SODA BOTTLE ROCKETS

OUTREACH PRE-VISIT PAGE (GRADES 3-8) 90 minutes

Arizona Science Center will be arriving no later than 15 minutes before the start of your program(s). **Soda Bottle Rockets** is intended to be a hands-on introductory program that covers:

- Thrust is created when fuel is forced out of the bottle at high speeds
- Newton's 3rd Law of Motion will be used to explain the motion of the rocket
- Drag can be reduced by making the rocket more aerodynamic
- There is an optimum weight for rockets; light enough to be propelled by thrust but heavy enough to overcome drag

PROGRAM NEEDS

- Class teacher/instructor must remain in room for duration of program
- One instructor table at front of room
- Water source readily available with the capacity to fill up 2 liter bottles (i.e. a deep sink)
- Limited to 30 participants who will be split into smaller groups of 3 or 4 students per group
- Outdoor location for launch must be unoccupied by other groups, free from overhanging trees, power lines, etc. and a minimum of 50 ft. x 100 ft.
- If multiple programs are scheduled at your location, it is ideal that the instructor be set up in one room and participants be brought in, otherwise allow 15 minutes between programs

SCIENCE STANDARDS

Grade 5: S5C2PO1: Describe the following forces: gravity and friction
S5C2PO2: Describe the various effects forces can have on an object (e.g., cause motion, halt motion, change direction of motion, cause deformation).
S5C2PO4: Demonstrate effects of variables on an object's motion (e.g., incline angle, friction, applied forces).

Grade 8: S5C2PO2: Identify the conditions under which an object will continue in its state of motion (Newton's 1st Law of Motion).
S5C2PO3: Describe how the acceleration of a body is dependent on its mass and the net applied force (Newton's 2nd Law of Motion).
S5C2PO4: Describe forces as interactions between bodies (Newton's 3rd Law of Motion).