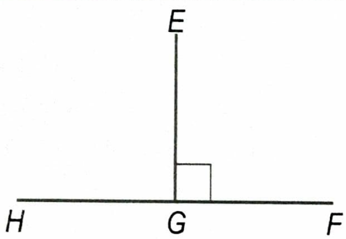
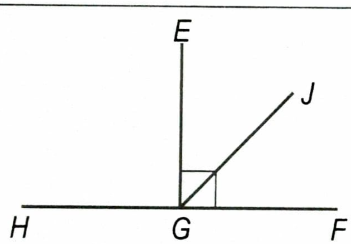
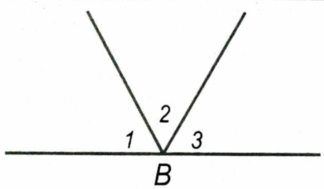
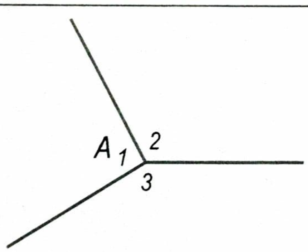
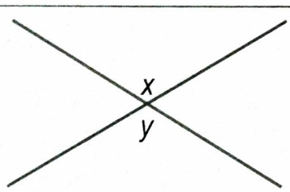
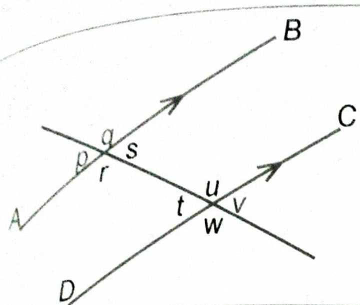
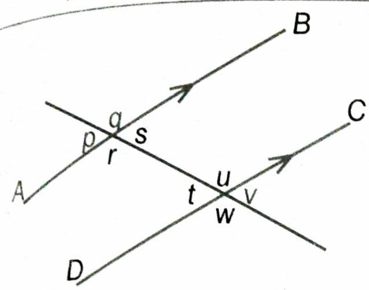
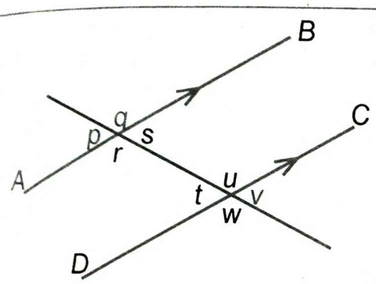
Definitions:

Adjacent supplementary angles:	adjacent angles which add up to 180°
Adjacent complementary angles:	adjacent angles which add up to 90°
Revolution:	a 360° angle
Transversal:	line which cuts two lines

Straight lines

	EG is perpendicular to HF	$E\hat{G}F = E\hat{G}H = 90°$ *(given EG ⊥ HF)*
	$J\hat{G}F$ and $E\hat{G}J$ are complementary	$E\hat{G}J + J\hat{G}F = 90°$ *(adj. compl. ∠'s)*
	Adjacent angles on a straight line are supplementary	$\hat{B}_1 + \hat{B}_2 + \hat{B}_3 = 180°$ *(adj suppl ∠'s)* Or $\hat{B}_1 + \hat{B}_2 + \hat{B}_3 = 180°$ *(∠'s on a str line)*
	Angles in a revolution add up to 360°	$\hat{A}_1 + \hat{A}_2 + \hat{A}_3 = 360°$ *(∠'s in a rev)* Or $\hat{A}_1 + \hat{A}_2 + \hat{A}_3 = 360°$ *(∠'s around a pt)*
	Vertically opposite angles are equal	$x = y$ *(vert opp ∠'s)*

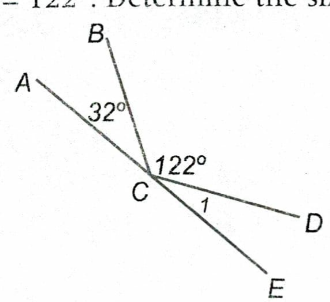
	Two angles which lie on opposite sides of the transversal and between the parallel lines are equal. These are called **alternate angles.**	$r = u$ (alt ∠'s; AB ∥ DC) and $s = t$ (alt ∠'s; AB ∥ DC)
	Two angles which lie on the same side of the transversal and the same side of the parallel lines are equal. These are called **corresponding angles.**	$q = u$ (corres ∠'s; AB ∥ DC) and $p = t$ (corres ∠'s; AB ∥ DC) and $r = w$ (corres ∠'s; AB ∥ DC) and $s = v$ (corres ∠'s; AB ∥ DC)
	Two angles which lie on the same side of the transversal and between the parallel lines are supplementary. These are called **co-interior angles.**	$s + u = 180°$ (co-int ∠'s; AB ∥ DC) and $r + t = 180°$ (co-int ∠'s; AB ∥ DC)

NOTES:

- It is very important to give reasons for each theorem you use.
- Show all the necessary working.
- Learn all your theorems.

EXAMPLE 1:

ACE is a straight line, $A\hat{C}B = 32°$ and $B\hat{C}D = 122°$. Determine the size of $\hat{C}_1$.



ANSWER

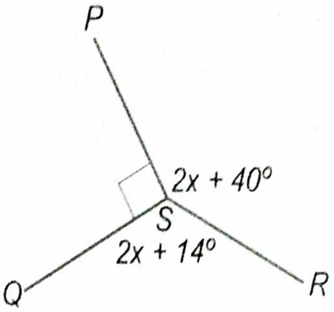
$\hat{C}_1 + 32° + 122° = 180°$ (∠'s on a straight line)

$\hat{C}_1 = 180° - 122° - 32°$

$\hat{C}_1 = 26°$

EXAMPLE 2:

PS, SQ and SR meet at S and $P\hat{S}Q = 90°$. Determine the value of x.



ANSWER

$2x + 40° + 2x + 14° + 90° = 360°$ *(∠'s around a pt)*

$4x + 144° = 360°$

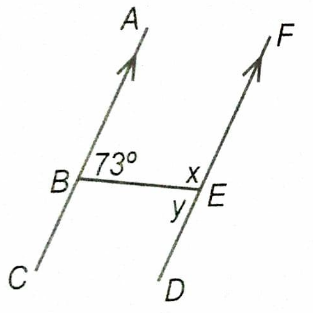
$4x = 216°$

$x = 54°$

EXAMPLE 3:

AC // FD and $A\hat{B}E = 73°$.

Determine the value of x and y.



If the question is set out like this you may work out x and y in any order.

However, if the question reads:

Determine the value of:

a. x

b. y

then you have to do x first and then y

ANSWER

$73° + x = 180°$ *(coint ∠'s ; AC // FD)*

$x = 107°$

$y = 73°$ *(alt ∠'s ; AC // FD)*

OR

$y + 107° = 180°$ *(∠'s on a straight line)*

$y = 73°$

Your answer must follow a logical order:

Here is an example of correct answers in an illogical order:

If you worked out y first in this question you could not say.

$y + 107° = 180°$ *(∠'s on a straight line)*

$y = 73°$

$x = 107°$ *(co-int ∠'s ; AC // FD)*

You are using x to find y but work out y then x.

If you wanted to work out y first, the only logical way to do this is to find y using alternate angles and then x using co-interior angles or angles on a straight line.