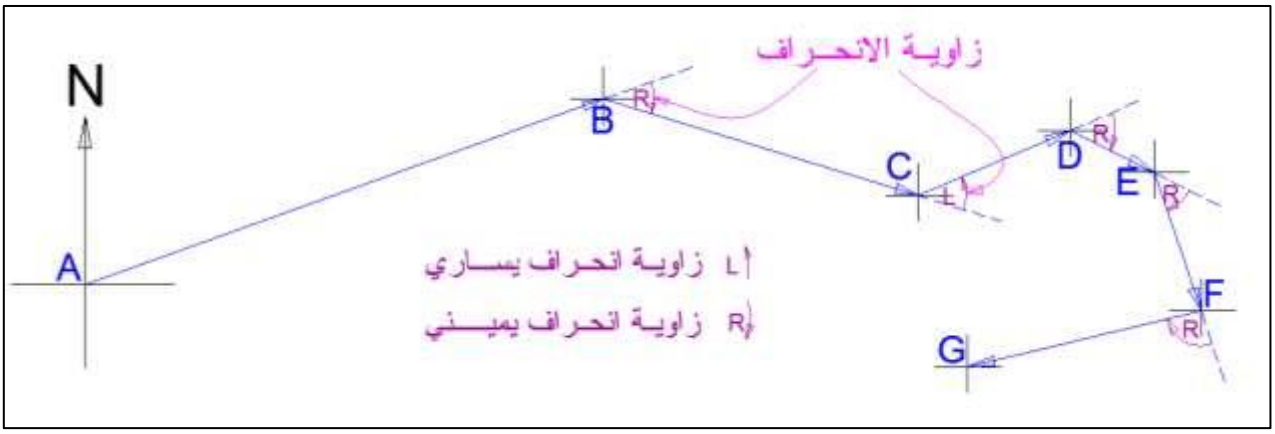
زاوية الانحراف Deflection Angle:

هي الزاوية المقاسة من امتداد الضلع السابق باتجاه الضلع اللاحق، وليس شرطاً ان تكون مع عقرب الساعة أو عكس عقرب الساعة، وتمثل انحراف ضلع لاحق عن ضلع سابق في الاتجاه.

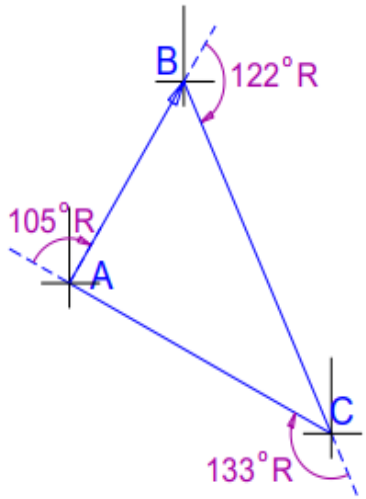


وبما ان هذه الزاوية تربط بين ضلع سابق وضلع لاحق لذلك يمكن إيجاد اتجاه الضلع اللاحقة بمعلومية اتجاه الضلع السابق وزاوية الانحراف بين الضلعين.

Forward Az. (لاحق) = Forward Az. (سابق) + Deflection Angle to right

or Forward Az. (لاحق) = Forward Az. (سابق) – Deflection Angle to left

Example: The polygon was surveyed using the deflection angle method with information about the direction of line AB =45^0 00'. The measured angles were as shown in sketch. The required information is the direction of line CA.



105° R المطلوب إيجاد اتجاه CA.

AB = 45° 00'

BC = AB + Def. Angle to R. = 45° + 122° = 167°

CA = BC + Def. Angle to R. = 167° + 133° = 300°

AB = CA + Def. Angle to R. = 300° + 105° = 405°

∴ AB = 405° – 360 = 45° 00' ∴ O.K

Example 2:- Angles were measured using the deflection method, and the results were as follows

Station	From	To	Deflection angle
A	E	B	142° 25' L
B	A	C	135° 40' L
C	B	D	105° 35' R
D	C	F	48° 30' R

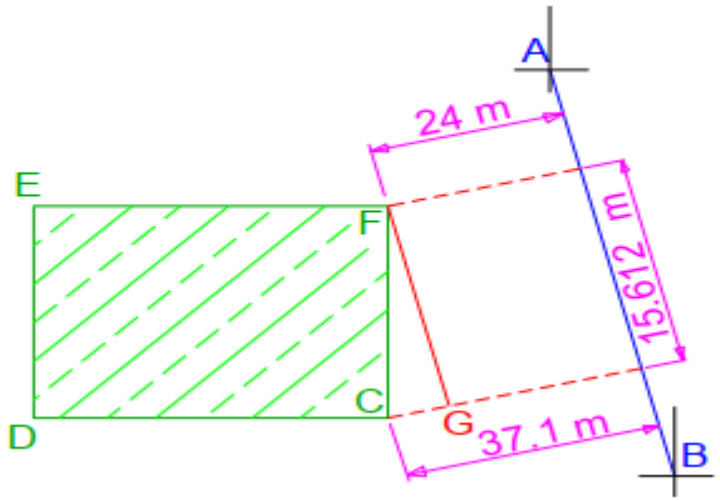
If the direction of line EA = 320, what are the directions of the other lines

EA = 320^0 ➔ AB = EA – Deflection angle to left = $320^0 – 142^0 25'$
AB = $177^0\,35'$
BC = AB – Deflection angle to left = $177^0\,35' – 135^0 40' = 41^0\,55$

CD = BC + Deflection angle to right = $41^0\,55' + 105^0\,35' = 147^0\,30'$
DA = CD + Deflection angle to right = $147^0\,30' + 48^0\,30' = 196^0\,00'$

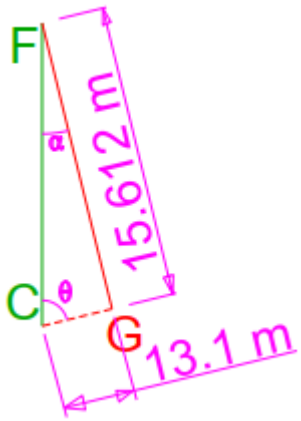
Example 3

From the survey line AB, it was took linear measurements to install the rectangular wall CDEF. If the direction of line AB is 170^0 05', what is the direction of lines CD and DE?



Solution

المثلث CFG قائم الزاوية في نقطة G



$$\theta = \tan^{-1}\frac{15.612}{13.1} = 50^{\circ}$$

$$\alpha = 180 - (90 + \theta) = 40^{\circ}$$

اتجاه FG = اتجاه AB = 170° 05' (لأن FG يوازي AB)

FC = FG + α = 170° 05' + 40° = 210° 05' ➔ CF = FC – 180 = 30° 05'

الزاوية FCD زاوية قائمة = 90° (لان زوايا المستطيل قائمة)

الزاوية الخارجية = 360° - 90° = 270° (زاوية من اليمين من CF إلى CD)

CD = CF+ Ext. angle to right = 30° 05' + 270° = 300° 05' ➔ DC = 120° 05'

DE = DC – Internal angle to left = 120° 05' – 90 = 30° 05'