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Dr. E's Challenges Skill Builder 1

A Quick Lesson on Gears

A gear is a special type of wheel with teeth that slots together for a lot of different reasons

...including: increasing torque, changing speed, or changing the direction of movements.



Gears included with SRIKE Prime

12-tooth Double Bevel Gear

28-tooth Double Bevel Gear

zo-tooth Double Bevel Gear

36-tooth Double Bevel Gear



What is a Gear Ratio?

Two or more gears in a row is called a gear train! Learn more about gear trains from the Think Like an Engineer Blogs! The way in which a gear moves affects the way the gear connected to that one moves!

The Gear Ratio

- is used to calculate the relative speeds of gears
- Calculated from information about both gears in a train
- Helps discover if a gear is going to be moving fast or slowly.

Calculating a Gear Ratio

- 1. Identify the driver (the gear on which the force is acting upon)
- 2. Count how many teeth the driver gear has
- 3. Identify the follower (the gear that is attached to the driver, but is not driving the force)
- 4. Count how many teeth the follower gear has
- 5. The gear ratio is:

of teeth of driver: # of the teeth of follower

Can you find some gears on the Think Like an Engineer Blog and calculate the gear ratios?

Skill Builder Activity 1

Build your own gears out of cardboard!

What materials do you need?

- cardboard
- scissors
- something to write with

What materials might you need?

- paper

- a ruler

- straws for what?

Ask yourself some design questions!

- What do you want your gear ratios to be?
- How can you make sure the gears fit together? What do you need to measure?
- How big do you want your gears to be?
- Do you want your gears to be able to attach to a shaft?

Skill Builder Activity z



Build your own gear trains!

- 1. Your driver gear should move faster than your follower.
- 2. Now your driver gear should move slower than your follower gear.
- 3. Your driver gear should move three times as fast as your follower. Are they turning in the opposite or the same direction?

Challenge Questions:

- 1. Find a gear ratio of 7/9 by building your own gear train
- 2. Build a gear train with 3 gears, calculate the gear ratio
- 3. Can you use your LEGO gears to build something that moves like a car?

For More Information on Gears

Visit the Think Like an Engineer Blog on

Gears!