



Gears

WHAT ARE GEARS FOR?

Robots use gears to give motors purpose because they can be used to change direction, power, and speed of rotation.

Gears have teeth that mesh with other gears in order to transmit torque. Gears can be used to change the speed, torque (turning force), or direction of a motor's original output.

For gears to be compatible with each other, the meshing teeth must have the same shape (size and pitch).

docs.revrobotics.com



In any pair of gears, the larger gear will move more slowly than the smaller gear, but it will move with more torque. Thus, the bigger the size difference (or gearing ratio) between two gears, the greater the difference in speed and torque. The gearing ratio is the value at which you change your velocity and torque.

<https://www.societyofrobots.com> > ...



Consider two gears interacting with each other, Gear A with 10 teeth and Gear B with 20 teeth. When Gear A makes one full rotation, Gear B would have made half a rotation due to the 2:1 gear ratio.

The gear ratio tells us that for every rotation of the driving gear (Gear A), the driven gear (Gear B) rotates half a turn.

Given the gear ratio and the speed of the driving gear, you can calculate the speed of the driven gear. If Gear A rotates at 60 RPM (revolutions per minute), Gear B would rotate at 30 RPM.

<https://www.mathratios.com/tutorial/understanding-gear-ratios.html>

CHALLENGE 1

To demonstrate how the number of teeth on two gears relates to the speed of each gear when they are linked together and one is turned, create a display with interchangeable gears made of cardboard, wood, or metal gears and share it with your unit or upload a picture of it to our website!

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STRATEGY N°3

The background features several decorative elements consisting of multiple thin, black, wavy lines. In the top-left corner, there is a set of lines that curve downwards and to the right. In the top-right corner, there is a set of lines that curve downwards and to the left. In the bottom-left corner, there is a set of lines that curve upwards and to the right. In the bottom-right corner, there is a set of lines that curve upwards and to the left. The central text is positioned between these decorative elements.

*Thanks for
Watching!*