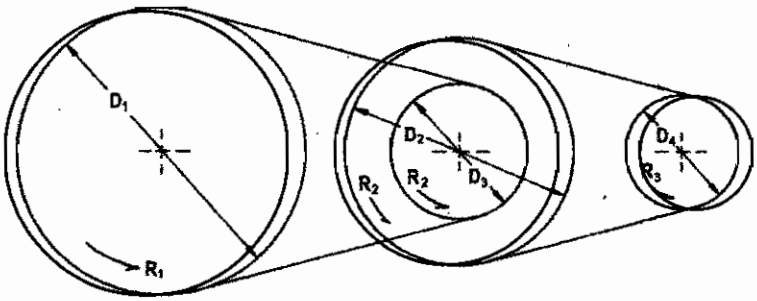
FOR MULTIPLE TRANSMISSION SYSTEMS:

Belts and Pulleys: For a system of three shafts and four pulleys, number the components as follows:

- pulley #1 is on shaft #1,
- pulleys #2 and #3 are on shaft #2,
- and pulley #4 is on shaft #3.

Shaft #1 is the drive shaft and shafts #2 and #3 are driven shafts. The REVOLUTIONS PER MINUTE of the shafts are labeled R_1, R_2, and R_3 and the DIAMETERS of the pulleys are labeled D_1, D_2, D_3, and D_4. The REVOLUTIONS PER MINUTE, R_1, of the drive shaft and the DIAMETERS of the pulleys are known and the REVOLUTIONS PER MINUTE, R_3, of the final driven shaft is required. Use the following equations:



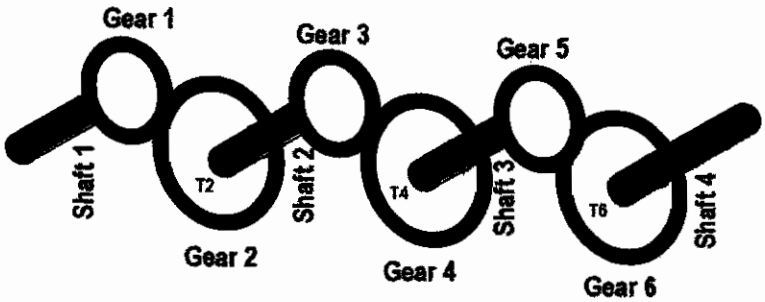
$$D_1 \times R_1 = D_2 \times R_2;\ D_3 \times R_2 = D_4 \times R_3$$

Combine these equations to find:

$$R_3 = \frac{R_1 \times (D_1 \times D_3)}{(D_2 \times D_4)}$$

Gears: For a system of four shafts and six gears, number the components as follows:

- gear #1 is on shaft #1,
- gears #2 and #3 are on shaft #2,
- gears #4 and #5 are on shaft #3,
- and gear #6 is on shaft #4.



Shaft #1 is the drive shaft, and shafts #2, #3, and #4 are driven shafts. The REVOLUTIONS PER MINUTE of the shafts are labeled R_1, R_2, R_3, and R_4 and the NUMBER OF TEETH on the gears are labeled T_1, T_2, T_3, T_4, T_5, and T_6. The REVOLUTIONS PER MINUTE, R_1, of the drive shaft and the NUMBER OF TEETH on the gears are known and the REVOLUTIONS PER MINUTE, R_4, of the final driven shaft is required. Use the following equations:

$$T_1 \times R_1 = T_2 \times R_2;\ T_3 \times R_2 = T_4 \times R_3\ ;\ T_5 \times R_3 = T_6 \times R_4$$