

EXERCISE 14.4

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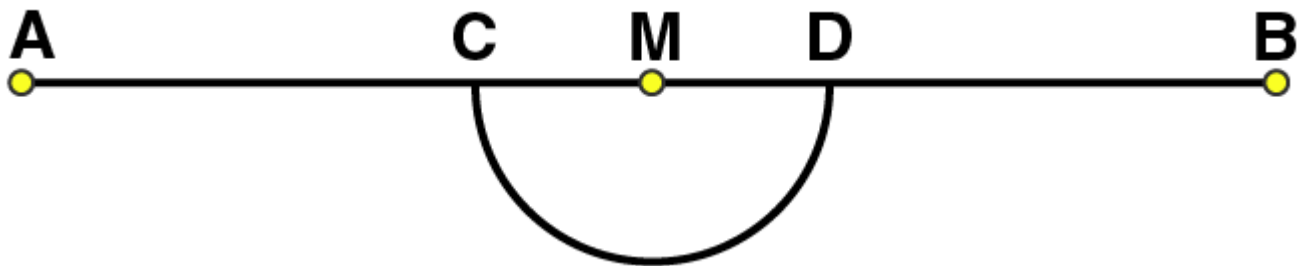
1. Draw any line segment \overline{AB} . Mark any point M on it. Through M, draw a perpendicular to \overline{AB} . (use ruler and compasses)

Solutions:

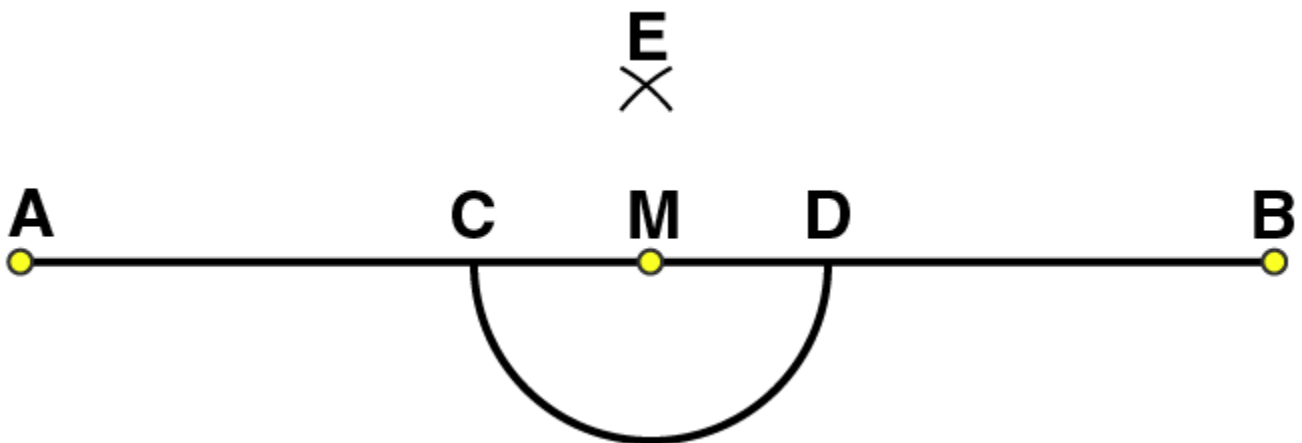
(1) Draw a line segment \overline{AB} and mark a point M on it.



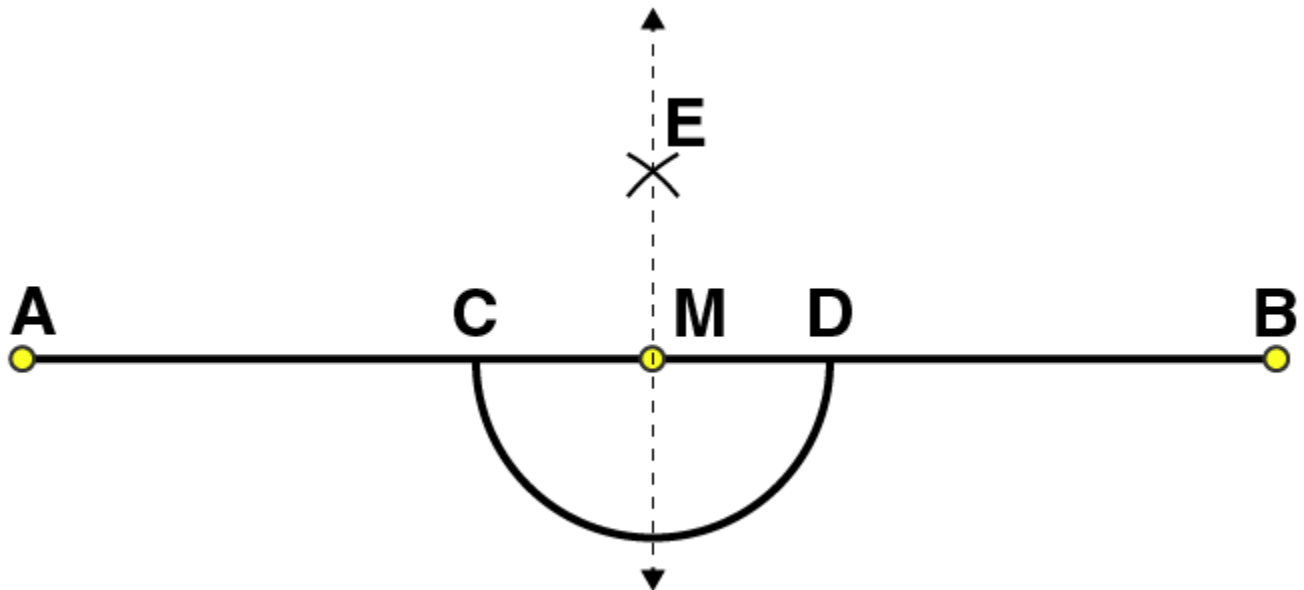
(2) Taking M as centre and a convenient radius, construct an arc intersecting the line segment \overline{AB} at points C and D, respectively.



(3) By taking centres as C and D and radius greater than CM, construct two arcs such that they intersect each other at point E.



(4) Join EM. Now \overline{EM} is perpendicular to \overline{AB}



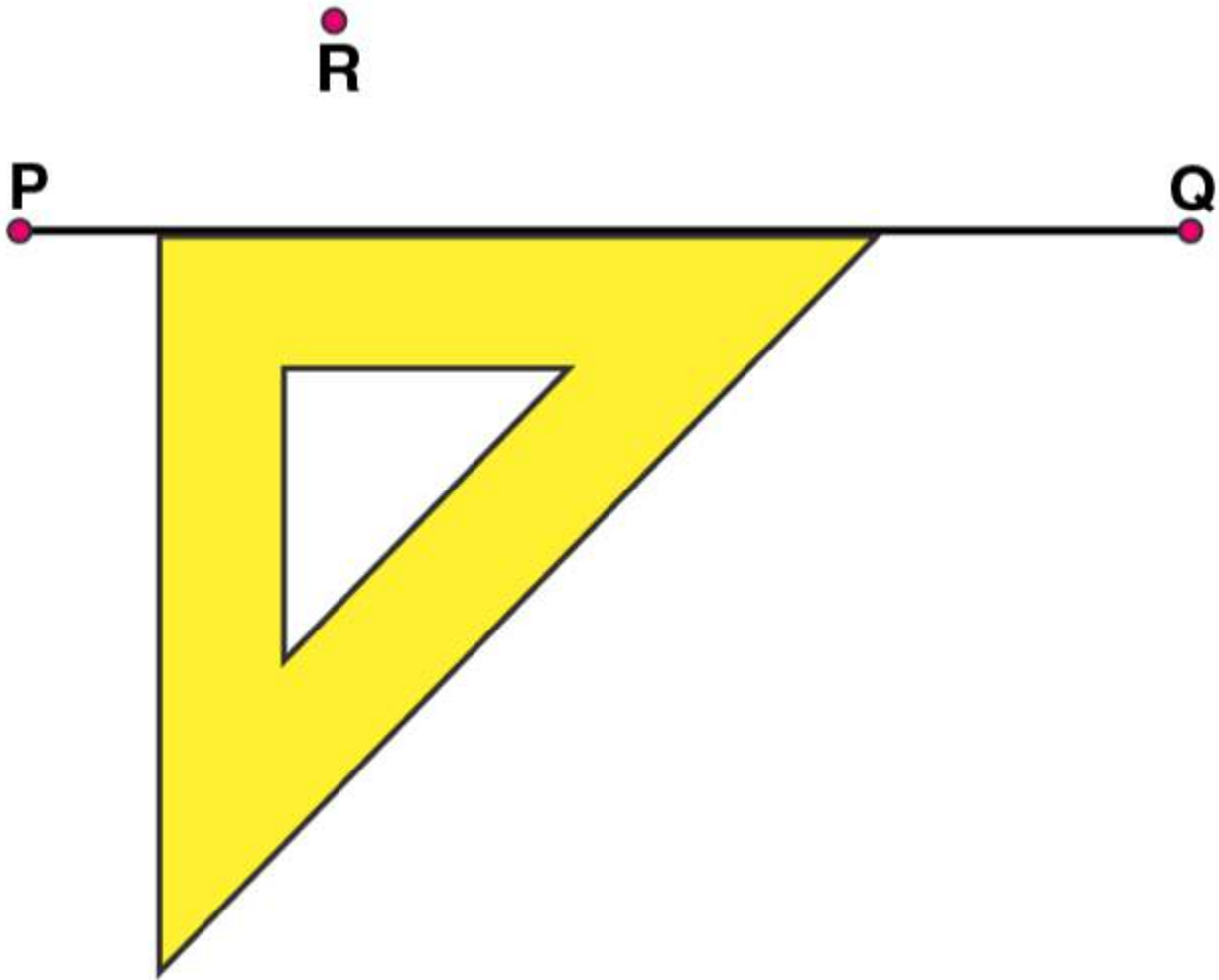
2. Draw any line segment \overline{PQ} . Take any point R not on it. Through R, draw a perpendicular to \overline{PQ} . (use ruler and set-square)

Solutions:

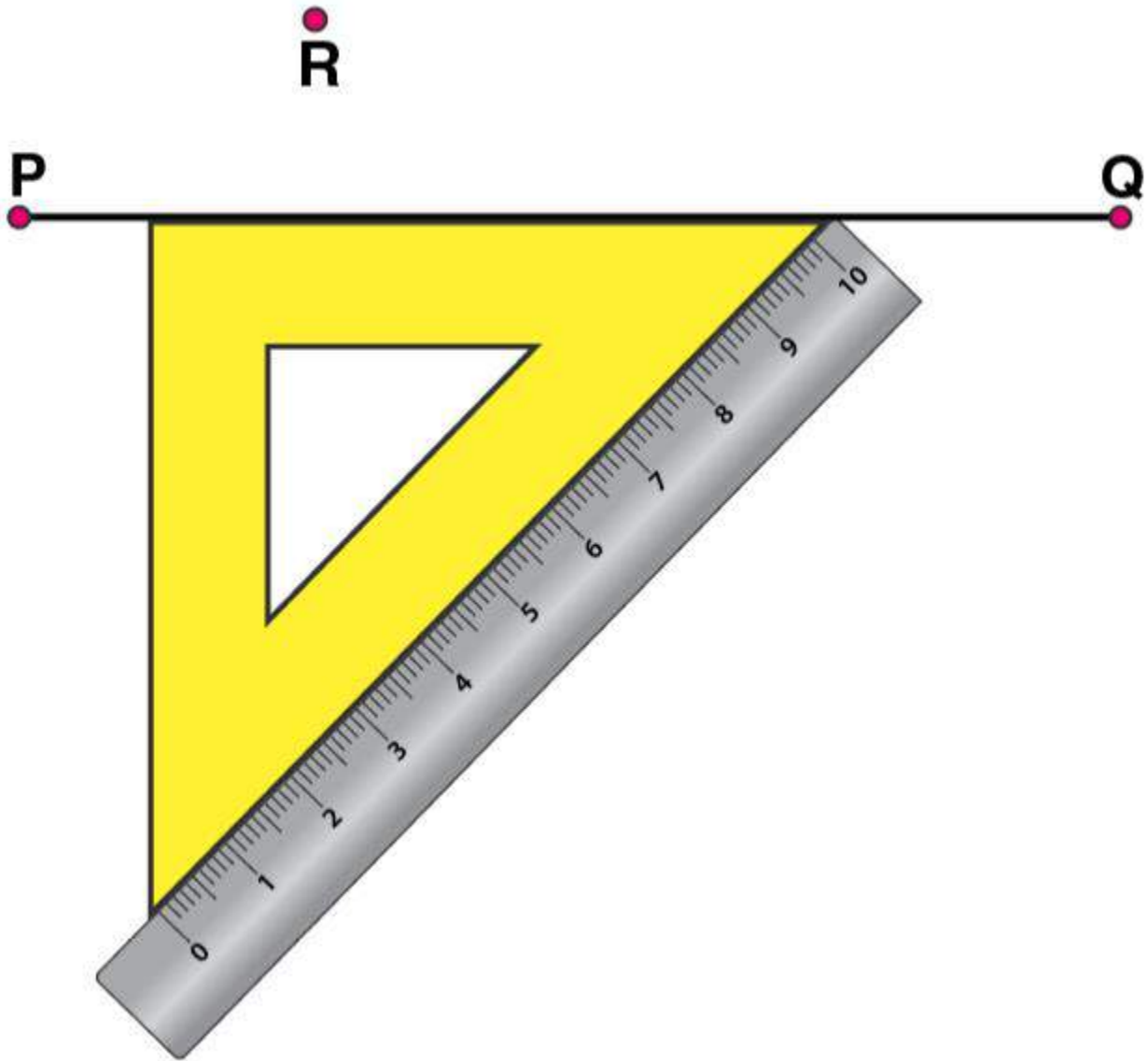
(1) Draw a given line segment \overline{PQ} and mark a point R outside the line segment \overline{PQ}



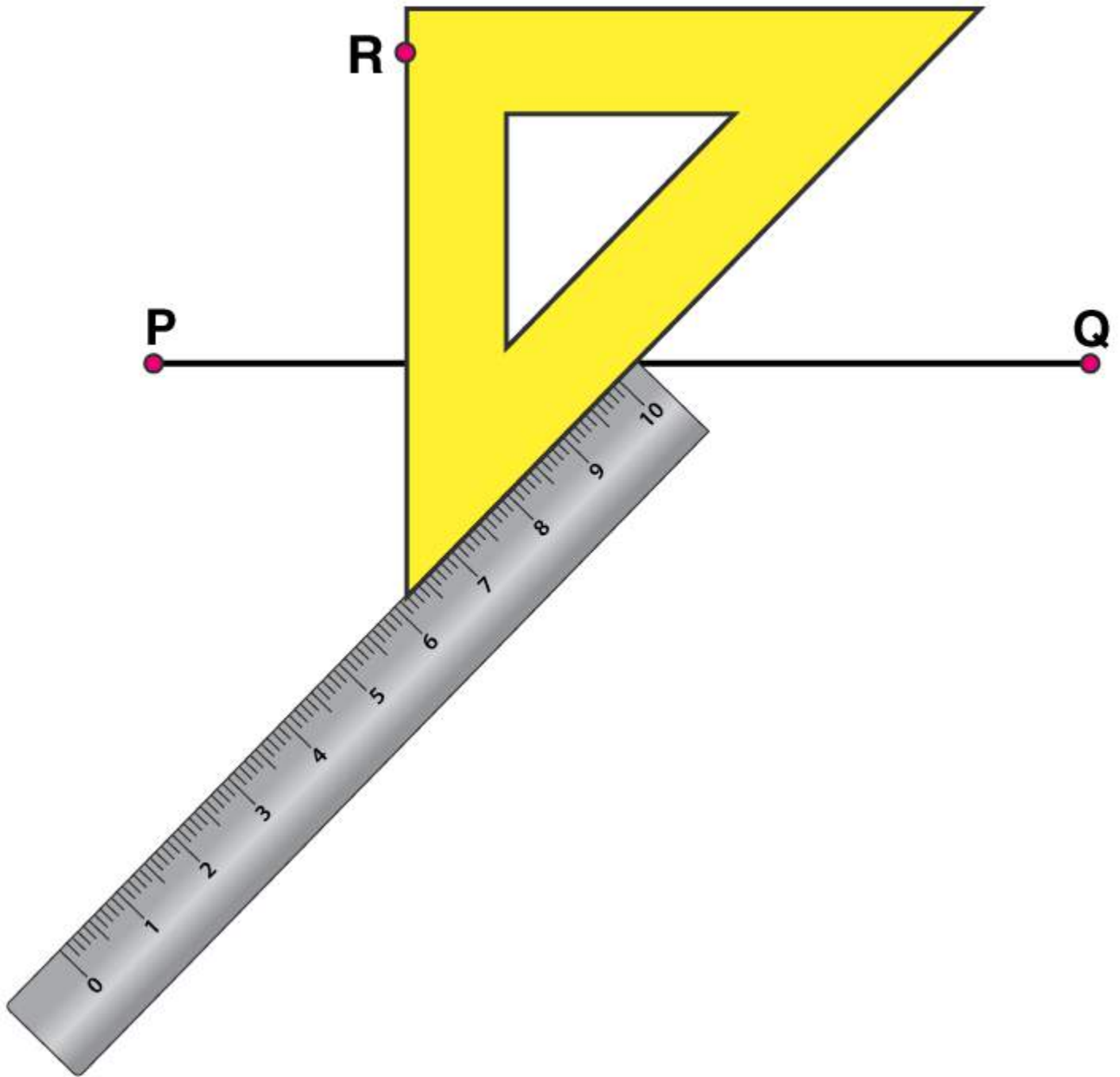
(2) Place a set square on \overline{PQ} such that one of its right angles arm aligns along \overline{PQ}



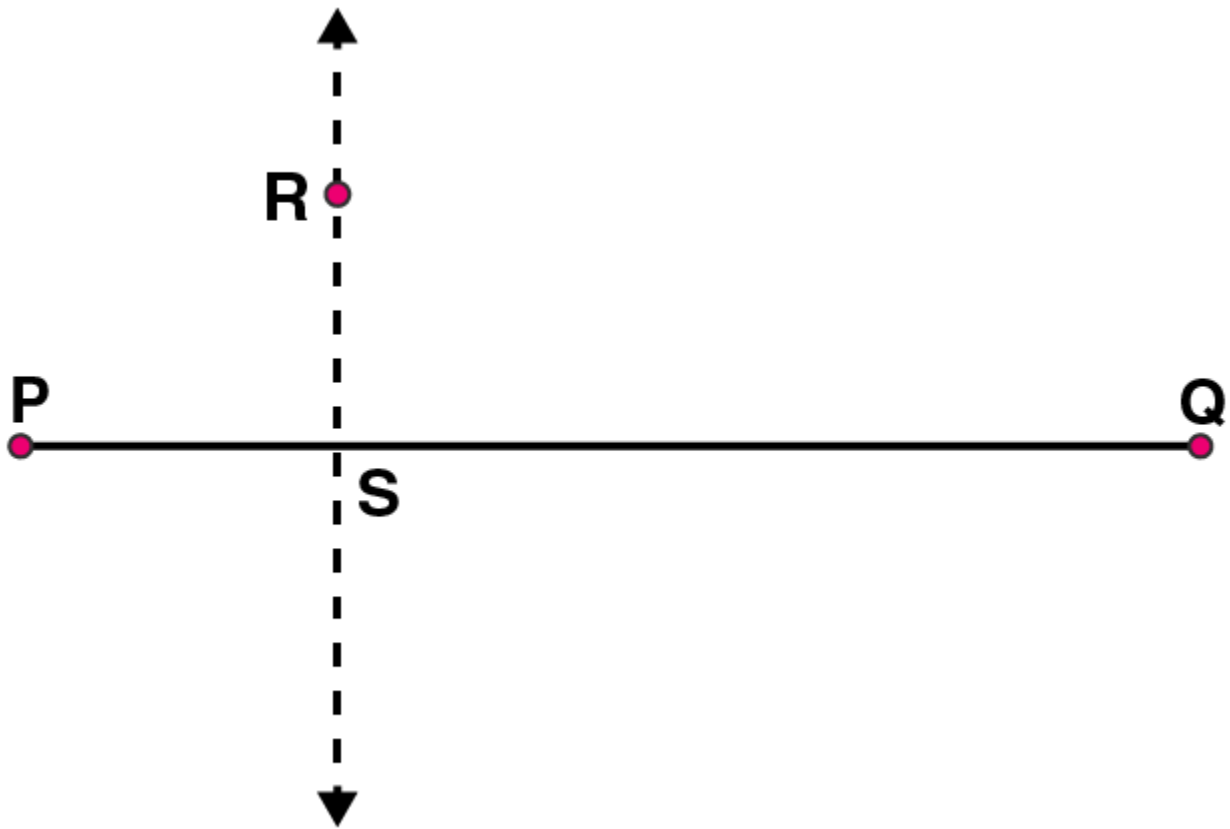
(3) Now, place the ruler along the edge opposite to right angle of set square.



(4) Hold the ruler fixed. Slide the set square along the ruler such that the point R touches the other arm of set square.



(5) Draw a line along this edge of set square which passes through point R. Now, it is the required line perpendicular to \overline{PQ}



3. Draw a line l and a point X on it. Through X , draw a line segment \overline{XY} perpendicular to l .

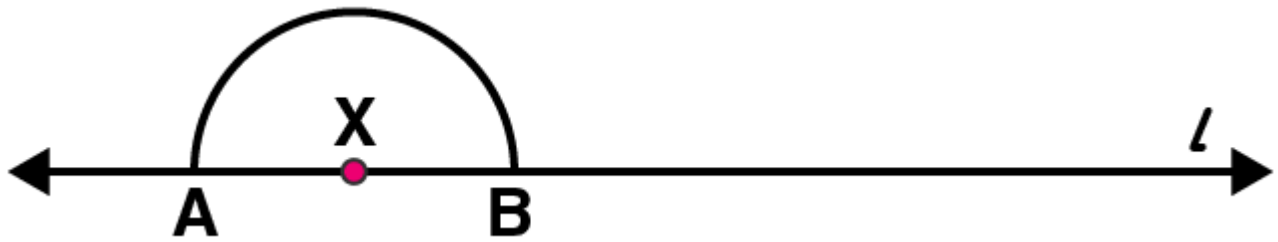
Now draw a perpendicular to XY at Y . (use ruler and compasses)

Solutions:

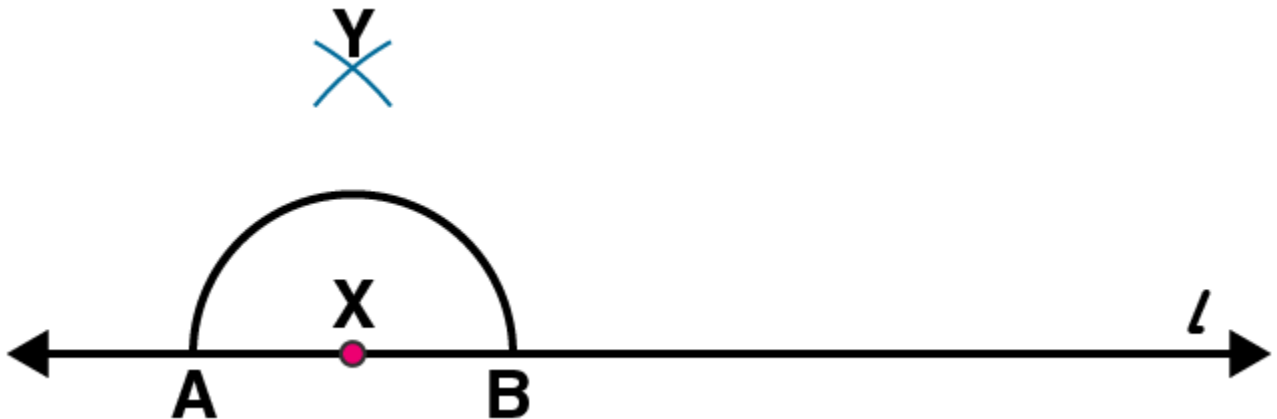
(1) Draw a line l and mark a point X on it.



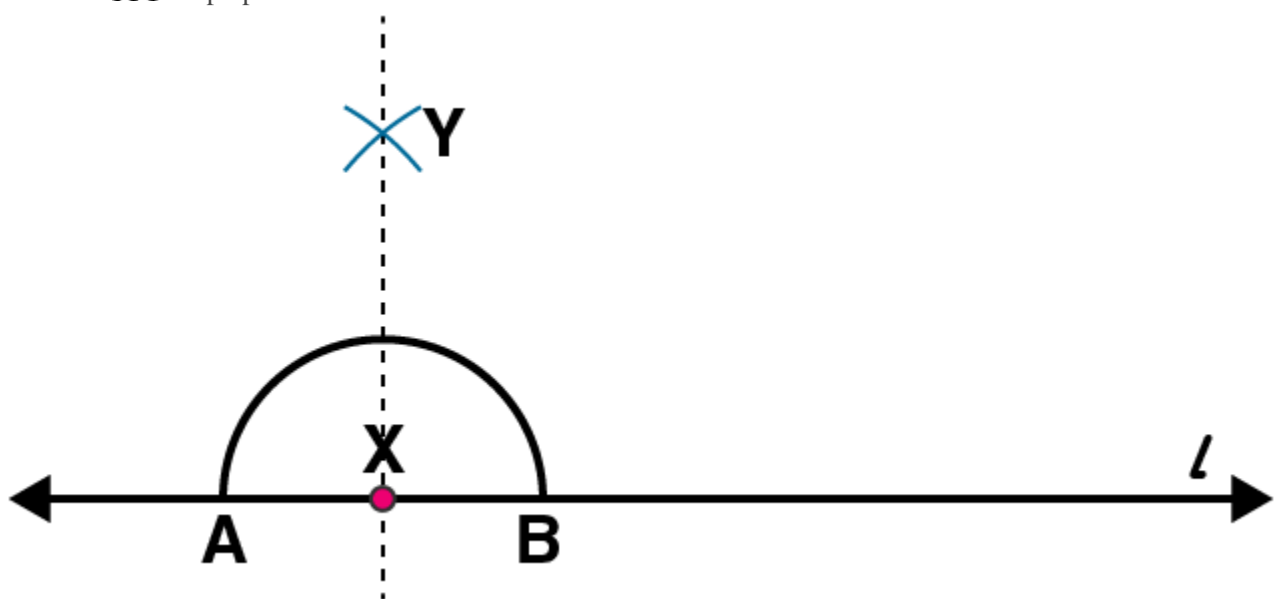
(2) By taking X as centre and with a convenient radius, draw an arc intersecting the line l at points A and B , respectively.



(3) With A and B as centres and a radius more than AX, construct two arcs such that they intersect each other at point Y.



(4) Join XY. Here \overline{XY} is perpendicular to l



Similarly, by taking C and D as centres and radius more than CY, construct two arcs intersecting at point Z. Join ZY. The line \overline{ZY} is perpendicular to \overline{XY} at Y

