HW
25/06/2021

Exercise 6.2

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

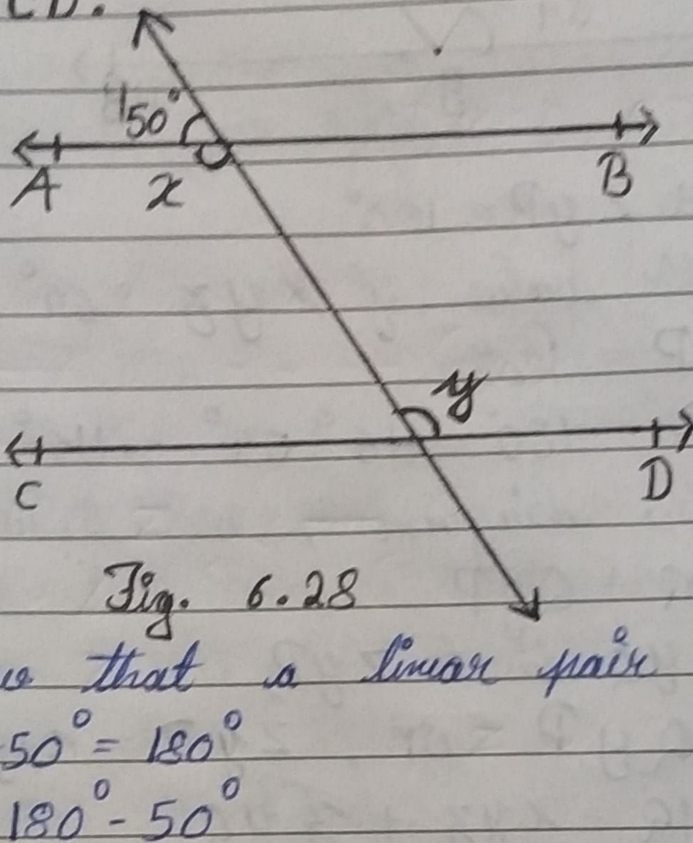


Fig. 6.28

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 ~~kn~~ 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~~ are equal and ~~so~~ so, AB ∥ CD.

Date
Page

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

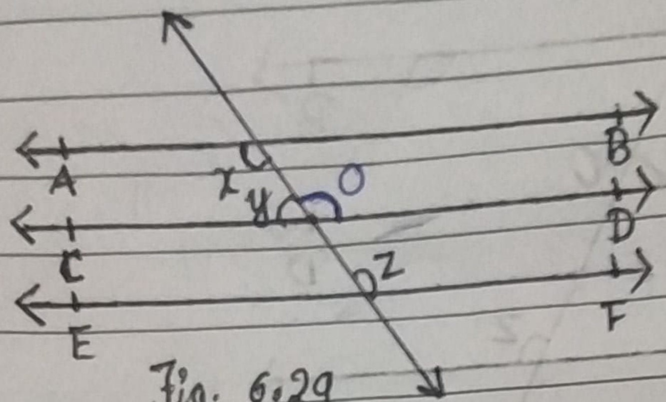


Fig. 6.29

ans) It is known that $AB \parallel CD$, $CD \parallel EF$
As the angles on the same side of a transversal line sum upto $180°$.

$x + y = 180°$ - - - - - (i)

Also

$\angle O = z$ (~~Alt~~ Corresponding angles)

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

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, $y = 3 \times 18 = 54°$

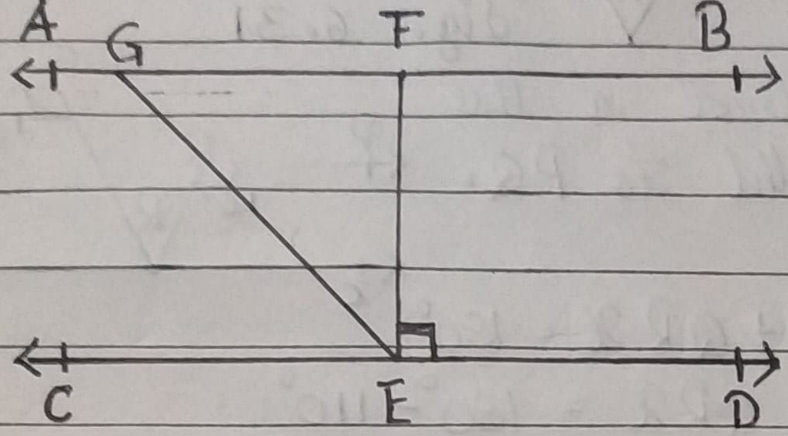
$z = 7 \times 18 = 126°$

Now, angle x = $x + y = 180°$

$\Rightarrow x = 180° - 54°$

$\Rightarrow x = 126°$

3) In Fig. 6.30, if $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$



ans) Since AB, CD and GE is a transversal.

It is given that $GED = 126^\circ$

So, $GED = AGE = 126^\circ$ (Alternate interior angles)

Also,

$$GED = GEF + FED$$

As, $EF \perp CD$, $FED = 90^\circ$

$\therefore GEF = 126^\circ - 90^\circ = 36^\circ$

Again, $FGE + GED = 180^\circ$ (~~linear pair~~ Transversal)

Putting the value of $GED = 126^\circ$, we get,

$FGE = 54^\circ$

So,

$$AGE = 126^\circ$$

$$GEF = 36^\circ$$

$$FGE = 54^\circ$$

4) In Fig. 6.31, if $PQ \parallel ST$, $\angle PQR = 110^\circ$ and $\angle RST = 130^\circ$, find $\angle QRS$.
[Hint : Draw a line parallel to ST through point R.]

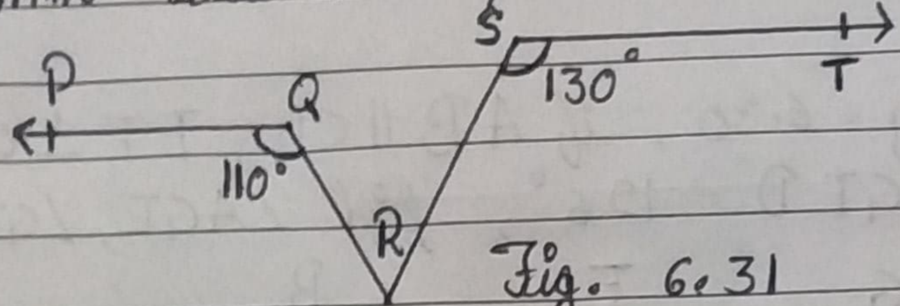
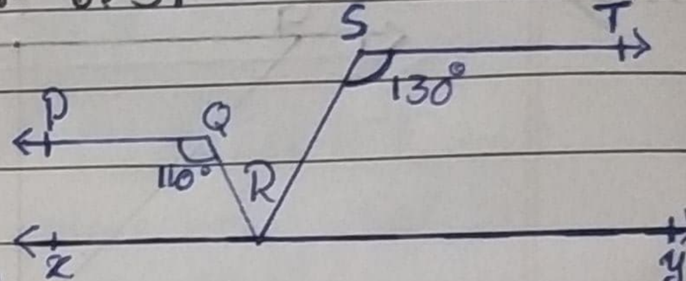


Fig. 6.31

ans) First construct a line xy parallel to PQ.



So, $PQR + QRx = 180^\circ$

$\rightarrow$ ~~QRx~~ $QRx = 180^\circ - 110^\circ$

$\therefore$ ~~QRQ~~ $QRx = 70^\circ$

Similarly,

$RST + SRY = 180^\circ$

$\rightarrow SRY = 180^\circ - 130^\circ$

$\Rightarrow SRY = 50^\circ$

Now, for the linear pairs on the xy

$QRx + QRS + SRY = 180^\circ$

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

$QRS = 180^\circ - 70^\circ - 50^\circ$

$= 60^\circ$

5) In Fig. 6.32, if AB ∥ CD, $\angle APQ = 50^\circ$ and $\angle PRD = 127^\circ$, find x and y.

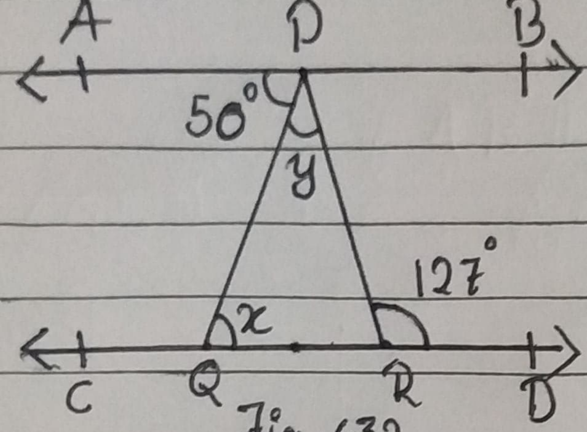


Fig. 6.32

ans) From the diagram,
APQ = PQR (Alternate interior angles)
Now, putting the value of APQ = 50° and PQR = x
we get,
$x = 50^\circ$
Also,
APR = PRD (Alternate interior angles)
APR = 127°
We know that APR = APQ + QPR
Now, putting values, we get
$127^\circ = 50^\circ + y$
$y = 77^\circ$
$\therefore$ the values of x is 50° and y is 77°.