

## ATOMIC ENERGY CENTRAL SCHOOL

### CLASS-6 PRACTICAL GEOMETRY MODULE – 3 HAND OUT

#### **PERPENDICULARS**

- Two lines ( or rays or segments ) are said to be perpendicular if they intersect such that the angles between them are right angles.

#### **PERPENDICULAR TO A LINE THROUGH A POINT ON IT**

##### **paper fold method**

- Given a line  $l$  drawn on a paper sheet and a point P lying on the line.
- Simply fold the paper along the line as shown.
- Again fold the paper so that crease passes through the marked point P
- Open out ; the crease is perpendicular to  $l$  .

#### **PERPENDICULAR TO A LINE THROUGH A POINT ON IT**

##### **using ruler and a set-square**

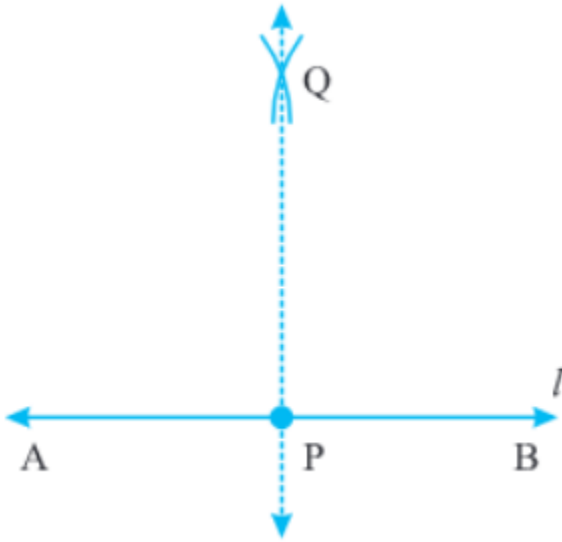
- A line  $l$  and a point P are given. Note that P is on the line  $l$ .
- Place a ruler with one of its edges along  $l$ . Hold this firmly.
- Place a set-square with one of its edges along the already aligned edge of the ruler such that the right angled corner is in contact with the ruler
- Slide the set square along the edge of ruler until its right angled corner coincides with P
- Hold the set-square firmly in this position. Draw PQ along the edge of the square

#### **PERPENDICULAR TO A LINE THROUGH A POINT ON IT**

##### **using ruler and a compasses**

- Given a point P on a line  $l$ .
- With P as centre and a convenient radius, construct an arc intersecting the line at two points A and B.
- With A and B as centres and a radius greater than AP construct two arcs, which meet each other at Q

Join PQ. Then PQ is perpendicular to  $l$ .



### **Perpendicular to a line through a point not on it paper folding method**

- Take a sheet of paper. Draw a line on it. Make a point P away from  $l$ .
- Fold the sheet such that the crease passes through P.

### **Perpendicular to a line through a point not on it method using ruler and set-square**

- Let  $l$  be the given line and P be a point outside  $l$ .
- Place a set-square on  $l$  such that one arm of its right angle aligns along  $l$ .
- Place a ruler along the edge of the opposite of the right angle of the set-square.
- Hold the ruler fixed. Slide the set-square along the ruler till point P touches the other arm of the set-square.
- Join PM along the edge through P, meeting  $l$  at M.
- Now PM is perpendicular to  $l$ .

### **Perpendicular to a line through a point not on it method using ruler and compasses**

- Given a line  $l$  and a point P not on it.
- With P as a centre, draw an arc which intersects line  $l$  at two points A and B.

- Using the same radius and with A and B as centres, construct two arcs that intersect point, say Q, on the other side.
- Join PQ. Thus, PQ is perpendicular to  $l$ .

