

STEMGuyana

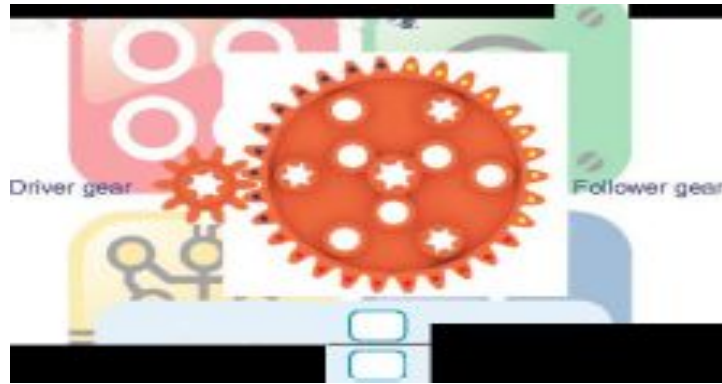
03/09/19

Good morning students!

Today's themes are: GEARS
- How do they work?

What is a gear?

A gear is a toothed wheel or cylinder used to transmit rotary motion from one part of a machine to another.



Two or more gears, transmitting motion from one shaft to another, constitute a gear train.

What is the gear ratio?

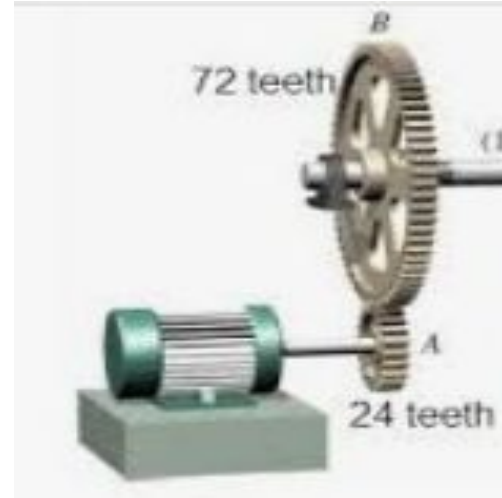
- When there are two gears of different sizes, the two gears will rotate in different speed. The difference between these two speeds is called the gear ratio.
- Gear ratio can be calculated using the number of teeth. The formula is:

$$\text{Gear ratio} = \frac{\text{Number of teeth on follower gear}}{\text{Number of teeth on the driver gear}}$$

Activity: FIND TWO GEARS IN YOUR KIT. CREATE A GEAR TRAIN AND CALCULATE THE GEAR RATIO

The Gear Train - Drive gear and follower gear

The simplest example of a **gear** train has two **gears**. The "input **gear**" (also known as drive **gear**) transmits power to the "output **gear**" (also known as follower **gear**). The drive **gear** will typically be connected to a power source, such as a motor or engine.



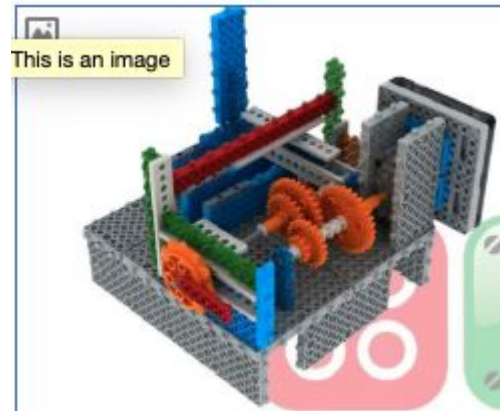
Activity: Use a calculator to determine the gear ratio of the gear train above

Speed And Torque

- When a gear has made a full turn, you can say it has made one full revolution.
- Speed is the number of rotations of the gear. In mechanics, speed is measured with RPM (Revolutions Per Minute).
- Torque is a force that tends to rotate things.

Speeding Up Or Slowing Down

- The movement of the wheel can be speed up or speed down by changing the gear ratio of the gear system.



Activity: How can we change the gear ratio of a gear system?

Activity For Today

- **Robots - Let us build a 3 speed gear system (follow instructions in attached document)**
- **Scratch - Create and animate a 3 speed gear system (study designs online or in attached document)**

Khan Academy

Begin Practicing Math Subject on the
NGSA app or Khan Academy App --

Ask anyone on the STEM Team If you
need help and let us know when you start
a new lesson, and if you need any help.