

## MECHANICAL ADVANTAGE WORKSHEET

Calculate the mechanical advantage in the problems with the equation:

$$MA = \frac{\text{Resistance Force}}{\text{Effort Force}}$$

OR

$$MA = \frac{\text{Length of Effort Arm}}{\text{Length of Resistance Arm}}$$

1. You apply a force of 18 N on to the end of a lever to open a paint can lid. The resistance of the lid is 9 N. Calculate the MA.
2. You apply a force on a crowbar to open a stuck door. The effort length of the crowbar is 26 cm long and the resistance length is 4 cm. Find the MA of the crowbar.
3. A worker uses a board that is 4 m long to pry up a boulder. A small rock is used for a fulcrum and is placed 0.5 m from the resistance end of the lever. Calculate the MA of the board.
- 4A. Three of your friends are all sitting on one end of a seesaw. The combined weight is 275 N. The length from the fulcrum to your friends is 2.5 m. The rest of the seesaw (from the fulcrum to you) is 4.5 m. What is the MA? What effort force is needed to lift your friends?
- 4B. You want to see if you can lift your three friends when each side of the seesaw is equal in length (3.5 m). What is the MA? What effort force is needed to lift them?