## **Cogs and Sprockets**

(yes, there is a difference)

This image is from George Washington's gristmill, and shows some nice examples of cogs. While some people might use the term "cog" and "gear" interchangeably, usually a cog is a specialized type of gear, normally wooden, consisting of pegs or teeth driven into a disk. Cogs can engage with each other, or, as shown in the photo, with a wooden gear (near the top center) or with a "lantern pinion" or "cage gear" as in the cogs on the right.



Sprockets, on the other hand, are used with chains to transfer motion. In VEX, several types of gears are available: ordinary (low strength) and high strength spur gears, small bevel gears, worm gears and worms, and rack & pinion gears. Most of the time, a pair of spur gears is chosen to transmit torque between two parallel shafts, often changing the speed and torque as well. Gears cause the direction of rotation to reverse, also. Chain and sprockets are used (usually) to transmit torque across some distance, often changing the ratio, but the direction of rotation does not reverse.

In competition, care must be taken to align gears so they do not strip (the VEX gears have been engineered to mesh properly at 1/2" grid spacings). For sprockets, the load must not be too high or the chain will come apart. Also, if precision is required, some sort of chain tension device will be needed.