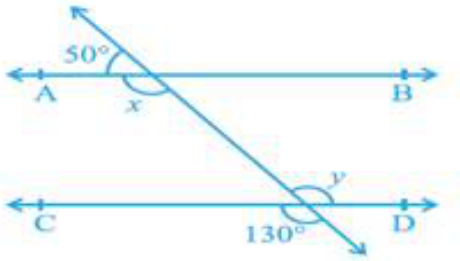
NCERT solutions for class 9 Maths Lines and Angles Ex 6.2

Q1. In the given figure, find the values of x and y and then show that AB || CD.



Ans. We need to find the value of x and y in the figure given below and then prove that $AB \parallel CD$.

From the figure, we can conclude that

$y = 130^{\circ}$ (Vertically opposite angles), and

x and 50° form a pair of linear pair.

We know that the sum of linear pair of angles is 180° .

$x + 50^{\circ} = 180^{\circ}$

$x = 130^{\circ}$.

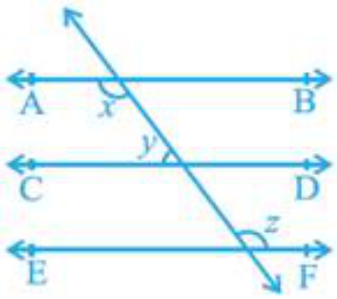
$x = y = 130^{\circ}$.

From the figure, we can conclude that x and y form a pair of alternate interior angles corresponding to the lines AB and CD.

Therefore, we can conclude that

$x = 130^{\circ}, y = 130^{\circ}$ and $AB \parallel CD$.

Q2. In the given figure, if AB || CD, CD || EF and y: z = 3: 7, find x.



Ans. We are given that $AB \parallel CD$, $CD \parallel EF$ and $y : z = 3 : 7$.

We need to find the value of x in the figure given below.

We know that lines parallel to the same line are also parallel to each other.

We can conclude that $AB \parallel CD \parallel EF$.

Let $y = 3a$ and $z = 7a$.

We know that angles on same side of a transversal are supplementary.

$\therefore \; x + y = 180^\circ$.

$x = z$ (Alternate interior angles)

$z + y = 180^\circ$, or

$7a + 3a = 180^\circ$

$\Rightarrow \; 10a = 180^\circ$

$a = 18^\circ$.

$z = 7a = 126^\circ$

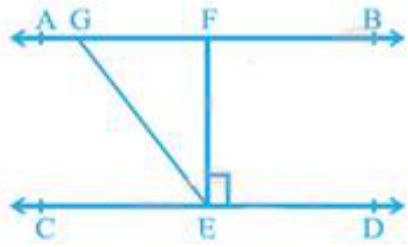
$y = 3a = 54^\circ$.

Now $x + 54^\circ = 180^\circ$

$x = 126^\circ$.

Therefore, we can conclude that $x = 126^\circ$.

Q3. In the given figure, If AB || CD, $EF \perp CD$ and $\angle GED = 126^\circ$, find $\angle AGE, \angle GEF$ and $\angle FGE$.



Ans. We are given that $AB \parallel CD$, $EF \perp CD$ and $\angle GED = 126^\circ$.

We need to find the value of $\angle AGE, \angle GEF$ and $\angle FGE$ in the figure given below.

$\angle GED = 126^\circ$

$\angle GED = \angle FED + \angle GEF.$

But, $\angle FED = 90^\circ.$

$126^\circ = 90^\circ + \angle GEF$

$\Rightarrow \angle GEF = 36^\circ.$

$\because \angle AGE = \angle GED$ (Alternate angles)

$\therefore \angle AGE = 126^\circ.$

From the given figure, we can conclude that $\angle FED$ and $\angle FEC$ form a linear pair.

We know that sum of the angles of a linear pair

is 180°.

$\angle FED + \angle FEC = 180^{\circ}$

$\Rightarrow 90^{\circ} + \angle FEC = 180^{\circ}$

$\Rightarrow \angle FEC = 90^{\circ}$

$\angle FEC = \angle GEF + \angle GEC$

$\therefore 90^{\circ} = 36^{\circ} + \angle GEC$

$\Rightarrow \angle GEC = 54^{\circ}.$

$\angle GEC = \angle FGE = 54^{\circ}$ (Alternate interior angles)

Therefore, we can conclude that
$\angle AGE = 126^{\circ}, \angle GEF = 36^{\circ}$ and $\angle FGE = 54^{\circ}$.

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