Lever - There are many possibilities with a meter rule as a lever with a load (known or unknown) suspended from a point near one end (say left), the lever itself pivoted on a knife-edgeuse slotted weights suspended from the other (right) side for effort.

Determine the mass of a metre rule using a spring balance or by balancing it on a knife-edget some point away from the middle and a 50g weight on the other side. Next pivot (F) the metre rule at the 40cm, 50cm and 60cm mark, each time suspending a load L or the left end and effort E near the right end. Adjust E and or its position so that the rule is balanced. Tabulate the position of L, F and E and the magnitudes of L and E and the distances of load arm and effort arm. Calculate MA=L/E and VR = effort arm/load arm. It will be found that MA VR in the third case. Try to explain why this is so. Also try to calculate the real load and real effort in these cases.

2. Determine the VR and MA of a given pulley system.

3. Trace the course of different rays of light refracting through a rectangular glass slab at different angles of incidence, measure the angles of incidence, refraction and emergence. Also measure the lateral displacement.

4. Determine the focal length of a convex lens by (a) the distant object method and (b) using a needle and a plane mirror.

5. Determine the focal length of a convex lens by using two pins and formula $f = uv/(u+v)$.

6. For a triangular prism, trace the course of rays passing through it, measure angles i_1, i_2, A and δ. Repeat for four different angles of incidence (say i1=40°, 50°, 600° and 700°). Verify i_1+ i_2=A+δ and A = r_1 + r_2 .

7. For a ray of light incident normally (i1=0) on one face of a prism, trace course of the ray. Measure the angle δ. Explain briefly. Do this for prisms with A=60° , 45° and 90° . 8. Calculate the sp. heat of the material of the given calorimeter, from the temperature readings and masses of cold water, warm water and its mixture taken in the calorimeter.