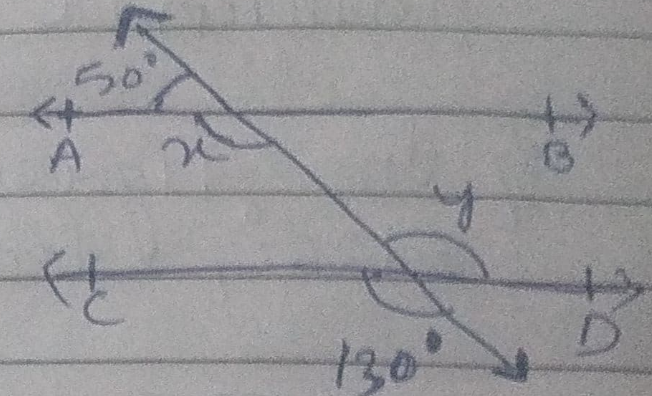
HW
21/6/21 Exercise 6.2

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



$50° + x = 180°$ (Linear pair)

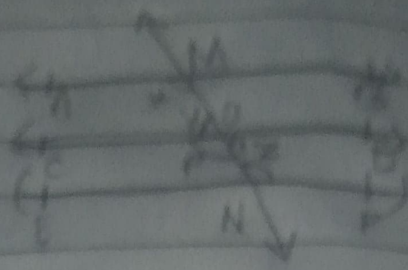
$x = 180° - 50°$

$x = 130°$

Also, $y = 130°$ (Vertically opposite angles)

$\therefore x = y$ [But they are alternate angles] (AB)

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



=> AB || CD
CD || EF

AB || CD || EF

$\angle 1 = y$ (vertically opposite angles)

CD || EF.

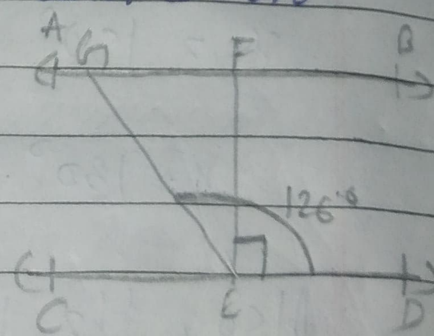
$\angle 1 + z = 180^\circ$ (co-interior angle)

$y + z = 180^\circ$

$x = z = 126$

(alternate angles)

3) In figure, if AB || CD, EF ⊥ CD and $\angle GED = 126^\circ$, find $\angle AGE$, $\angle GEF$ and $\angle FGE$.



Now;

AB || CD, GE is transversal.

Hence,

$\angle AGE = \angle GED$

$\angle AGE = 126^\circ$

$\angle FGE = 180^\circ - 126^\circ$ (Linear pair)
$= 54^\circ$

$\angle AGE + \angle FGE = 180^\circ$
$126^\circ + \angle FGE = 180^\circ$

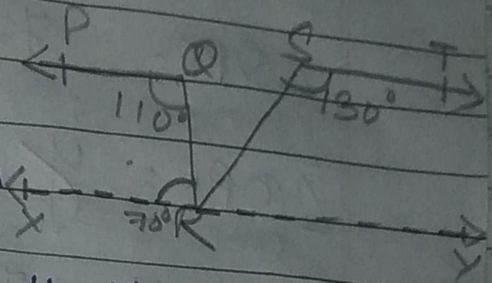
~~OF~~ $\angle GEF = 126^\circ - 90^\circ$

$= 36^\circ$

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.]

⇒ Given : $PQ \parallel ST$



To draw a line $XY \parallel ST$, through

So, $XY \parallel PQ$, i.e $PQ \parallel ST \parallel XY$

$ST \parallel XY$

$\angle 1 = 180^\circ - 130^\circ$

$= 50^\circ$ (Cointerior angles)

$PQ \parallel XY$

$\angle QRS = 180^\circ - (50 + 70)$

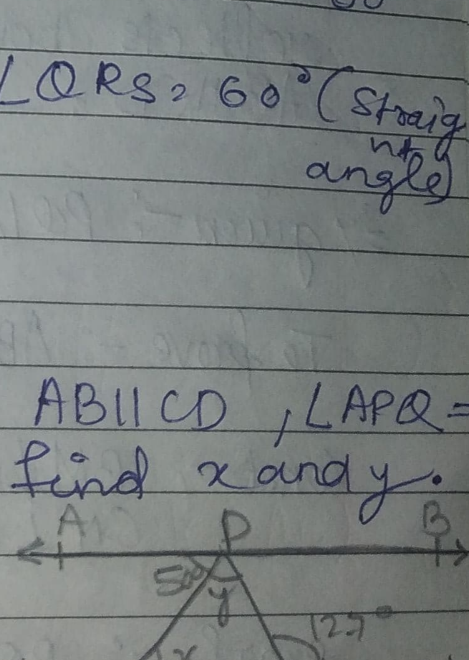
$\angle QRS = 180^\circ - 120^\circ = 60^\circ$

$\angle 2 = 180^\circ - 110^\circ$

$= 70^\circ$ (Cointerior angles)

$\angle QRS = 60^\circ$ (Straight angle)

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



⇒ $\angle APQ = 50^\circ$

~~∠~~ $\angle PRD = 127^\circ$

$\angle APR = \angle PRD$ (alternate angle)

$\angle APQ + \angle QPR = 127°$ $\qquad$ $\angle APQ = \angle PQR$ (alternate angle)

$50° + \angle QPR = 127°$

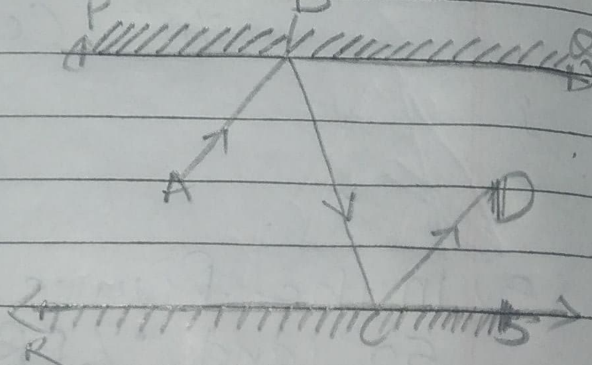
$\angle QPR = 127° - 50°$ $\qquad$ $50° = 50°$

$\angle QPR = 77°$ $\qquad$ then $x = 50°$

$\angle QPR = y$ $\qquad$ $\therefore$ So, the value of $x = 50°$, $y = 77°$

then $y = 77°$

⑥ In figure 6.33, PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that AB ∥ CD.



$\Rightarrow$ given :- PQ ∥ RS

To prove :- AB ∥ CD

Const :- BM ⊥ PQ and CN ⊥ RS

Proof :- PQ ∥ RS

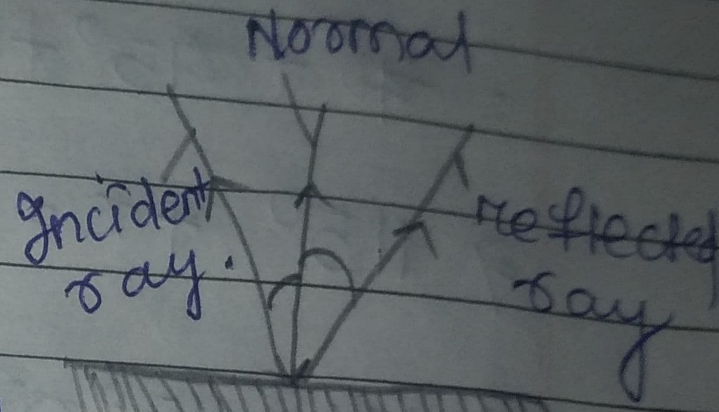
BM ⊥ PQ ; CN ⊥ RS

$\Rightarrow BM \parallel CN$

$\Rightarrow \angle 1 = \angle 2 \quad [\angle i - \angle r]$

$\Rightarrow \angle 3 = \angle 4 \quad [\angle i - \angle r]$

$\Rightarrow \angle 2 = \angle 3$ (Alternate angle)



$2\angle 2 = 2\angle 3$

$\Rightarrow \angle ABC = \angle BCD$

But they are alternate

$AB \parallel CD$ (proved)