

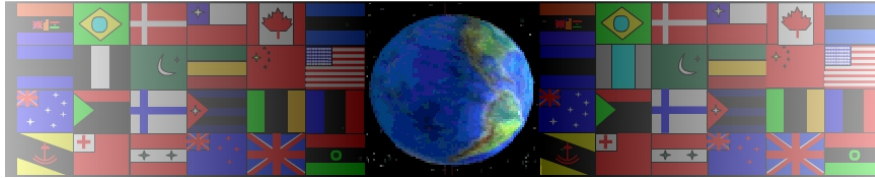
# GEAR RATIOS

WORLD ASSOCIATION OF TECHNOLOGY TEACHERS <https://www.facebook.com/groups/254963448192823/> [www.technologystudent.com](http://www.technologystudent.com) © 2017 V.Ryan © 2017

V.Ryan © 2000 - 2017

On behalf of The World Association of Technology Teachers

# W.A.T.T.



World Association of Technology Teachers

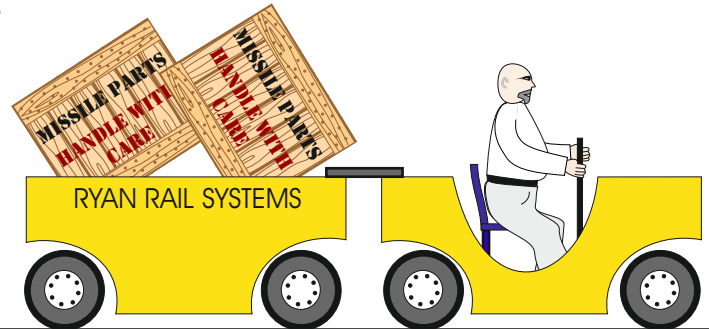
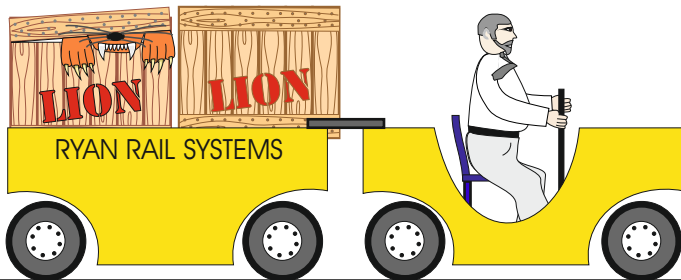
This exercise can be printed and used by teachers and students. It is recommended that you view the website ([www.technologystudent.com](http://www.technologystudent.com)) before attempting the design sheet .

THESE MATERIALS CAN BE PRINTED AND USED BY TEACHERS AND STUDENTS.  
THEY MUST NOT BE EDITED IN ANY WAY OR PLACED ON ANY OTHER MEDIA INCLUDING WEB SITES AND INTRANETS.  
NOT FOR COMMERCIAL USE.  
THIS WORK IS PROTECTED BY COPYRIGHT LAW.  
IT IS ILLEGAL TO DISPLAY THIS WORK ON ANY WEBSITE/MEDIA STORAGE OTHER THAN [www.technologystudent.com](http://www.technologystudent.com)

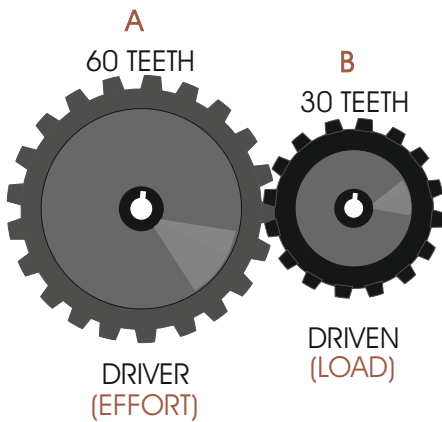
# GEAR RATIOS

The supply staff in the theme park drive small electric carts. These are charged up over night and used during the day time. The carts rely on geared systems to propel them along at speeds exceeding fifteen mph. It has been decided to change the gear system in each of the carts to reduce the speed to ten mph. The old and new replacement gear systems are shown below.

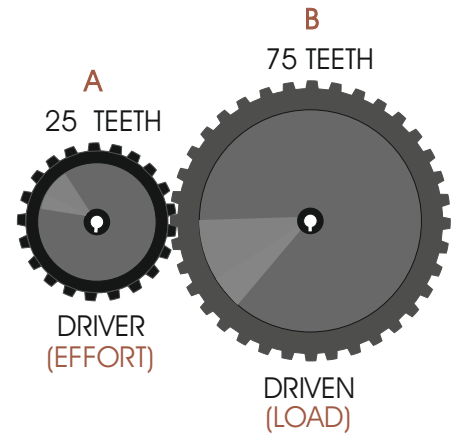
Work out the gear ratio and rpm of gear 'B' for each system.



## OLD GEAR SYSTEM



## NEW GEAR SYSTEM



### GEAR RATIO / VELOCITY RATIO

$$\frac{\text{Distance moved by Effort}}{\text{Distance moved by Load}} = \frac{\text{Input movement}}{\text{Output movement}}$$

$$= \frac{\text{Driver : Driven}}{\text{RPM}}$$

GEAR A	GEAR B
60 teeth	30 teeth
120 rpm	

$$= \frac{120}{2} = 60 \text{ revs/min}$$

### GEAR RATIO / VELOCITY RATIO

$$\frac{\text{Distance moved by Effort}}{\text{Distance moved by Load}} = \frac{\text{Input movement}}{\text{Output movement}}$$

$$= \frac{\text{Driver : Driven}}{\text{RPM}}$$

GEAR A	GEAR B
25 teeth	75 teeth
60 rpm	

$$= \frac{60}{3} = 20 \text{ revs/min}$$