



The distance an arrow flies depends on a number of factors: the size and weight of the bow, the size and weight of the arrow, the distance the string is pulled back, and the angle the arrow is shot as well as many other variables. Any object propelled into the air is affected by such factors. These factors can be studied as ratios and proportions. Review ratios, and proportions.

Design and build an apparatus for firing rubber bands. Be able to accurately measure in mm the distance the rubber band is pulled before releasing, the angle at which the rubber band is released, and the distance the rubber band flies (not including any bounces). Using the same size rubber band and recording your data each time, make repeated firings. After you have made enough shots to get an accurate average, change one of the settings and repeat the procedure. Make a table, based on your test firings, indicating the range for a large variety of settings.

Use your imagination to design a rubber band bombing game. Perhaps you could place a target of some kind at random distances from the rubber band launcher. Take turns with a classmate trying to hit the target.

Variation 1: *Design the gun to shoot paper or tinfoil balls or other such projectiles instead of shooting rubber bands.*

Variation 2: *Test a variety of rubber band sizes and make a ballistics record.*