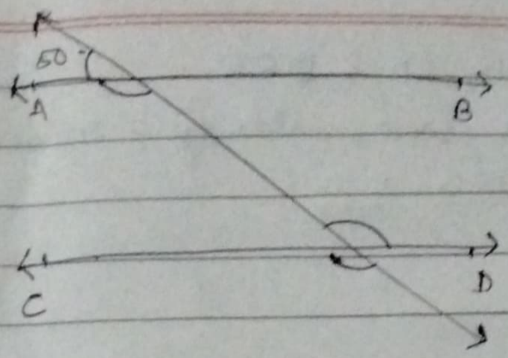
HW

Exercise → 6.2

Q1)



Sol^n :-

we know that a linear pair is equal to 180°

$$\text{So, } x + 50^\circ = 180^\circ$$

$$\therefore x = 130^\circ$$

we also know that vertically opposite angles are equal.

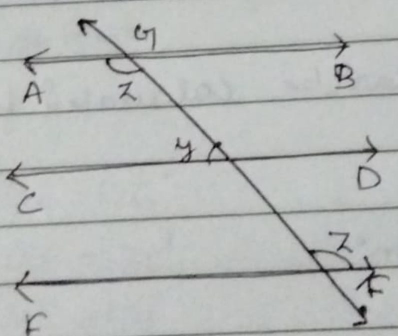
So, $y = 130^\circ$

In two parallel lines, the alternate interior angles are equal. In this, $x = y = 130^\circ$.

This proves that alternate ~~or~~ interior angles are equal. In this, $x = y = 130^\circ$

This proves that alternate interior angles are equal and so, AB ∥ CD.

Q2) ~~Sol~~



Sol^n :-

It is known that AB, CD & EF.
As the angles on the same side of a transversal line sums up to 180°;

$x + y = 180°$ — (i)

Also,
$o = z$ (since, they are corresponding angles)
and, $y + o = 180°$ (since, they are linear pair)
So, $y + z = 180°$

Now, let $y = 3w$ and hence $z = 7w$
(As $y : z = 3 : 7$)

$\therefore 3w + 7w = 180°$
or $10w = 180°$
$w = 18°$

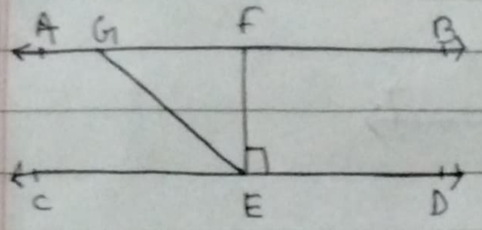
Now, $y = 3 \times 18° = 54°$
$z = 7 \times 18° = 126°$

~~x+y~~

Now, angle x can be calculated from eqn (i)

$x + y = 180°$
$x + 54° = 180°$
$\therefore x = 126°$

Q3)



Sol^n :-

AB, CD, GE is a transversal.

It is given that GED = 126°

So, GED = AGE = 126° (As they are alternate interior angles)

Also,

GED = GEF + FED

As EF ⊥ CD, FED = 90°

∴ GED = GEF + 90°

GEF = 126° - 90° = 36°

FGE + GED = 180° (Transversal)

Putting the value of GED = 126°, we get,

FGE = 54°

So,

AGE = 126°

GEF = 36°

FGE = 54°

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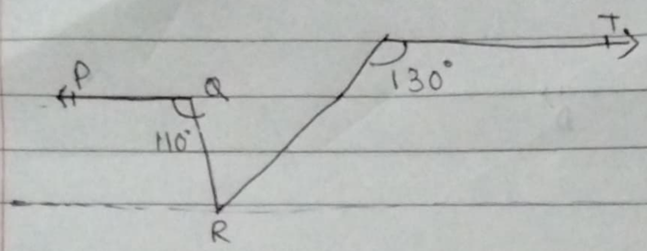
Q4)



we know that the angles on the same side of transversal is equal to 180°.

So, PQR + QRX = 180°
QRX = 180° − 110°
∴ QRX = 70°

Similarly,

RST + SRY = 180°
SRY = 180° − 130°
∴ SRY = 50°

Now, for the linear pairs on the line XY -

QRX + QRS + SRY = 180°

Putting their respective values, we get,
QRS = 180° − 70° − 50°
QRS = 60°

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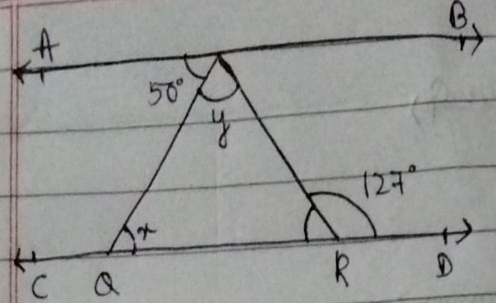
Q5)



From the diagram,

APQ = PQR (Alternate interior angles)

Now, putting the value of APQ = 50° & PQR = x,
we get,
$x = 50°$

Also,
APR = PRD (Alternate interior angles)

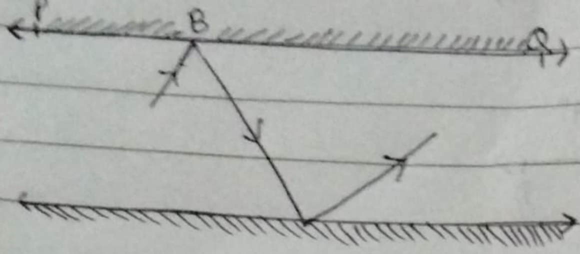
APR = APQ + QPR

Now, putting values of QPR = y &
APR = 127°, we get

$127° = 50° + y$
$y = 77°$

The values of x & y are calculated as:-
$x = 50°$
$y = 77°$.

Q6)



Soln :-

First, draw two lines BE & CF such that BE ⊥ PQ & CF ⊥ RS.

Now, since PQ ∥ RS,

So, BE ∥ CF

we know that,

Angle of incidence = Angle of reflection (By the law of reflection)

So,

1 = 2 &

3 = 4

We also know that alternate interior angles are equal.
Here, BE ∥ CF and the transversal line BC cuts them at B & C.

So, 2 = 3 (As they are alternate interior angles)

Now, 1 + 2 = 3 + 4

ABC = DCB

So, AB ∥ CD are alternate interior angles are equal.