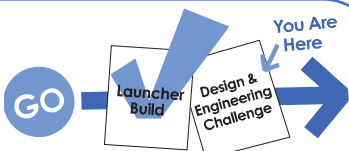
# Projectile Launcher STEM Siege Challenge



## The Challenge

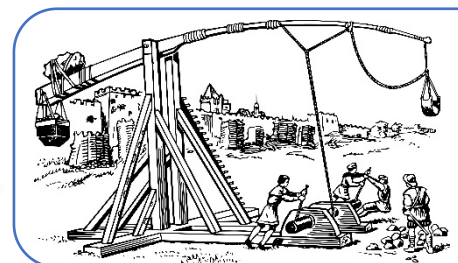
*Have fun storming the castle!*

Redesign your launcher to knock down a castle wall - as quickly as possible!



**Before You Start:** Make sure you have built a launcher for use on this challenge.

Documents & Supplies at: [teachergeek.com](http://teachergeek.com)



Medieval Catapults



## Siege the Castle

1. Adjust your angle and trigger design.
2. Aim. Take as many shots as possible in the span of three minutes to knock down the castle wall.
3. Record your results on an Engineering Notebook Sheet.

## Constraints

(rules and limits for your design)

### ▶ Challenge Supplies

Launcher (from Build Guide), protractor, castle/wall material, ruler, tape, stop-watch, ping pong balls

### ▶ Difficulty: Easy-Medium

### ▶ Teacher's Note

Find more information on setting up targets and running this challenge, in the [Launcher Classroom Overview](#).

### ▶ Allowable Materials

- TeacherGeek Components
- Found & Recycling Bin
- Teacher Approved
- Non-Hazardous

### ▶ Ground Rules:

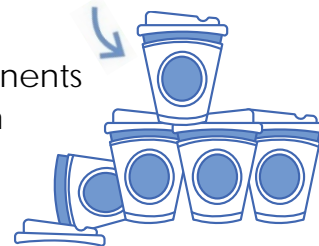
- Launch from behind the starting line
- Wall must fall only from projectiles



**Time Limit:** \_\_\_\_\_

Fill in how much time you have

Use cups or cards to make a wall.



The time from building and re-designing your launcher to the start of the competition.



# Projectile Launcher Engineering Notebook



Design #: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

1

What problem do you want your design (launcher) to solve?

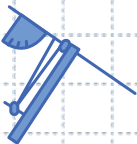
2

Draw your new design.

*Tip: think of the trigger, launcher angle, amount of rubber bands, etc.*

3

Build it.

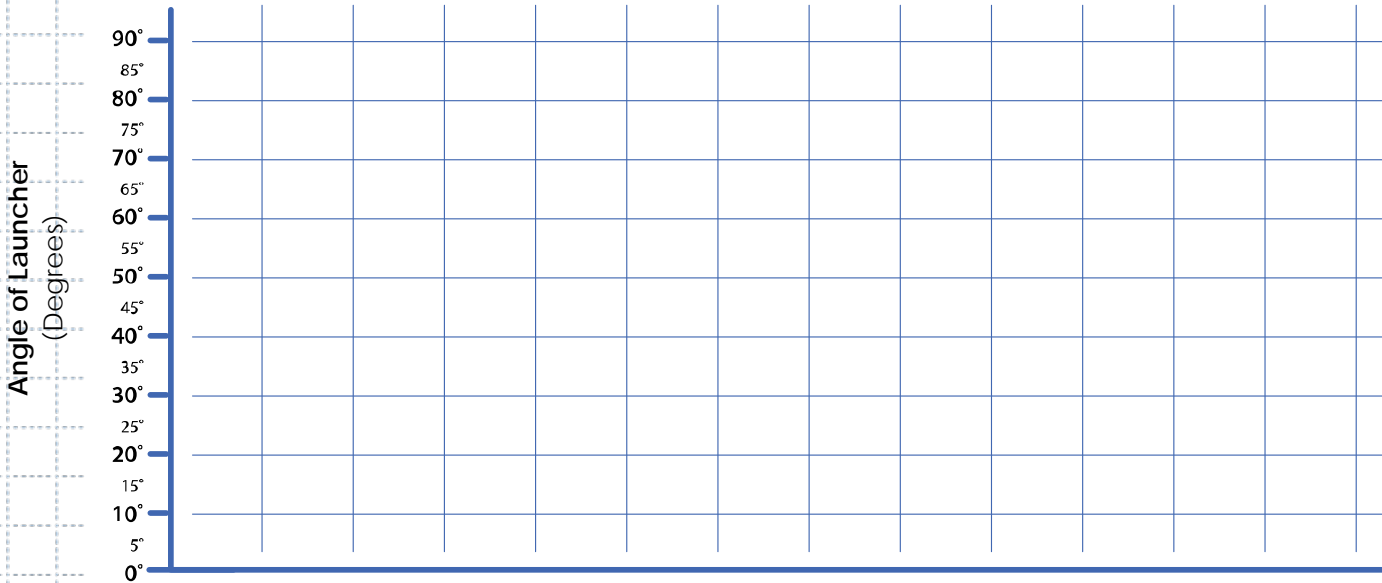
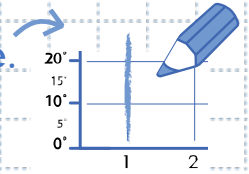


# Projectile Launcher Engineering Notebook

4

Test it.

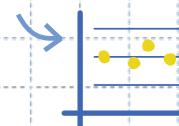
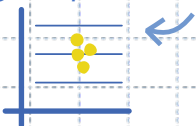
Mark your targets' distance on the graph with a vertical line. Record the **distance** of at least three launches for each design or **angle** you test on the graph below.



5

Evaluate it.

How **precise** (consistent) were your results? Does your data look *grouped together* in one area  or does it look *scattered* ?



How **accurate** (close to the 'true' value) were your results? How close is your data to the line indicating the targets' distance?

6

How can your design be improved?

This will become your next problem to solve.

7

Get another engineering notebook page.

Solve the new problem.

