HW
25/06/2021

Exercise 6.2

1) In Fig. 6.28, find the values of x and y and then show that AB ∥ CD.

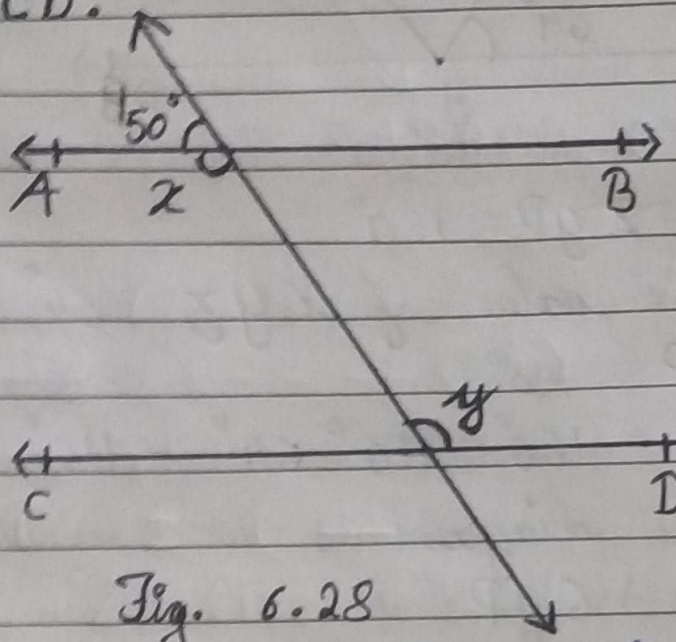


Fig. 6.28

ans) We know that a linear pair is equal to 180°.

So, $x + 50^\circ = 180^\circ$

$x = 180^\circ - 50^\circ$

$x = 130^\circ$

We know that vertically opposite angles are.

So, $y = 130^\circ$

In two parallel lines, the alternate interior angles are equal. In this,

$x = y = 130^\circ$

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

2) In Fig. 6.29, if AB || CD, CD || EF and $y : z = 3 : 7$, find x.

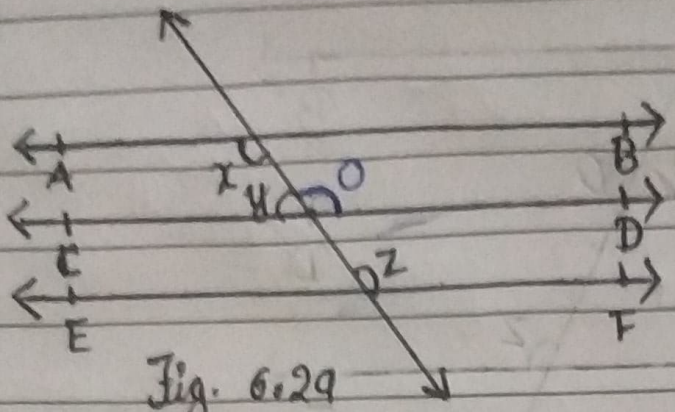


Fig. 6.29

Ans) It is known that AB || CD, CD || EF
As the angles on the same side of a transversal line sums upto 180°.

$x + y = 180°$ ----- (i)

Also

$\angle O = z$ (Corresponding angles)

and $y + \angle O = 180°$ (linear pairs)

So $y + z = 180°$

Let y be 3a and z be 7a (as $y : z = 3 : 7$)

$\therefore 3a + 7a = 180°$

$\Rightarrow 10a = 180°$

$\Rightarrow a = \frac{180}{10} = 18°$

Now, $y = 3 \times 18 = 54°$

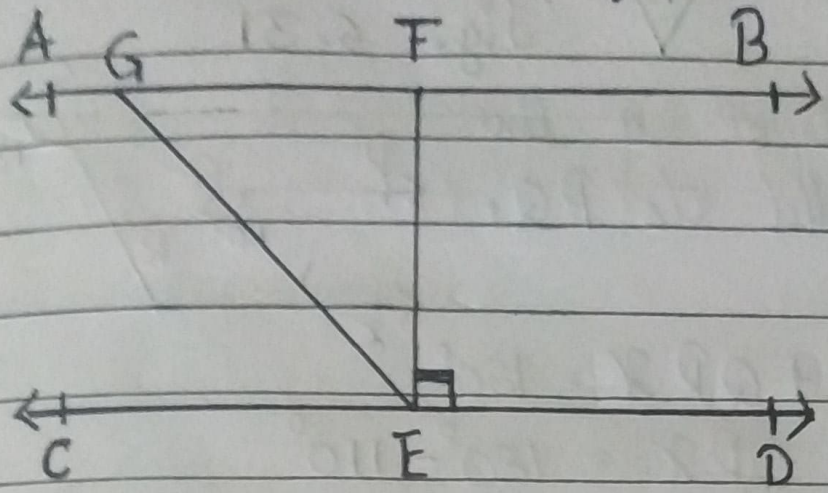
$z = 7 \times 18 = 126°$

Now, angle $x = x + y = 180°$

$\Rightarrow x = 180° - 54°$

$\Rightarrow x = 126°$

3) In Fig. 6.30, if AB ∥ CD, EF ⊥ CD and ∠GED = 126°, find ∠AGE, ∠GEF and ∠FGE



Sol) Since AB, CD and GE is a transversal.
It is given that GED = 126°
So, GED = AGE = 126° (Alternate interior angles)
Also,
GED = GEF + FED
As, EF ⊥ CD, FED = 90°
∴ GEF = 126° - 90° = 36°
Again, FGE + GED = 180° (Transversal, ~~linear pair~~)
Putting the value of GED = 126°, we get,
FGE = 54°
So,
AGE = 126°
GEF = 36°
FGE = 54°

4) In Fig. 6.31, if PQ ∥ ST, ∠PQR = 110° and ∠RST = 130°, find ∠QRS.
[Hint: Draw a line parallel to ST through point R.]

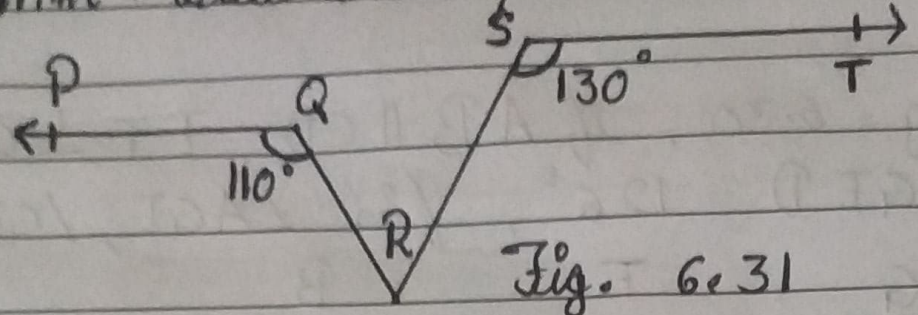
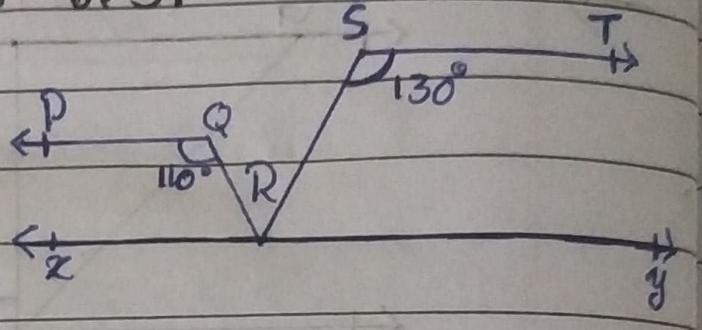


Fig. 6.31

Ans) First construct a line XY parallel to PQ.



So, PQR + QRX = 180°

→ ~~QRX~~ QRX = 180° − 110°

∴ ~~QRQ~~ QRX = 70°

Similarly, RST + SRY = 180°

→ SRY = 180° − 130°

⇒ SRY = 50°

Now, for the linear pairs on the XY

QRX + QRS + SRY = 180°

Putting their ~~representa~~ respective value, we get

QRS = 180° − 70° − 50°

= 60°