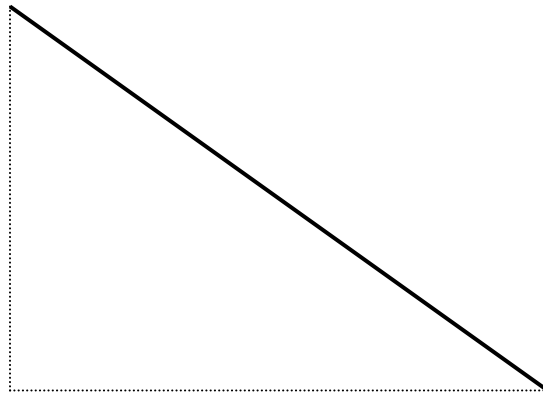


## Lecture 13– Inverse Computations and Area Calculations

### Inverse Computations

Given: The departure and latitude of a line, you can calculate the length of a line.



## Area Calculations

### *Methods of measuring area*

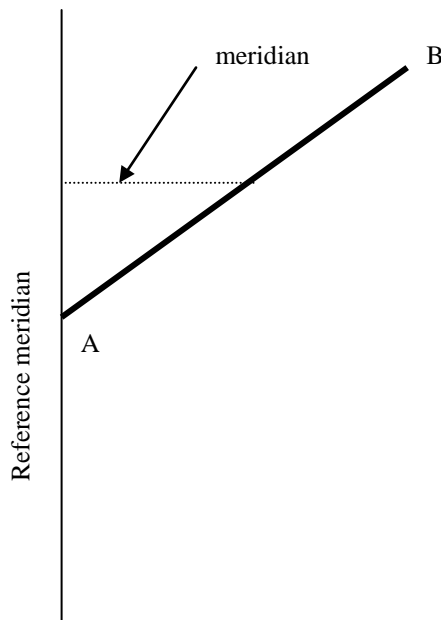
Three methods used when all sides are straight lines.

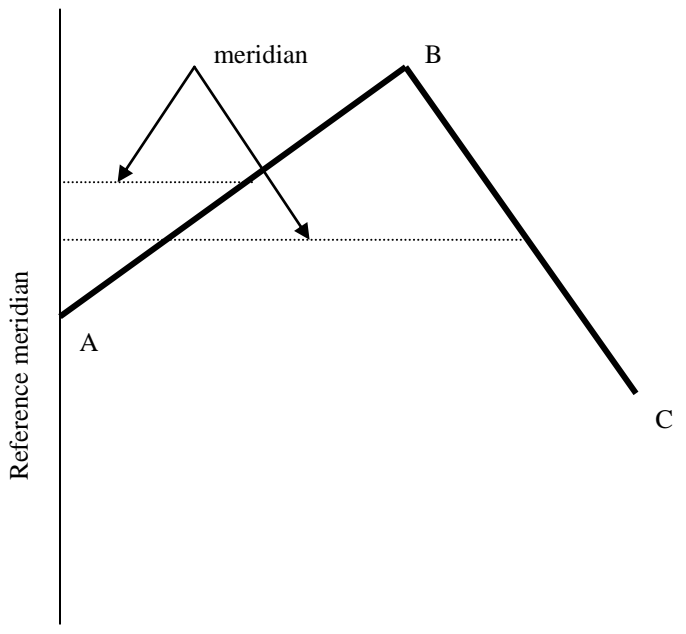
1. DMD – Double meridian distance
2. DPD – Double parallel distance
3. Coordinate method

### **DMD method – Double Meridian Distance**

Requires balanced departures and latitudes

The meridian is defined as the perpendicular distance from the midpoint of the course to some reference point usually placed through the most westerly point of the traverse.





Example

Sta	LAT <sub>adj</sub>	DEP <sub>adj</sub>	DMD	+ Double area	- Double area
A					
	-70.80	+416.04	-416.04		
F					
	+216.12	-176.90	-655.18		
E					
	+405.79	+200.48	-678.76		
D					
	-489.82	-738.35	-140.89		
C					
	-388.08	-57.61	655.07		
B					
	+326.79	+356.34	356.34		
A					
	0.00	0.00			

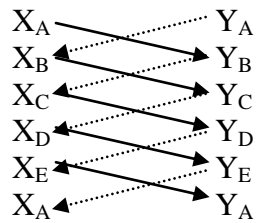
## DPD method

This method is similar to the DMD method except that it uses the latitudes instead of departures.

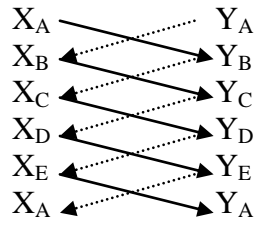
$$\text{DPD}_{\text{each course}} = \text{DPD}_{\text{preceding course}} + \text{latitude}_{\text{preceding course}} + \text{latitude}_{\text{course}}$$

**Pay careful attention to the signs!**

## Coordinate method



Example on page 308 of your text.



Sta	Northing	Easting			
A	10000.00	10000.00			
F	10070.80	9583.96			
E	9854.68	9760.86			
D	9448.89	9560.38			
C	9938.71	10298.73			
B	10326.79	10356.34			
A	10000.00	10000.00			

Should check with DMD method.