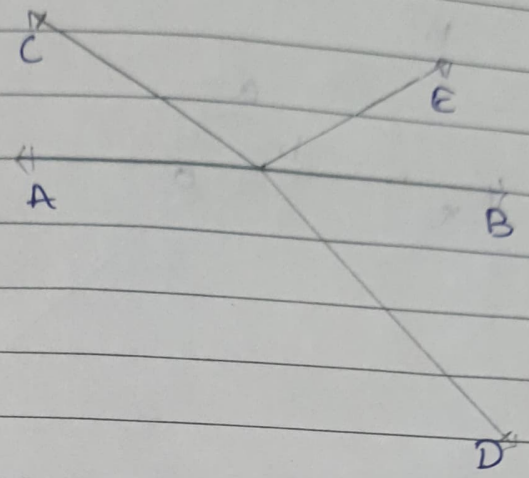
H.W

Ex - 6.1

(1) In given figure, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70$ and $\angle BOD = 40°$, find $\angle BOE$ and reflex $\angle COE$.



Ans. AB is straight line, rays OC and OE stand on it.

$\angle AOC + \angle COE + \angle BOE = 180°$

$(\angle AOC + \angle BOE) + \angle COE = 180°$

$70° + \angle COE = 180°$

$\angle COE = 180° - 70° = 110°$

Reflex $\angle COE = 360° - 110° = 250°$

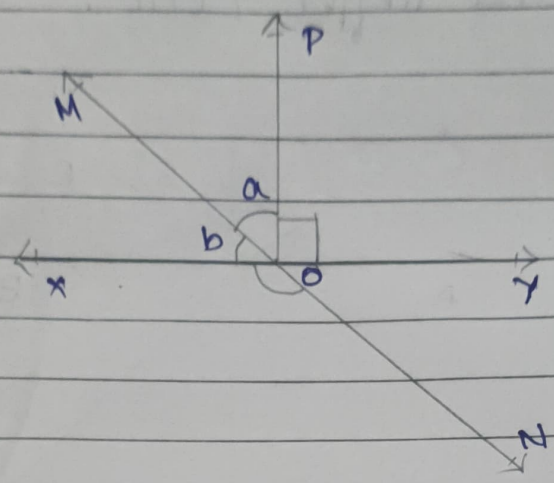
CD is a straight line, rays OE and OB stand on it.

$\angle COE + \angle BOE + \angle BOD = 180°$

$\Rightarrow 110° + \angle BOE + 40° = 180°$

$\Rightarrow \angle BOE = 180° - 150° = 30°$

2. In the given figure, lines XY and MN intersect at O. If ∠POY = 90° and a : b = 2 : 3, find c.



Ans Let the common ratio between a and b be x.

$a = 2x$ and
$b = 3x$

XY is a straight line, rays OM and OP stand on it.

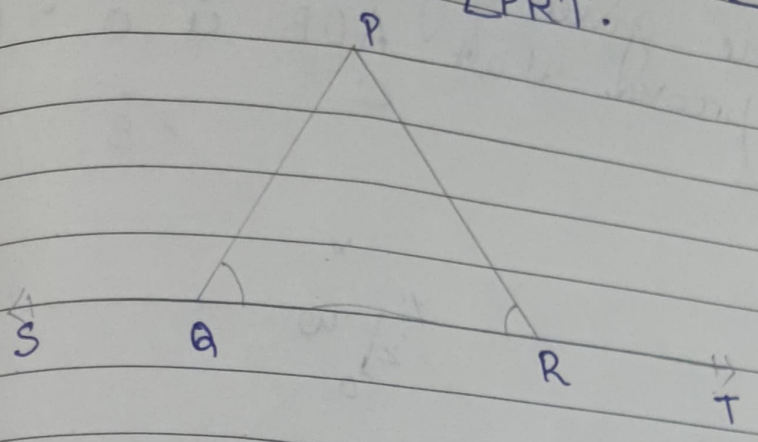
$\therefore \angle XOM + \angle MOP + \angle POY = 180°$

$b + a + \angle POY = 180°$
$3x + 2x + 90° = 180°$
$5x = 90$, $x = 18°$
$a = 2x = 2 \times 18 = 36°$
$b = 3x = 3 \times 18 = 54°$

MN is a straight line. Ray OX stands on it.

$\therefore b + c = 180°$, $54° + c = 180°$
$\therefore c = 180° - 54° = 126°$, $c = 126°$

3. In the given figure, $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.



Ans In the given figure, ST is a straight line and ray QP stands on it.

$\therefore \angle PQS + \angle PQR = 180^\circ$

$\angle PQR = 180^\circ - \angle PQS \longrightarrow (1)$

$\angle PRT + \angle PRQ = 180^\circ$

$\angle PRQ = 180^\circ - \angle PRT \longrightarrow (2)$

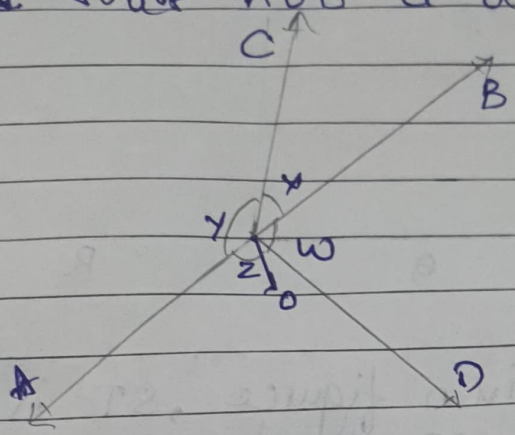
It is given that $\angle PQR = \angle PRQ$.

Equating equations (1) and (2), we obtain,

$180^\circ - \angle PQS = 180^\circ - \angle PRT$

$\angle PQS = \angle PRT$

4. In the given figure, if $x + y = w + z$, then prove that AOB is a line.



Sol. It can be observed that,

$x + y + z + z = 360°$

It is given that

$x + y = z + w$

$\therefore x + y + x + y = 360°$

$2(x + y) = 360°$

$x + y = 180°$

Since x and y form a linear pair, AOB is a line.