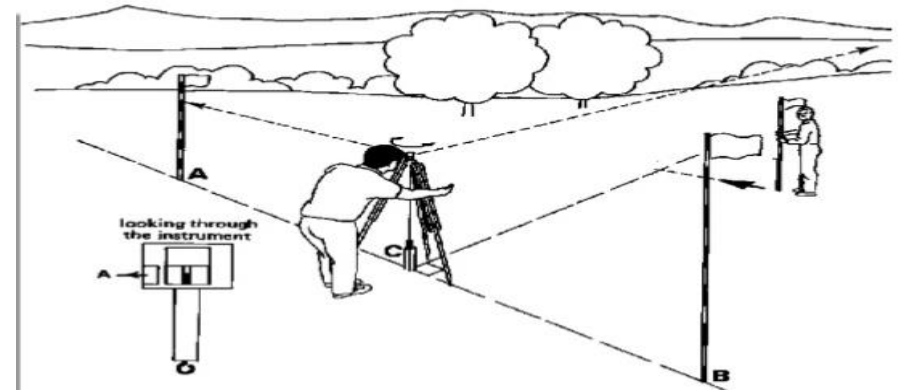


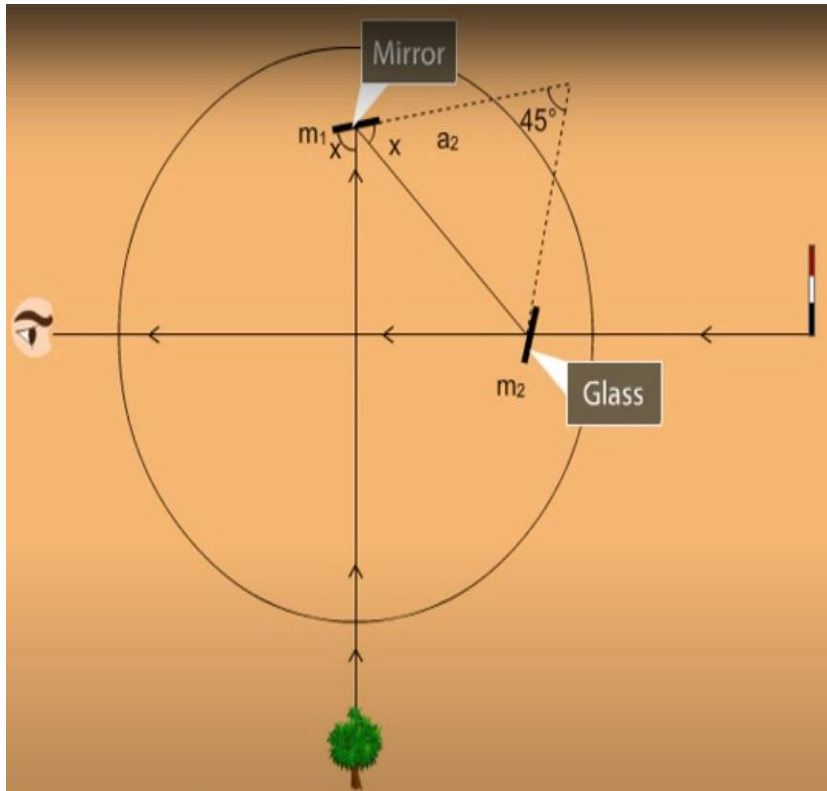
Optical Square

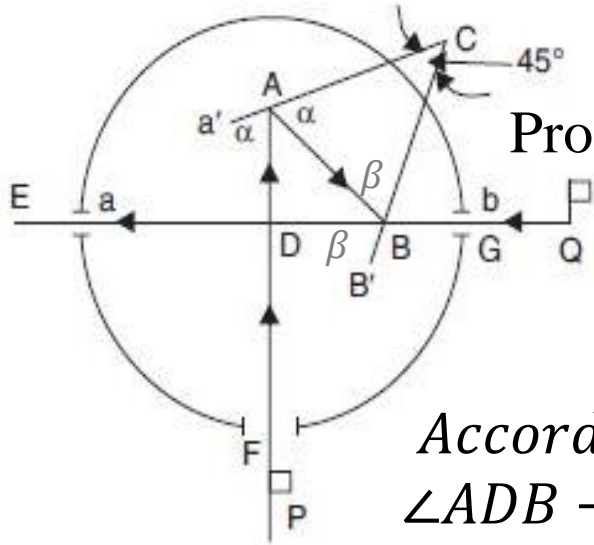
An optical square is a hand instrument used by surveyor's. Used for **placing points on a line, offset measurements**, setting out curves or determining horizontal plans.



Perpendicular Offsets Using Optical Square and Prism Square







Proof that optical square 2 mirror incline at 45° Angle.

from figure, $\angle DAB = 180^\circ - 2\alpha$

and $\angle DBA = 180^\circ - 2\beta$

According to Triangular law,
 $\angle ADB + \angle DBA + \angle DAB = 180^\circ$

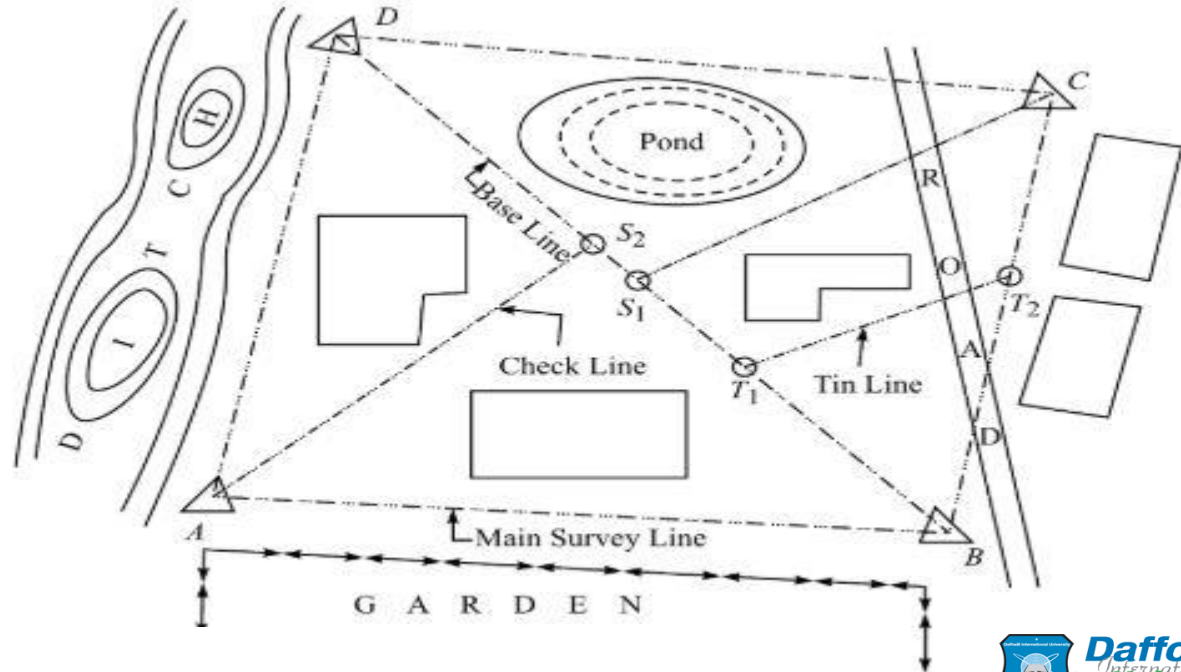
$$\Rightarrow 90^\circ + 180^\circ - 2\beta + 180^\circ - 2\alpha = 180^\circ \quad \therefore \alpha + \beta = 135^\circ$$

Now ΔACB , $\alpha + \beta + \angle C = 180^\circ$

$$\Rightarrow 135^\circ + \angle C = 180^\circ \quad \therefore \angle C = 45^\circ$$

Reconnaissance Survey

It is the **preliminary survey**. It is used at commencement of any project work through suggesting possible alternative paths and routes. It needs to be done with greater efficiency and cost accuracy for **identifying these alternative paths and routes**.



Stations

These are points on the ground fixed by **driving pegs**. Every station should be located with respect to **three permanent objects**. The distances from these objects to the stations should be measured very accurately and recorded **field book**.

STATION	GROUND DIST	ANGLE	VERT DIST	ELEV
A	HL 0			1000
B	8	-22°	-3	997
C	7	-35°	-4	993
D	15	-5°	-1	992
E	27	-26°	-8	984
F	45	-27°	-9	975
G	65	+7°	+3	978
H	90	+12°	+6	984
I	120	-2°	0	984
J	152	-5°	-2	982
K	23	-7°	-3	979
L	177	-7°	-3	976
M	206	-3°	-1	975
N	220	0°	0	975
O	30	0°	0	975
P	250			
Q	21	-6°	+2	

All distances & elevations in meters

NOTES & REMARKS

(A) SOURCE #1 (ARBITRARY ELEV=1000m)

(C) SITE OF COLLECTION TANK
1.5m OF GZ FOR GULLY

(G) Hard rock area

(H) SITE FOR RESERVOIR

(K) INTERCEPTS FOOTPATH

(M) TAP #1 (SCHOOL)

MAINLINE (PROCEEDING DOWNSTREAM FROM SOURCE)

WOODED JUNGLE

TRAIL

FIELD

ALONG FOOTPATH

Gravel & Sandy Soil

Thank You

Stay Safe

Stay Aware