

## WHAT ARE WE INVESTIGATING?

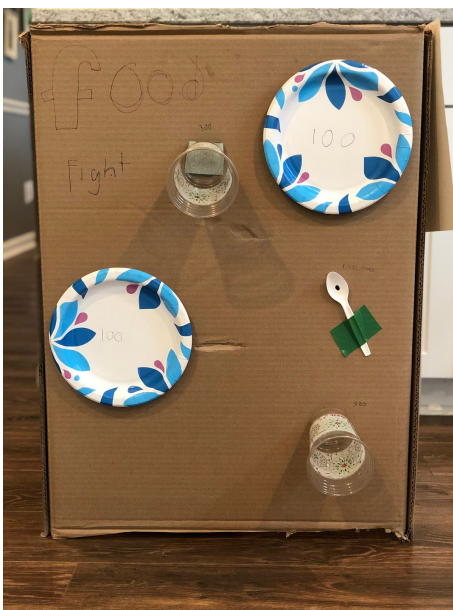
How many times can you hit a target in 15 seconds?

## MATERIALS:

- Cardboard
- Paper Plates
- Tape
- Scissors
- Markers
- String/yarn
- Timer
- Nerf Gun (you can use a ball, frisbee, etc. in place of a Nerf Gun)
- Strive Academy's Engineering Design Process Handout (found at [www.striveacademy.org](http://www.striveacademy.org))
- Pencil or Pen

## EXTENSION:

- \* Give each target a point value and make levels of expertise. For example, if you get between 100-500 points, you are a beginner, etc.
- \* Build targets at different distances and see how this affects your accuracy.
- \* Build targets at different heights and see how this affects your accuracy.



## DIRECTIONS:

1. Gather all your materials. Our materials are just suggestions - feel free to add other things too!
2. On your handout (found at [www.striveacademy.org](http://www.striveacademy.org)), fill in the title of your experiment (Nerf Gun Target).
3. On your handout, fill in your hypothesis. You want to answer the question: How many times can you hit the target in 15 seconds?
4. On your handout, draw a sketch of what your target(s) will look like. Feel free to use color and label your materials.
5. Using your materials, create targets. One idea is to use a box as the base and glue targets on to the box. Another idea is to cut holes in a box and put figurines in the holes to use as targets. You could also stack cups or empty water bottles to use as targets. Decorate your targets to make this game even more fun!
6. Under "Data Collection/Observation", draw a picture of what your final targets look like. Feel free to use color!
7. Start your timer and shoot at your target for 15 seconds. Keep track of how many times you hit your targets.
8. Under "Results", record the number of times you hit your targets.
9. Repeat steps 7-8 2 more times.
10. Under "Results", calculate your average number of target hits. To do this, add up the number of target hits from each trial, and divide by 3.
11. Answer the "Analysis" questions on your handout:
  - How did your average number of target hits compare to your hypothesis?
  - What was easier to hit - a larger target or a smaller target? Why?
  - What variables (factors) did you have to adjust to get some good hits? (Size, distance, etc.)

**\*\* Try the extension activities on the first page for more fun! \*\***