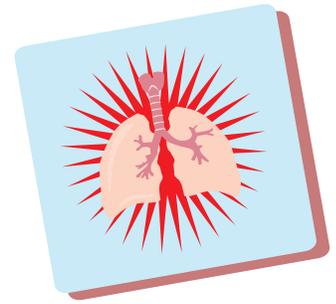


Targeting Variables with a Pom-Pom Shooter



Teacher Background Page:

Lesson Objective: Students will implement a simple experiment to learn about testing variables while furthering their knowledge of pulmonary health.

Activity Objectives:

Using a PVC Pom-Pom Shooter and restriction adapters, students will be able to:

- identify variables
- formulate a hypothesis
- collect, tabulate, graph, and analyze data
- explain the effect of simulated pulmonary disorders on pulmonary health

Activity Description:

A **Pom-Pom Shooter** is an easy, entertaining tool your students can use to test variables while learning about lung function. Different mouthpieces placed on the Pom-Pom Shooter represent different levels of pulmonary restrictions. The different mouthpieces become variables in this experiment. Students simply place a small **pom-pom** into the mouthpiece, and blow as hard as possible with **one breath**. This simulates the way a doctor would measure peak expiratory flow, commonly known as exhaling, in a patient with breathing difficulties. The instrument used by doctors for this purpose is called a **High Peak Expiratory Flow Meter**. Patients also learn to use Peak Expiratory Flow meters, PEF. Doctors often ask patients to keep a log of their PEF values to aid in managing disease.

Students will work in teams during this investigation as they assume specific roles (*Measure Master, Materials Master, Reader, Data Recorder, Time Keeper* and, if needed, an *Encourager*). Students will take turns assuming the role of the **Pom-Pom Shooter** at each station. The **Pom-Pom Shooter** is the person using the PVC pom-pom shooter device. The **Measure Master** will measure the distance traveled by each **pom-pom**. A **Data Recorder** will write down the information that the **Measure Master** collects and post the group's information on the class list. The **Materials Master** will gather, return, clean, and organize all necessary materials. The **Reader** has the responsibility of reading the investigation plan and making sure everyone stays on task. The **Time Keeper** will help ensure the group remains on task by notifying them when they reach the 5 minute mark, which should be the half way point. An **Encourager**, if needed, will encourage the others to stay on task and help with problems the group encounters. Both Group Task Cards and Station Instruction Cards are provided for this activity and should be laminated for frequent use. Groups will collect data using mouthpieces with different restrictions (variables). This information will be used to contribute to a class data set.

Note: If any group should have five students rather than four, add the **Encourager** role so all students play a specific role. At the teacher's discretion the job assignments may stay the same or rotate between students from one station to another.



CAUTION: Students with asthma or other respiratory problems should NOT assume the role of Pom-Pom Shooter in this activity because of repeated maximal inhalations and exhalations. Use of a breathing restriction mouthpiece which could leave the students short of breath or, possibly, trigger an asthmatic episode. These students can assume the roles of Measure Master, Reader, Data Recorder, Time Keeper, or Encourager.

