

Topic 2: FAQs

1. Is a wind tunnel really a tunnel? Not really. A wind tunnel is a device where a powerful fan pulls a stream of air past an object positioned inside. The air moving past the object produces the same effects you would observe if the object were moving through the air. It's a safe way to test new shapes for aircraft, boats, cars, and even athletes. Models are used. It is a lot cheaper, easier, and safer to build and test a model than to build and fly a real airplane.
2. When you buy special balloons filled with helium, and let them go, they float way up. Why? Helium balloons work on the law of buoyancy. The helium balloon is floating in a "pool" of air. The helium balloon displaces an amount of air. As long as the helium plus the balloon is lighter than the air it displaces, the balloon will float in the air. Helium weighs 0.1785 grams per litre. Nitrogen weighs 1.2506 grams per litre, and since nitrogen makes up 80% of the air you breathe, 1.25 is a good estimate to use for the weight of a litre of air. A 25-cm diameter helium balloon has a lifting capacity of 14 grams.
3. What makes some things rust faster? There are many factors that control the rate at which rust forms on an object. One of the main factors is temperature. Warmth allows the particles and electrons involved in the rusting process to move faster, and therefore, the metal that is being oxidized also rusts faster. If it is cold, the opposite is true – the particles and electrons are not capable of moving very fast, so rusting occurs very slowly. Another very important factor in rust formation is the amount of oxygen or air that is present around the rusting metal. The more oxygen present, the longer the metal will continue to be oxidized, and therefore, more rust will form because it takes longer to "use up" all the oxygen around the metal. Some other factors that affect how fast rust forms are the amount of moisture present around the metal, the type of solutes present around the metal (for example, if a metal is surrounded with salt water, it will rust faster than if it is surrounded by air), and the type of metal that is being oxidized.
4. When do you think the first kite was invented? Exactly how old kites are is not known. However, the earliest recorded instance of kite flying was around 200 B.C. describing a Chinese General who flew a kite above a town to determine how far his army would have to travel. Since they knew the distance, the soldiers under his command surprised their enemies and won the battle.
5. Some kite-fliers enjoy "buggying." What do you think kite bugging is? Kite bugging is when a stack of dual line kites are used to pull a small go-cart along a beach, field, or some other area suitable for kites. This type of kite flying requires fairly strong wind, as quite a lot of force is needed to allow the "buggy" to reach maximum speed.