Quadrant II – Transcript and Related Materials

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Notes

MAP SCALE

MAPS are necessarily smaller than the area mapped, consequently they must state ratio or proportion between comparable measurements.

The Ratio is called MAP Scale.

 MAP SCALE can be shown in many ways.

 It can be specifically indicated by some statement or graphics.

 It is Ratio between :

DISTANCE ON MAP: CORRESPONDING DISTANCE ON THE EARTH.

Statements of scale

REPRESENTATIVE FRACTION SCALE(R.F.)

VERBAL STATEMENT/VERBAL SCALE

GRAPHIC OR BAR SCALE

AREA SCALE

REPRESENTATIVE FRACTION SCALE(R.F.)

A representative fraction (RF) is the ratio of distance on the map to distance on the ground.

Representative fractions are expressed in the form of 1 followed by a : (colon) and then a number, where the one is the numerator in the fraction, the colon represents the division operation, and the other number is the denominator.

Thus, a scale of 1:24,000 can be expressed mathematically as 1/24,000. A representative fraction indicates ratio between the number of units on the map to the number of units on the ground.

Representative fractions are a unit-less relation between one "unit" on the map and however many "units" of the same type on the ground.

An RF of 1:24,000 means one inch on the map equals 24,000 inches on the ground and one centimetre on the map equals 24,000 centimetres on the ground.

Statement of Scale into R. F.

Convert the given Statement of Scale of 1 inch represents 4 miles into R. F.

Solution: The given Statement of Scale may be converted into R.F using the following steps.

1 inch represents 4 miles or 1 inch represents 4 × 63,360 inches (1 mile = 63,360 inches)

or 1 inch represents 253,440 inches

NOTE : We can now replace the character "inches" into "units"

and read it as :

1 unit represents 253,440 Units

Answer R. F. 1 : 253, 440

VERBAL STATEMENT/VERBAL SCALE

A map scale that expresses the relationship between distance on the map and distance on the ground in words; for example: "One inch equals 10 miles."

For example, the R.F. 1:1,000,000 denotes a map on which 1mm represents 1 kilometer.
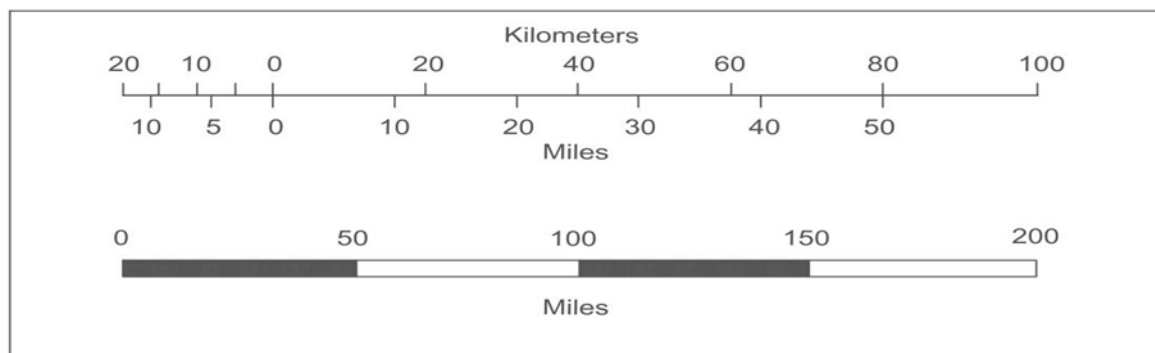
Examples

"1Centimeter = 100 Meters"

"1Centimeter = 100 Kilometers"

"1 Inch = 4 Miles"

GRAPHIC OR BAR SCALE

This is a line placed on the map often in a legend box or margin that has been subdivided to show the map lengths of units of Earth's distance.

One end of bar scale (often left) is usually sub-divided further so that user may measure the distances more precisely

The graphical scale stands valid even when the map is reduced or enlarged.

This is the unique advantage of the graphical method of the map scale.

AREA SCALE

Refers to the ratio of areas on the map to those on the earth.1 unit of area, square centimetre or square inches is proportional to a particular number of the same square units on the earth.

Expressed as 1:1,000,0002 or as 1 to the square of 1,000,000. Denominator of the map scale is squared is assumed and not shown.

Area scale can also be shown graphically by a square representing stated number of square kilometres or square miles.

Compass bearing

Directions on a Compass

North (N), East (E), West (W) and South (S) are the primary cardinal directions. Northeast (NE), Southeast (SE), Southwest (SW) and Northwest (NW) are called ordinal, primary intercardinal or intermediate directions.

Additional subdivisions North-Northeast (NNE), East-Northeast (ENE), East-Southeast (ESE), South-Southeast (SSE), South-Southwest (SSW), West-Southwest (WSW), West-Northwest (WNW), North-Northwest (NNW) are called secondary intercardinal directions.

For any precise measurement of bearings necessary for outdoors navigation, the azimuth or quadrant bearings rather than cardinal / intercardinal directions are used.
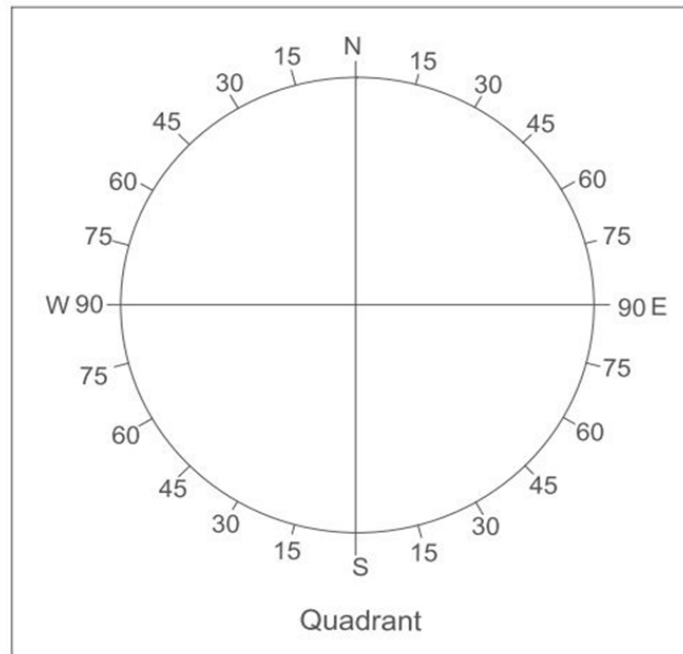
Quadrant bearing:

In this method the compass dial is divided into four quadrants, namely NE, SE, SW, and NW.

North and south are at 0 degrees, and depending on the quadrant, angles (up to 90 degrees) are measured away from north or south (whichever is nearer) towards East and West directions.

For example since Northeast (NE) is 45 degrees towards east of North, using quadrant notation it would be N45°E (read North-45 degrees-East).

Similarly NNW is equal to N22.5°W. ESE is S67.5°E.

Quadrant

Azimuth:

The compass dial is divided into 360 degrees. North is 0° or 360°. Angles are measured clockwise from North.

Therefore East is 90°, South is 180° and West is 270°. Converting azimuths to quadrant bearings or vice versa is easy.

For example an azimuth of 140° is greater than 90° and less than 180°, therefore it is in SE quadrant. There are 180 - 140 = 40 degrees between the South and the point, therefore the quadrant bearing is S40°E.

Similarly 287° (greater than 270° and less than 360°) is equal to N73°W.

A quadrant bearing of S37°W is in the SW quadrant and is equal to an azimuth of 180 + 37 = 217°.

Azimuth