

### Q no 1

**A distance is measured with a 100 ft steel tape and it is found  $d = 896.24$ ft. Later the tape is standardized and tape is found to have an actual length of 100.04 ft what is the correct distance measured.**

$L =$  When tape is manufacturing

$L' =$  this is the actual tape length on ground

True length =  $L'/L \times$  Measured distance

$$= 100.04/100 \times 896.24$$

$$= 896.598 \text{ ft}$$

### Q no 2

**The length of a line measured by means of 20m tape was found to be 610.2m which was known to be 612m. What was actual length of tape during measurement?**

$L = 20$

$M.D = 610$

$T.L = 612$

$L' = ?$

True length =  $L'/L \times$  Measured distance

$L' = T.L \times L / M.D$

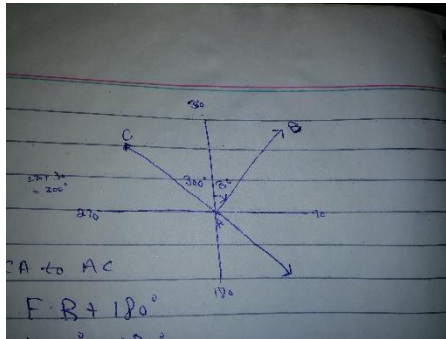
$$= 612 \times 20 / 610.2$$

$$= 20.06$$

### Q no 3

W.C.B OF Lines AB and CA are 30 degree and 120 degree respectively determine the angle between two lines

Diagram



From CA to AC

$$B.B = F.B + 180$$

$$= 120 + 180$$

AC = 300 degree

$$\text{Exterior angle} = 300 - 30 = 270$$

$$\text{Interior angle} = 360 - 270 = 90$$

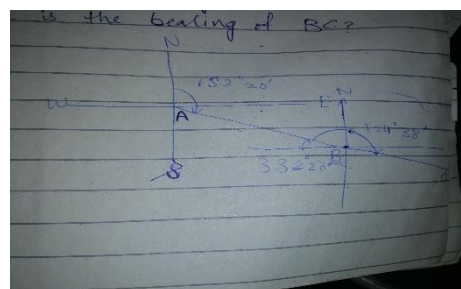
In W.C.B Case:

For exterior angle = greater angle – smaller angle

For interior angle = total angle – exterior angle

### Q no 4

The bearing of line AB is 152degree20 minutes and angle ABC is 124degree38minutes. What is the bearing of BC?



$$B.B = F.B + \_ 180 \text{ DEGREE}$$

$$= 152\text{degree}20\text{minutes} + 180\text{degree}$$

$$= 332 \text{ degree}20\text{minute}$$

$$332\text{degree}20\text{minute} \text{-----} 1$$

Add equation 1 with angle ABC

$$+124\text{degree} 38\text{minutes}$$

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$$= 456 \text{ degree } 58\text{minute}$$

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$$456 \text{ degree } 58\text{minute} \text{-----} 2$$

$$\_ 360\text{degree}00 \text{ minute}$$

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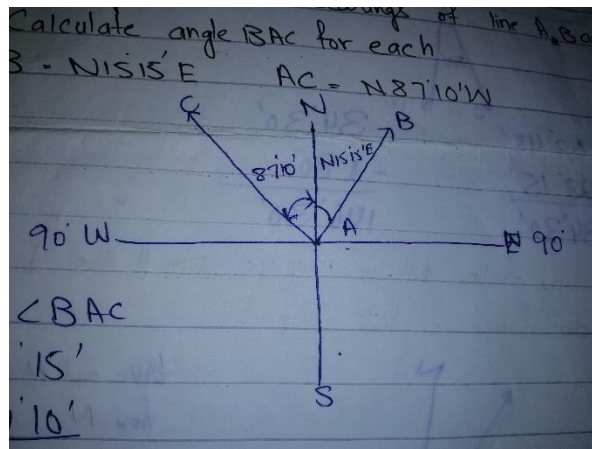

$$BC = 96\text{degree}58\text{minute}$$

### Q NO 5

Following are the bearings of line A, B, and AC Calculate angle BAC for each.

1.  $AB = N 15\text{degree}15\text{minute } E$  ,  $AC = N 87 \text{ degree } 10 \text{ minute } W$

Diagram



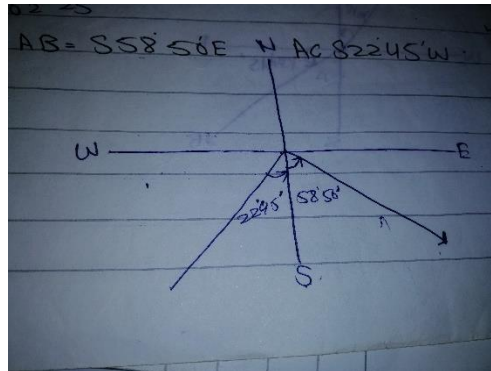
For  $\angle BAC$

$$15 \text{ degree } 15 \text{ minute} + 87 \text{ degree } 10 \text{ minute}$$

$$\angle BAC = 102 \text{ degree } 25 \text{ minutes.}$$

2.  $AB = S 58^\circ 50' E$  ,  $AC = S 22^\circ 45' W$

Diagram



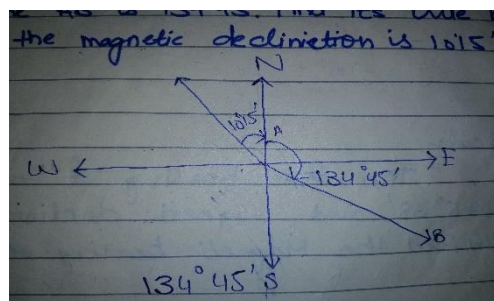
$58^\circ 50' + 22^\circ 45'$

$\angle BAC = 80^\circ 95'$

**Q no 6**

The magnetic bearing of a line AB is  $134^\circ 45'$ . Find its true bearing if the magnetic declination is  $10^\circ 15'$  west

❖ True bearing & magnetic bearing always taken from north (N).

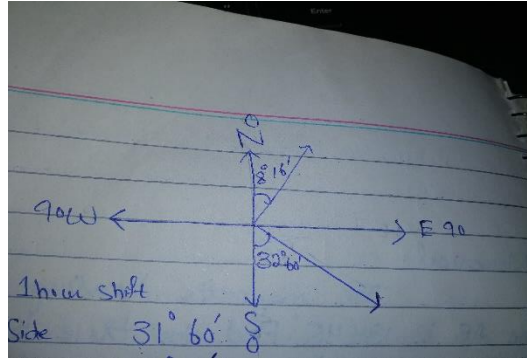


$= 134^\circ 45' - 10^\circ 15'$

$= 124^\circ 30'$

**Q no 7**

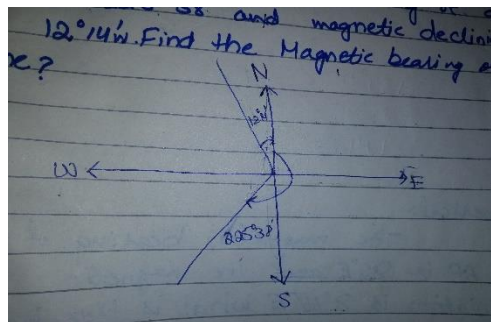
The magnetic bearing of a line AB is  $S 32^\circ 1'$ . Find its true bearing if the magnetic declination is  $8^\circ 16'$  E



From 32degree 1 hour shift in other side  
 = 32degree60minute – 8 degree 16 minute  
 = 24 degree 44 minute

### Q no 8

The true bearing of line 225degree 38minute and magnetic declination is 12 degree 14 minute W. Find the magnetic bearing of line



= 225degree 38minute + 12 degree 14 minute  
 = 237 degree 52 minute

- Towards E magnetic declination is + and error is negative and towards W magnetic declination is – error is +.

### Q no 9

Interior angle I.A of a close traverse ABC DEF are as follow.  $\angle A 60^{\circ} 40'$ ,  $\angle B 201^{\circ} 38'$ ,  $\angle C 93^{\circ} 19'$ ,  $\angle D 69^{\circ} 48'$ ,  $\angle E 210^{\circ} 13'$ ,  $\angle F 84^{\circ} 22'$ .

Find out D.F deflection angle of traverse.

- ❖ IF I.A  $> 180^\circ$  THEN, I.A  $- 180^\circ$
- ❖ IF I.A  $< 180^\circ$  THEN,  $180^\circ - \text{I.A}$

$$\text{D.A OF A} = 180^\circ - 60^\circ 40'$$

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$$\text{D.A OF B} = 201^\circ 38' - 180^\circ$$

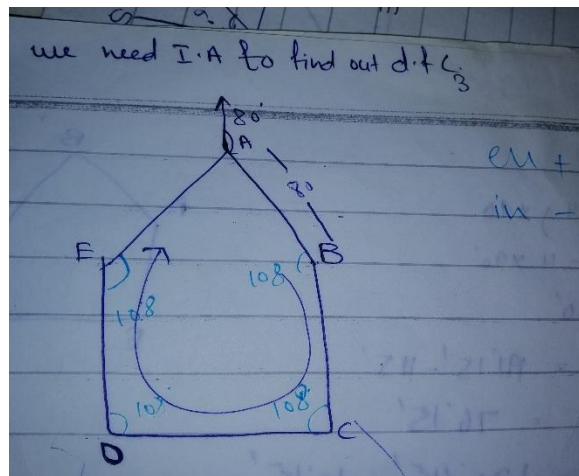
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So on...

### Q no 10

Bearing of one side of plot in shape of regular pentagon is 80 degree. Find the bearings of remaining sides.

### Diagram



$$\text{Sum of interior angle} = (2N + 4) \times 90 \text{ DEGREE}$$

$$(2N - 4) \times 90 \text{ DEGREE}$$

$$(2 \times 5 - 4) \times 90 \text{ DEGREE}$$

$$6 \times 90 = 540$$

$$540 / 5 = 108 \text{ Degree}$$

Each interior angle is 108 degree

For deflection angle

- ❖ IF I.A  $> 180^\circ$  THEN, I.A  $- 180^\circ$
- ❖ IF I.A  $< 180^\circ$  THEN,  $180^\circ - \text{I.A}$

Deflection angle =  $180 - 108$   
= 72 degree

Now, Bearing of AB = 80 degree

Bearing of BC =  $72 + 80 = 152$

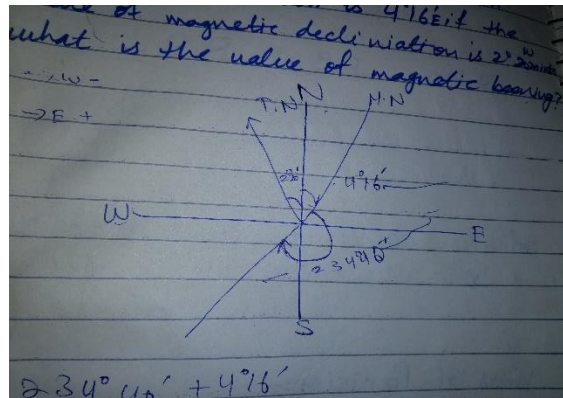
Bearing of CD =  $72 + 152 = 224$

Bearing of DE =  $72 + 224 = 296$

Bearing of EA =  $72 + 296 = 368$

### Q no 11

A line was drawn through magnetic bearing of 234degree 40 minute when magnetic declination is 4 degree 16minute E if the value of True North is 2 degree 20 minutes W. What is the value of magnetic bearing?



- Towards E magnetic declination is + and error is negative and towards W magnetic declination is – error is +.

Magnetic bearing = true bearing – magnetic declination

True bearing = magnetic bearing + magnetic declination

= 234degree 40 minute + 4degree 16 minute

= 238 degree 56 minute

Magnetic bearing = true bearing – True North

= 238 degree 56 minute – 2 degree 20minute

= 236 degree 36 minute