Attitude of the Geological Structures

Linear Structures

Attitude of the geological structures includes orientation linear structures and attitude planner structures.

Linear Structures: Resembles a geometric shape of line. (e.g. hinge line of fold, striation on fault).

Some important definitions:

Attitude: orientation of geometrical element (linear or planner) structures in space. Geologists specially the orientation of lines by giving their plunge and trend.

Trend: the bearing (compass direction) of a line. Non-horizontal line trends in the down plunge direction (Figure 1).

Plunge: the vertical angle between a line and an imaginary horizontal plane, as measured with an inclinometer in the vertical that contains the line (Figure 1).

Pitch (Rake): angle measured with an inclined plane between a horizontal line and the line in question (Figure 2).

There are two ways of expressing the trends of lines and strikes of planes (Figure 3):

1. The azimuth method: is measured clockwise from north and range between ($0 – 360^{\circ}$).
2. The quadrant method: is based on four 90° quadrants.

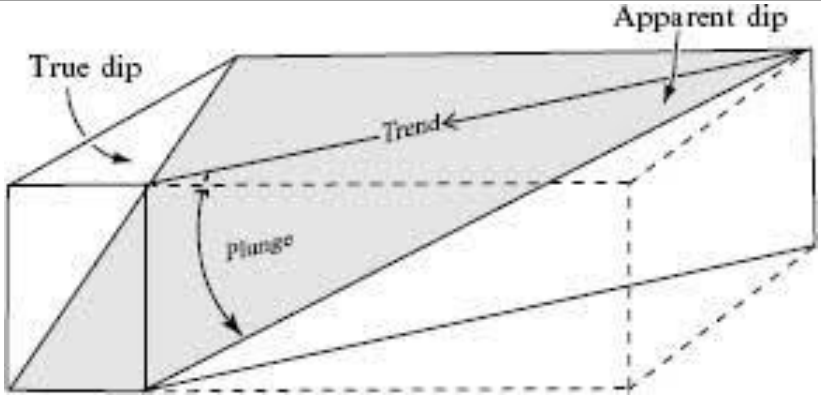


Figure 1: Trend and Plunge of a line

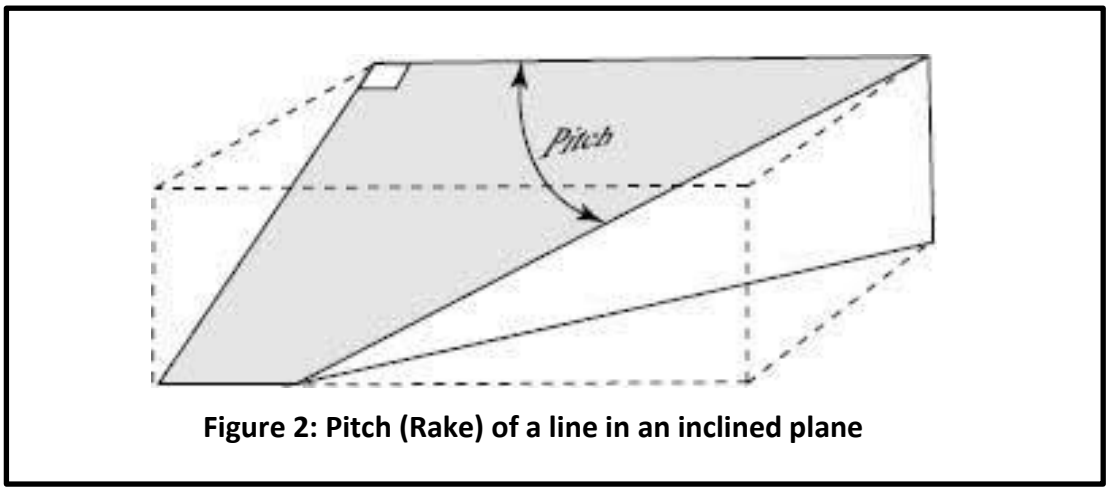


Figure 2: Pitch (Rake) of a line in an inclined plane

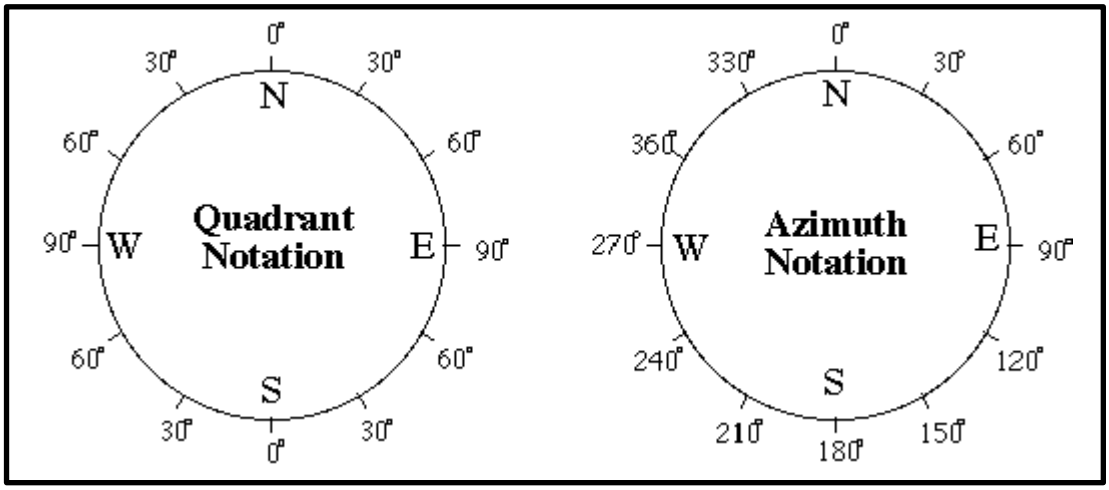
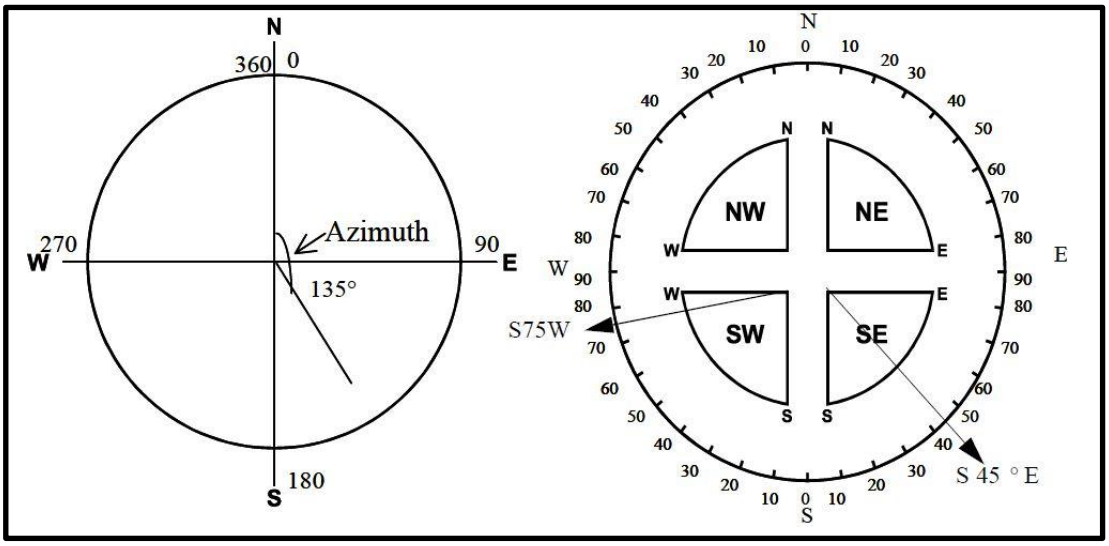


Figure 3: Pitch (Rake) of a line in an inclined plane

- How we can use the azimuth and quadrate



Exercise: Write all possible conventions of these attitudes of lines:

S70°W/25° ; 140°/45° ; 05°/67° ; N25°E/55° ; 89°/20° ; N55°W/65 ; 289°/57° ; S67°E/30°