Experimental Part

Method of measuring distance:-

1. By taps:- different depended on manufacture

materiel

Steel tap Linen tap

Advantages of tap disadvantages of tap

Light it cannot repair

Easy to use difficult in bed weather

Simple accuracy

If the line ≤ tap length Read direct

If the line > tap length it need divide the length

If the ground is hilly L = L1 +L2 +L3+……

L3

L2

L1

Error in ordinary measurement :-

1. Error of pull.

Pull strong enough to make the tap straight line.

1. Making the zero point S V
2. Error of slope make correction

H = S -V₂/2S H

Ex :-A line measured a long constant slop (1446.25 m) & the difference between two end (62.5 m)find the horizontal distance ?

H = 1446.25 – (62.5)₂/2\*1446.25

= 1444.9 m

1. Incorrect length of tap.

True dis. tap

True distance =--------------------------- \*nominal dis.

Nominal dis. Tap

1. By pacing :-

Distance (50) 50m

Pace length =-----------------------=-----------= 0.68 m

No. of pace(average) 73

?

L K

Distance (KL) = length of pace \* No. of pace

1. How to measure angle in site by tap:-

A

d X

f Bd=Be

B df=ef

e X

Sin(Φ/2)=df/Bd C

1. Perpendicular on line from point on it by phethagorce :-

d

5

4

A C B

1. Put pin on (c) and read tap (3)m.
2. We need make (e) in direction AB and fix it read tap( 0 , 12) m
3. Man and fix (7) m on tap and tension at (d).
4. Perpendicular on line from point on it by chord
5. Tack equal distance from each side of(C) .
6. open tap at the side of ( c) and make

arch .

1. (d)the point intersection of the arch.
2. line (dc) perpendicular to AB.

d

X X

A C B

1. Perpendicular on line from point out it :-

C

A X B

1. Make Parball line to straight line :-
2. Make distance from (A) at length (x) CA AB.
3. Make equal distance from DB AB
4. CD = AB
5. Parallel line by triangle method :- D
6. Chose point (d) out- side of the line . X Y
7. Make triangle (ABd).

A B

1. Taka point on (AD) like (x) and on (BD) like(y).

So Dx/DA=Dy/DB=1/2 ,1/3 ,1/4 . ……..

AB xy= 1/2 , 1/3 ,1/4 , ………

Ex:-

The line draw by scale 1/3000 and find the length at scale 1/1000 is 330m, Find the true of the length?

Scale = map dis./ground dis.

1/1000 = map dis /330

Map dis = 0.33 m= 33 cm

1/3000= 33/ground dis.

Ground dis.=99000 cm =990 m

Ex:-

it is required to draw rectangular area with dimensions

(20 mil \*16 mile)On sheet with dimensions(50cm\*35 cm).

What will be the suitable scale to be used if you should

leave one inch from all sides of the sheet? & point the

distance 570 m on the drawing ?

The new dimensions of rectangular =20 \*1.609 = 32.18 Km

16 \*1.609 = 25.744 Km

The new dimensions of sheet = 50 – 1\*2.54 \*2 = 44.92 cm

35 – 1\*2.54 \*2 = 29.92 cm

Scale = map distance / ground distance

= smaller distance on map/larger distance on ground

= 29.92 cm/32.18 \*1000 \*100 = 1 / 107553

= 1/110000

1/110000 = X/ (570 \*100 cm)

X=0.518 cm

Ex:-

Dimension of city ( 10 Km \*15 Km ) ,how much paper need to draw it at scale 1/7500 if the dimension of paper

(35cm\*50cm) ?

Distance on map

Scale = ------------------------------

Distance on ground

1/7500 = X / 1000000

X = 133.3 cm

New dimension of paper=31 cm \*46cm

No. of paper =133.3/31=5

1/7500=y/1500000

Y= 200

No. of paper = 200/46 =5

Total paper = 5\*5=25

Ex:**-**

Draw scale1 /2500 of accuracy 5 m?

point out distance 115 m 55m

1 cm = 2500 cm =25 m

عدد التقسيمات الفرعية=القيمة الرئيسية للمقياس / دقة المقياس

5/15

5=

بما ان عدد التقسيمات اقل من 10 اذن لا توجد تقسيمات عمودية (المقياس طولي)

115

55

25 20 15 10 5 0 25 50 75 100 125

Ex:-

Draw the scale 1/2000 of accuracy 1 m ?

1 cm = 2000 cm = 20 m

عدد التقسيمات الفرعية = القيمة الرئيسية للمقياس / دقة المقياس

20 / 1 =

20 =

اذن التقسيمات العمودية = 10

التقسيمات الافقية =2

المسافة بين التقسيمات العمودية = دقة المقياس = 1

10

9

8

7

6 126

5 75

4 54

3 33

2

1 21

0 20 10 0 **20** 40 60 80 100 120