**Mathematics**
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(Chapter - 14) (Practical Geometry)
(Class - VI)

**Exercise 14.4**

**Question 1:**
Draw any line segment $\overline{AB}$. Mark any point $M$ on it. Through $M$, draw a perpendicular to $\overline{AB}$. (Use ruler and compasses)

**Answer 1:**
Steps of construction:
(i) With $M$ as centre and a convenient radius, draw an arc intersecting the line $AB$ at two points $C$ and $B$.
(ii) With $C$ and $D$ as centres and a radius greater than $MC$, draw two arcs, which cut each other at $P$.
(iii) Join $PM$. Then $PM$ is perpendicular to $AB$ through the point $M$.

**Question 2:**
Draw any line segment $\overline{PQ}$. Take any point $R$ not on it. Through $R$, draw a perpendicular to $\overline{PQ}$. (Use ruler and set-square)

**Answer 2:**
Steps of construction:
(i) Place a set-square on $\overline{PQ}$ such that one arm of its right angle aligns along $\overline{PQ}$.
(ii) Place a ruler along the edge opposite to the right angle of the set-square.
(iii) Hold the ruler fixed. Slide the set square along the ruler till the point $R$ touches the other arm of the set square.
(iv) Join $RM$ along the edge through $R$ meeting $\overline{PQ}$ at $M$. Then $RM \perp \overline{PQ}$.

**Question 3:**
Draw a line $l$ and a point $X$ on it. Through $X$, draw a line segment $\overline{XY}$ perpendicular to $l$. Now draw a perpendicular to $\overline{XY}$ to $Y$. (use ruler and compasses)

**Answer 3:**
Steps of construction:
(i) Draw a line $'l'$ and take point $X$ on it.
(ii) With $X$ as centre and a convenient radius, draw an arc intersecting the line $'l'$ at two points $A$ and $B$.
(iii) With $A$ and $B$ as centres and a radius greater than $XA$, draw two arcs, which cut each other at $C$.
(iv) Join $AC$ and produce it to $Y$. Then $XY$ is perpendicular to $'l'$.
(v) With $D$ as centre and a convenient radius, draw an arc intersecting $XY$ at two points $C$ and $D$.
(vi) With $C$ and $D$ as centres and radius greater than $YD$, draw two arcs which cut each other at $F$.
(vii) Join $YF$, then $YF$ is perpendicular to $XY$ at $Y$.

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