

Simple Machines–Gears: Objectives and Vocabulary

By referring to the various handouts, notes, lab activities and homework covered during this unit, then at the end of this unit of study, each student should be able to:

1. Identify what simple machine a gear is derived from.
2. Determine the direction of rotation for a sequence of intermeshing gears when given the direction of rotation for just one of them.
3. Apply the “Law of Gearing” or “Law of Gears” to calculate the number of teeth or the number of turns for the output gear when given the number of teeth and turns for the input gear.
4. Build compound gear machines made up of more than one pair of intermeshing gears.
5. Calculate the gear ratio for a single pair of intermeshing gears given either the number of teeth in each gear or the number of turns that each gear makes.
6. When shown a diagram of a compound gear machine, record the position and number of teeth on each gear in a Data Table similar to the type used in the gear labs.
7. Use what you have learned and the data table to work out the single gear ratios and then calculate the total gear ratio for the compound gear machine.
8. Apply your knowledge of gear ratios to design a gear machine having a specific total gear ratio using the same single gear ratios used in class.
9. Explain some of the reasons why gears are used in machines.

Vocabulary:

Simple Machine

input gear

single gear ratio

gear machines

output gear

total gear ratio

“Law of Gearing” or “Law of Gears”

compound gear machine

intermeshing gears

