

EXERCISE 4 ANSWERS IN MK.Pg 87

1. Friction refers to the force that opposes motion between objects in motion.
2. Friction helps us to write on papers/Helps us to light a match stick when struck on a match box/Helps in grinding food using a grinding machine/Enable vehicles to stop and move/Enable people climb electric poles, walls etc
3. Friction causes unnecessary heat/causes unwanted noise/more force is needed to produce movement/causes wear and tear of objects in contact/delays work and retards movement.
4. Using lubricants eg oil, grease.//Using ball bearings//using rollers//streamlining objects to prevent viscosity//making rough surfaces in contact to be smooth.
5. First class lever
6. the arrow has to point downwards pressing the area where you handle.
7. Wedges are used for peeling and cutting food//splitting fire wood.
8. a) single fixed pulley b) single movable pulley
9. Block and tackle pulley.
10. $M.A = L/E$
 $M.A = 20g/E$
 $2XE = 20/E$
 $2E/2 = 20/2$
 $E = 10g$
Therefore since $M.A = L/E$, and Load = 20g Effort = 10g, so
 $20/10 = 2$ So, $M.A = 2$ (TWO).
- Note; M.A has no units. We got 2 in position of M.A because of the number of ropes that support the pulley system above. You can also use this formula; Effort = $1/2 \times$ load ie $1/2 \times 20g = 10g$
11. Flag posts, Breakdown vehicles, Cranes, Lifts, Scaffolds.
12. Motor car jacks/engineers vice/bolts and nuts/bottle lids/screw nails
13. By changing the direction of force//By reducing the friction//By reducing the effort needed to do the work//By increasing the speed of doing work.
14. Ladders/stair cases/ramps/winding roads.