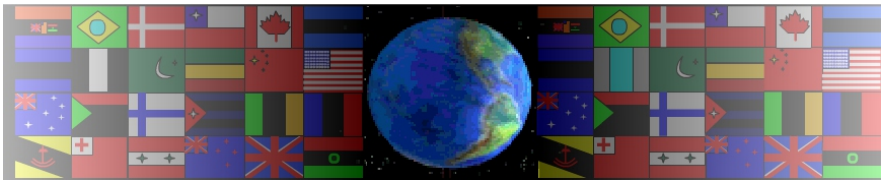
GEAR RATIO EXAMINATION QUESTION

On behalf of The World Association of Technology Teachers

W.A.T.T.

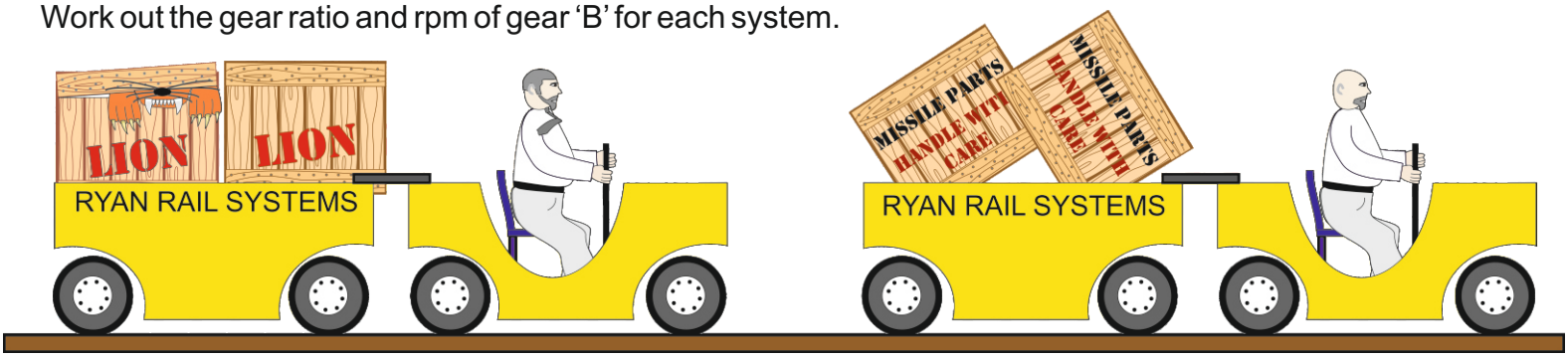


World Association of Technology Teachers

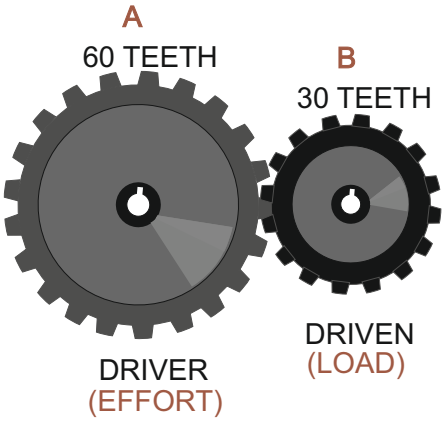
This exercise can be printed and used by teachers and students. It is recommended that you view the website (www.technologystudent.com) before attempting the design sheet .

At a railway stock yard everyday goods are moved from one train to another by porters driving small electric trains. These are charged up over night and used during the day time. The trains relay 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 trains 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



GEAR RATIO / VELOCITY RATIO

$$\frac{\text{Distance moved by Effort}}{\text{Distance moved by Load}} = \frac{\quad}{\quad}$$

$$= - = \frac{\text{Input movement}}{\text{Output movement}}$$

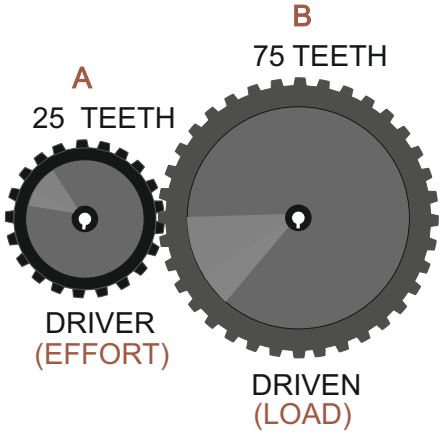
$$= \quad \text{Driver} : \text{Driven} \quad : \quad \underline{\text{RPM}}$$

GEAR A	GEAR B
60 teeth	30 teeth
120 rpm	

$$- =$$

$$= \quad = \quad \text{revs/min}$$

NEW GEAR SYSTEM



GEAR RATIO / VELOCITY RATIO

$$\frac{\text{Distance moved by Effort}}{\text{Distance moved by Load}} = \frac{\quad}{\quad}$$

$$= - = \frac{\text{Input movement}}{\text{Output movement}}$$

$$= \quad \text{Driver} : \text{Driven} \quad : \quad \underline{\text{RPM}}$$

GEAR A	GEAR B
25 teeth	75 teeth
60 rpm	

$$- =$$

$$= - = \quad \text{revs/min}$$