Conical Projection with One standard parallel

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Example:
Simple Conical Projection with One standard parallel

RF = 1: 200,000,000
Latitudinal Interval = 15°
Longitudinal Interval = 30°
Latitudinal Extent = 0° to 75° North
Longitudinal Extent = 0° to 120° East and West
Standard Parallel = 45°

First calculate RRE (Radius of Reduced Earth) with help of following formula.

\[
RRE = \frac{\text{Radius of actual earth}}{\text{Representative fraction}}
\]

\[
RRE = \frac{640,000,000}{200,000,000} = 3.2 \text{ cm.}
\]

RRE = 3.2 cm.
1. Draw a circle with the radius of 3.2 cm. (RRE) and center “O”.
2. Divide the circle into two equal parts. Draw \( O-C \) line to divide the right side half of the circle.
3. From \( O-C \) line make an angle of 45° and draw the line of \( O-A \)
4. Draw a perpendicular line to \( O-A \) line \( A-B \)
5. From the point \( O \) extend the line vertically until the intersection with \( A-B \) line is made
6. Then from \( O-C \) line mark an angle of 15° (COM) and 30° (CON) (downward)
7. Then take \( C-N \) distance in compass and make an arc from the center \( O \).
8. Draw \( P-Q \) line which must be perpendicular to \( O-B \) line, which extends up to the intersection of the arc and \( O-A \) line.
Procedure of construction: (Main diagram)

1. Draw one **vertical** line at the middle of page with any length.
2. Take distance of A-B line from basic diagram in compass. Put the tip of compass at the upper end (Point – A) of vertical line and draw an arc. That is **standard parallel**.
3. Take C-M distance in compass and put the tip at intersection of vertical line and arc. Start the marking on vertical line with compass.
4. Mark 60° and 75° at the above of standard parallel (45°) and 30°, 15° and 0° at the below of standard parallel (45°).
5. Draw all arcs with these marking and using same center. Therefore all these arcs are **concentric arcs**. So these are latitudes.
6. Now, we need to mark longitudes. Number longitudes to be plotted will be calculated as follows; **Number = Extent / Interval**. In this case 120 / 30 = 4. therefore 4 longitudes should be there at each side.
7. Now, take P-Q distance in compass and put the tip of intersection of vertical line and standard parallel. Start marking on standard parallel at the both side of vertical line. Mark 4 points at each side.
8. Draw straight lines from the **center A** to the last arc through the markings on standard parallel. These lines are longitudes. Give the values to the latitudes and longitudes and it will end up with the “**Fan**” shaped conical projection with one standard parallel.
Simple Conical Projection with One Standard Parallel
Properties:

1. All the latitudes are *concentric arcs* and they are running parallel to each other.

2. All the longitudes are *straight lines* and converging at center of the circle. They are intersecting latitudes at right angle.

3. 90° latitude can be shown by *an arc* (North or South Pole)

4. Distance between two latitudes is same everywhere. Distance between two longitudes is decreasing towards pole. Distances along the meridians are *true*.

5. This projection is mostly useful to show *mid latitude regions*. (Northern or Southern hemisphere)

6. Distortion in scale will occur as we move away from *standard parallel*. Scale is true along the standard parallel.

7. This projection is not suitable for *Polar* and *Equatorial* regions.
Uses:

1. This projection is normally represents the areas of mid-latitudes with limited latitudinal and larger longitudinal extent.

2. A long narrow strip of land having great east – west stretch and running parallel to the standard parallel is correctly shown in this projection.

3. Direction along standard parallel is true, therefore it is useful to show railways, roads, narrow river valleys and international boundaries.

4. This projection is appropriate for showing the Trans-Siberian Railways, Canadian Pacific Railways, international boundaries between USA and Canada and the Narmada Valley.