

Air Push

What happens if you try to pump air into a bag while someone is sitting on it?

Instructions

Students observe an effect of compressed air as they blow into a garbage bag with straws while a classmate sits on the bag.

- 1 Seal the end of a sturdy plastic garbage bag so that no air will leak out. It should begin deflated.
- 2 Spread the bag out on the floor. Tell team members to each poke one hole in the bag with a pencil.
- 3 Each team member sticks a straw through a hole and tapes it in place to prevent leaks.
- 4 One teammate sits on top of the bag, while the rest blow air into the bag through the straws.

Materials

PER GROUP OF 4–5 STUDENTS:

- Strong plastic garbage bag
- One straw per group member
- Tape
- Pencil



Engineering & Science Connections

- 🔗 Compressed air is air that is under greater pressure than the air in the general atmosphere. When air is blown into the bag, the air becomes compressed and exerts outward pressure on the bag. This makes it possible for the compressed air in the bag to support a lot of weight. Tires on a bike or car work in this same way.

- 🔗 Engineers have found many practical uses for compressed air. It is used as a source of power for machines like jackhammers, car lifts, and drills. It is used in brakes for trains and some large trucks. Compressed air is used for entertainment activities, such as to provide air to SCUBA divers or to power paintball guns. Compressed air can even be used as a way to store energy.

- 🔗 Compressed air is also valuable to engineers and others as a tool to clean delicate instruments. For example, compressed air can be purchased in spray cans that are designed to blow dust and particles off of computer circuit boards, fans, and keyboards.

Guiding Questions ?

How does the pressure of the person sitting on the bag affect the process of blowing air into it?

How would having more people blowing air into the bag at once make a difference?

Activity provided by: Society of Automotive Engineers from A World in Motion