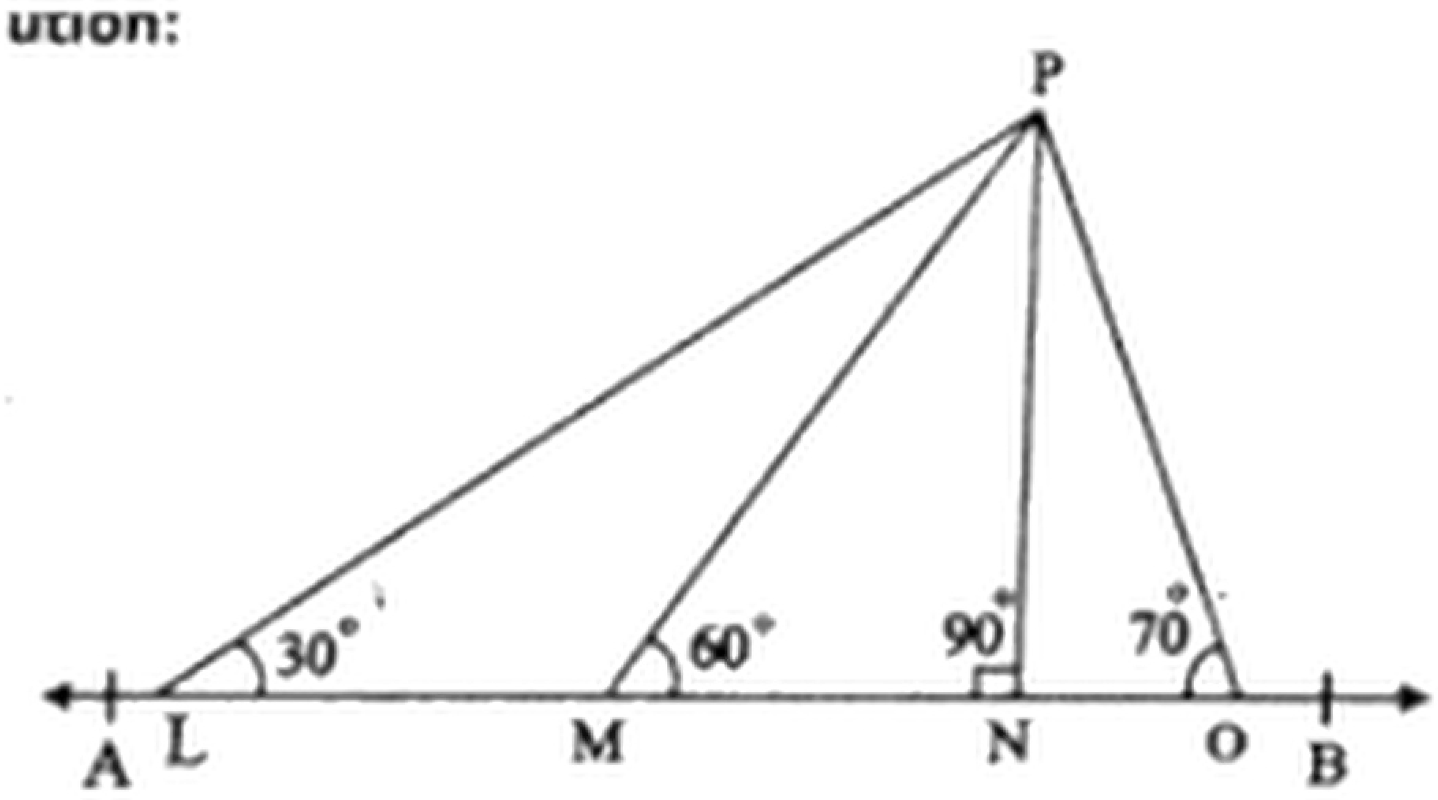
EXERCISE 13.2

Q1. In the figure, P is any point and AB is a line. Which of the following is the shortest distance between the point P and the line AB?

(a) m$\overline{PL}$ (b) m$\overline{PM}$ (c) m$\overline{NP}$ (d) m$\overline{PO}$

ution:



We all know that form a point outside the line, the perpendicular is the shortest distance from the point to the.

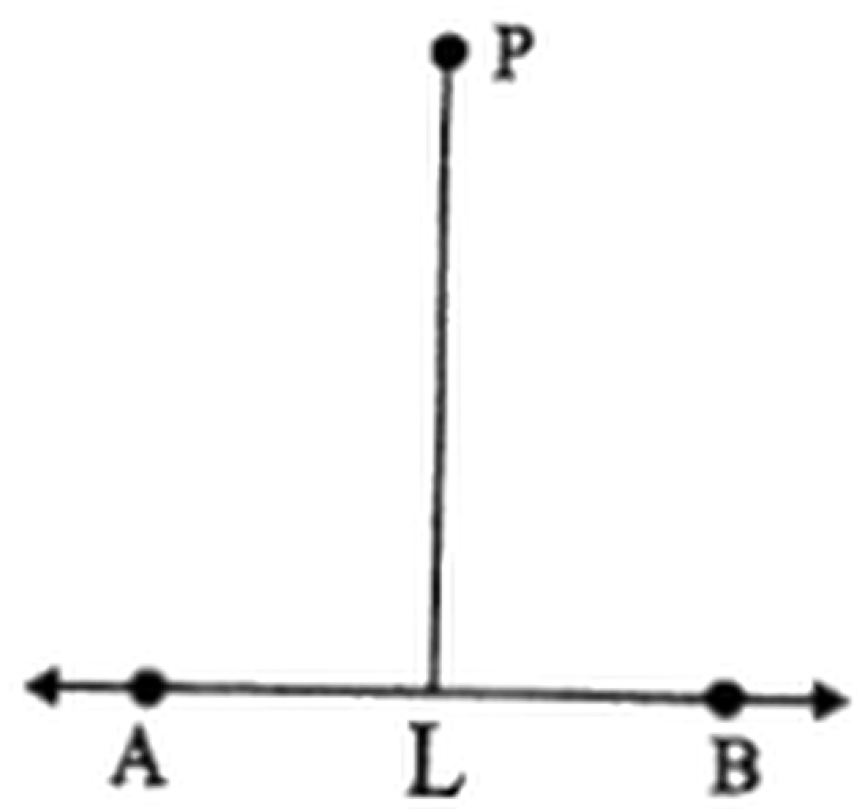
As $\overline{PN}$ is perpendicular to AB.

So $\overline{PN}$ is the shortest distance.

Q2. In the figure, P is any point lying away from the line AB. Then m$\overline{PL}$ will be the shortest distance if

(a) m∠PLA = 80° (b) m∠PLB = 100° (c) m∠PLA = 90°

Solution

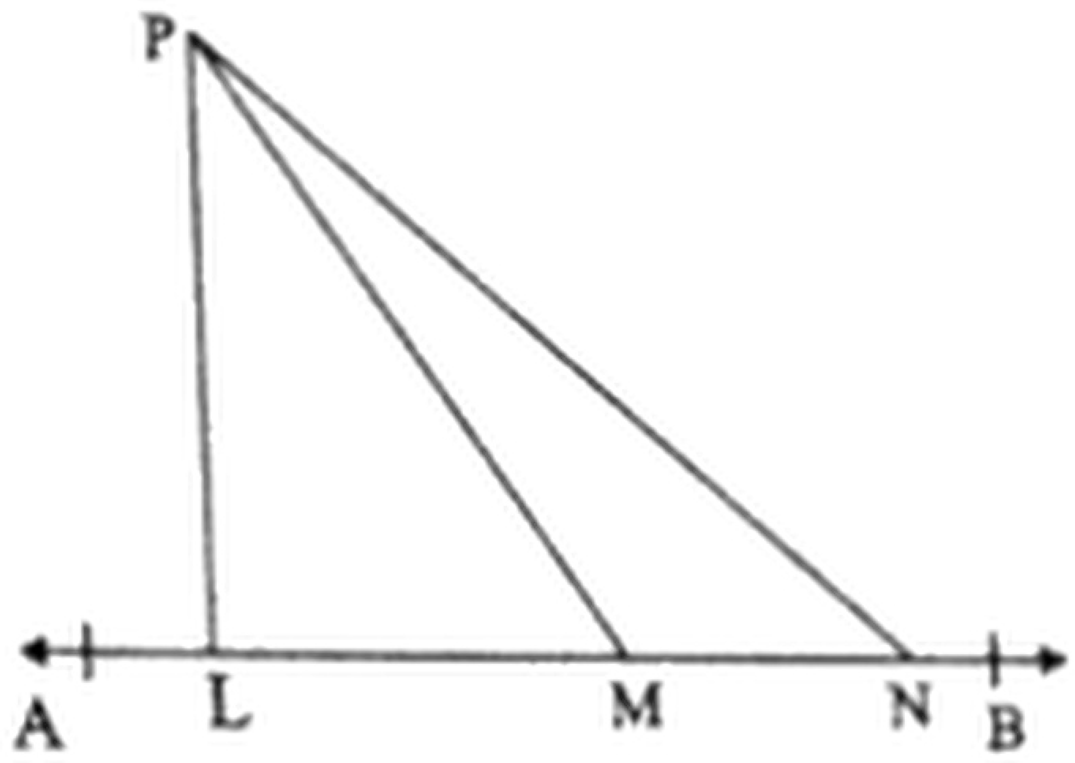


We know that for a point outside a line, the shortest distance from the point to the line is perpendicular to the line.

So, $\overline{PL}$ is perpendicular to $\overline{AB}$.

So, m∠PLA = 90°

Q3. In the figure, $\overline{PL}$ is perpendicular to the line AB and m$\overline{LN}$ > m$\overline{LM}$. Prove that m$\overline{PN}$ > m$\overline{PM}$.



Given

PL is perpendicular to AB and m$\overline{LN}$ > m$\overline{LM}$

To prove

m$\overline{PN}$ > m$\overline{PM}$

Proof

Statements	Reasons
In ΔLPN	Given
m∠PLN = 90°	Angle of a triangle
∴ m∠PLN < 90° (i)	
In ΔPLM	Exterior angle
m∠PMN > m∠PLM	∠PLM = 90°
∴ m∠,PMN < 90° (ii)	
In ΔPMN	from (i) and (ii)
m∠PMN > m∠PNL	opposite sides