Grade 7 Math Formulas

Congruence Formulas

Based on Maharashtra Board Syllabus (NEP 2025-26)

Note:

This document contains key concepts and criteria related to Congruence of geometric figures, especially triangles, for Grade 7.

Understanding Congruence

- Congruent figures are figures that have the exact same size and shape.
- If two figures are congruent, one can be placed exactly on top of the other by sliding, rotating, or flipping it.
- The symbol for congruence is $\cong$.

Congruence of Basic Figures

- Congruence of Line Segments: Two line segments are congruent if they have the same length. Example: If length of AB = length of CD, then line segment AB $\cong$ line segment CD.
- Congruence of Angles: Two angles are congruent if they have the same measure. Example: If measure of angle P = measure of angle Q, then angle P $\cong$ angle Q.

Congruence of Triangles

Two triangles are congruent if their corresponding sides and corresponding angles are equal. We use congruence criteria to prove triangles are congruent without checking all parts.

- **SSS Congruence Criterion (Side-Side-Side):** If three sides of one triangle are equal to the corresponding three sides of another triangle, then the two triangles are congruent.

- **SAS Congruence Criterion (Side-Angle-Side):** If two sides and the included angle (the angle between the two sides) of one triangle are equal to the corresponding two sides and the included angle of another triangle, then the two triangles are congruent.

- **ASA Congruence Criterion (Angle-Side-Angle):** If two angles and the included side (the side between the two angles) of one triangle are equal to the corresponding two angles and the included side of another triangle, then the two triangles are congruent.

- **AAS Congruence Criterion (Angle-Angle-Side):** If two angles and a non-included side (a side not between the two angles) of one triangle are equal to the corresponding two angles and the corresponding non-included side of another triangle, then the two triangles are congruent.

Corresponding Parts of Congruent Triangles (CPCTC)

- If two triangles are congruent, then their corresponding sides are equal and their corresponding angles are equal. This is often abbreviated as CPCTC.

- Example: If triangle ABC $\cong$ triangle PQR, then AB = PQ, BC = QR, AC = PR, angle A = angle P, angle B = angle Q, and angle C = angle R.

End of Formulas - Congruence Formulas