Self-study Sheet 05

Topic – Simple machines

Lesson -Lever

*End of this study you will,

- Introduce the fulcrum, effort and load through a simple activity
- Identify the force applied on the lever downward as the effort, the force that against by the effort as load and the point that tend to rotate the effort and load as fulcrum
- Demonstrate the instances of using lever according to the position of fulcrum comparative to effort and load through simple activity.
- Present advantages of using the different orders of levers and examples for instances where there using in day today life
- Demonstrate the effective ways of using lever through the activities

*First read the 86, 87, 88, 89, 90, 91, 92 pages of grade 9 text book part ii

*Then do the activity 15.1

*Sketch the figure 15.7.

(1) Mark distance a, distance x, point p.

(2) What is the direction of the force on the lever to lift the book in this figure?

*Then read the second paragraph of page number 87, according to the activity 15.1,

(1) Where is the place that effort is applied?

(2) Where the point that load is placed?

(3) What is the letter of the place of fulcrum?

Load is at one end of the lever and the effort is at the other end of the lever, load is balanced by the effort on the point of fulcrum.

*Then sketch & name the figure 15.8 ,

(1) Write the meaning of effort arm

(2) Write the meaning of load arm

*Then carefully read the bottom two paragraph of page number 87,

(1) Define the term "mechanical advantage."

(2) Write word equation for that.

(3) Solve the problem at the final paragraph. (effort as 12N and load as 36N)

*Then read page number 88, 89 carefully and answer the following questions.

(1) Write three types of lever.

(2) Draw figure 15.10 (first order lever) and name the parts. Give two examples.

(3) Draw figure 15.12 (second order lever) and name the parts. Give two examples.

(4) Draw figure 15.14 (thired order lever) and name the parts. Give two examples.

*Then read page number 90 carefully,

(1) Draw figure 15.16 and name the parts.

(2) According to that define the term "velocity ratio."

(3) Write down the word equation for velocity ratio.

(4) Displacement effort (BX) is 60cm and displacement of load (AY) is15cm in figure 15.16, calculate the velocity ratio, according to the above equation.

*Then read page number 91 and 92 carefully,

(1) Write down the meaning of work-input.

(2) Write down the meaning of work-output.

(3) Practice how to calculate work-input and work-output according to the examples of page number 91.

(4) Write down an equation for efficiency of lever. (machine)