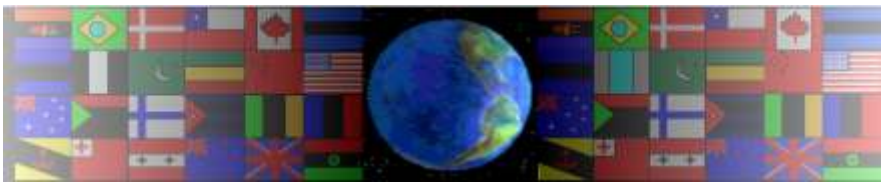
# PULLEYS AND LIFTING



On behalf of The World Association of Technology Teachers

# W.A.T.T.



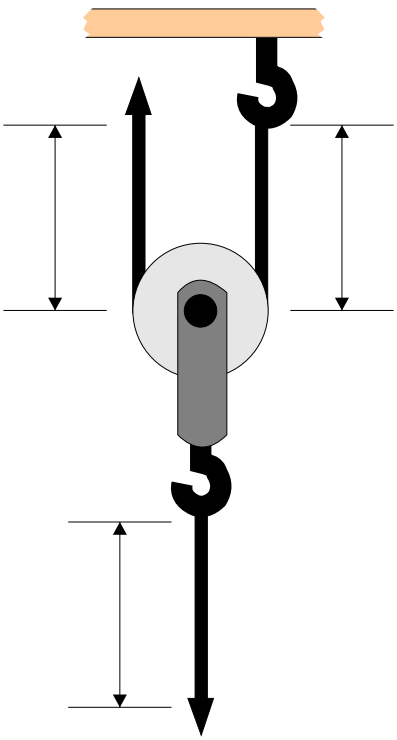
World Association of Technology Teachers

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 .

# PULLEYS AND LIFTING



DIA. 1



1. Label the effort and load on the pulley system drawn opposite (DIA. 1).

2. What happens to the mechanical advantage when a pulley system is suspended, as shown in the diagram? Explain your answer.

3. Complete the calculation below to determine the mechanical advantage of the pulley system?

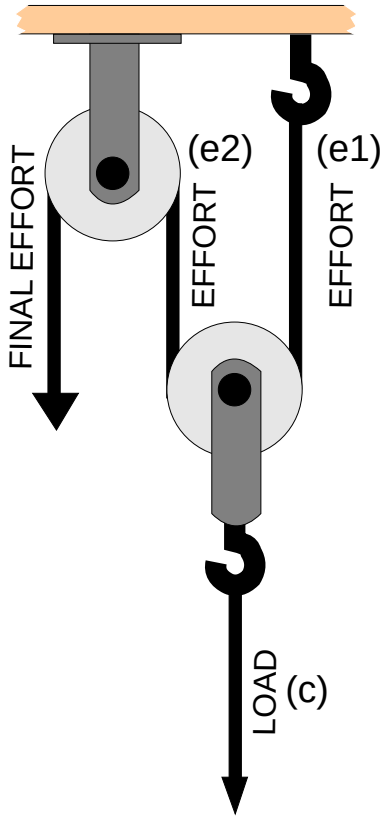
$$\text{MECHANICAL ADVANTAGE} = \frac{\text{LOAD}}{\quad} = \frac{\quad}{\quad} =$$

## VELOCITY RATIO

4. Using the example above. If the load is lifted 2 metres, the rope on the right hand side and left hand side (above the pulley) are shortened by one metre. Therefore, the effort can be seen to move twice as far as the load.
Complete the calculation below so that it shows the velocity ratio.

$$\text{VELOCITY RATIO (MOVEMENT RATIO)} = \frac{\text{DISTANCE MOVED BY EFFORT}}{\quad} = \frac{\quad}{\quad} =$$

DIA. 2




5. Why is a pulley system as seen in Dia. 2, easier to use than the one shown in Dia 1 (seen above)?

6. Calculate the mechanical advantage and velocity ratio for the pulley system Dia. 2. Include the formulas and all working out in your answers.