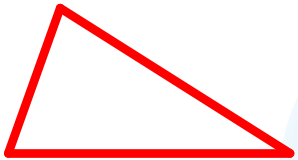
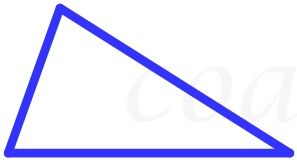
Congruence of triangles

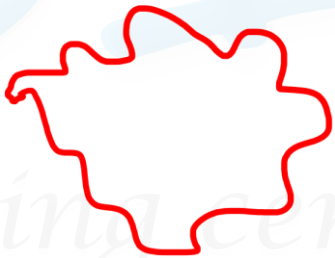
(त्रिभुजों की सर्वांगसमता)

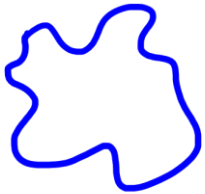
सर्व अंग समता
सारे
All parts equality

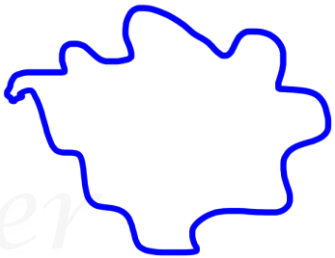
Congruence (सर्वांगसमता) :







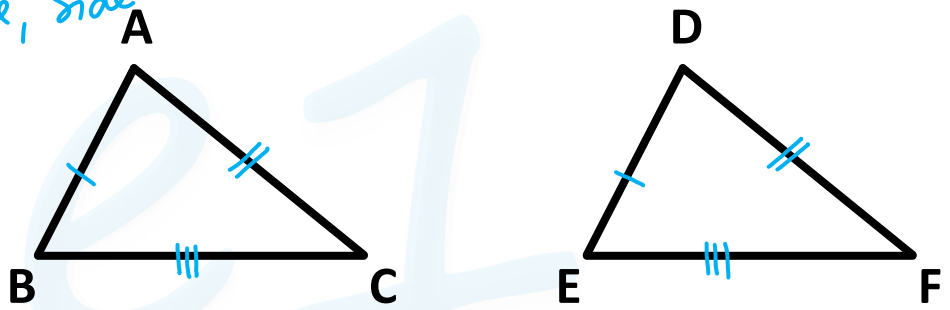




SSS Rule:

Side, Side, Side

3=3



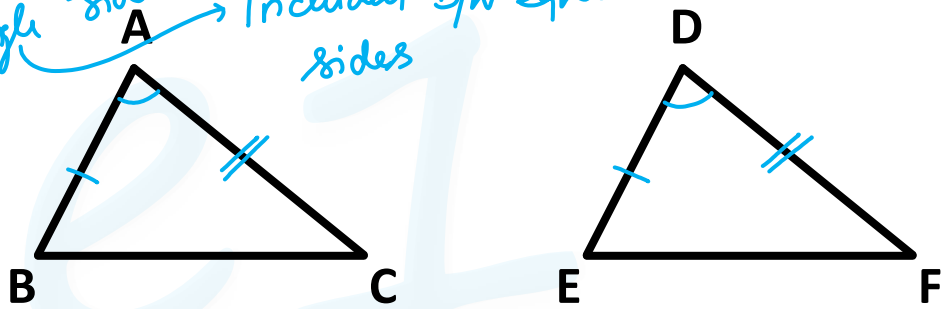
$\triangle ABC \cong \triangle DEF$ ✓

$\triangle ABC \cong \triangle FED$ ×

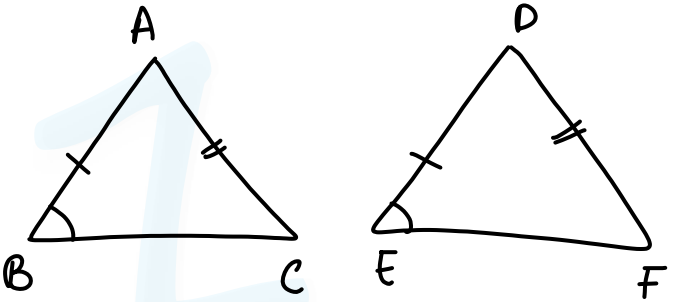
SAS Rule:

Side Angle Side → Included b/w equal sides

SSA, ASS
X X

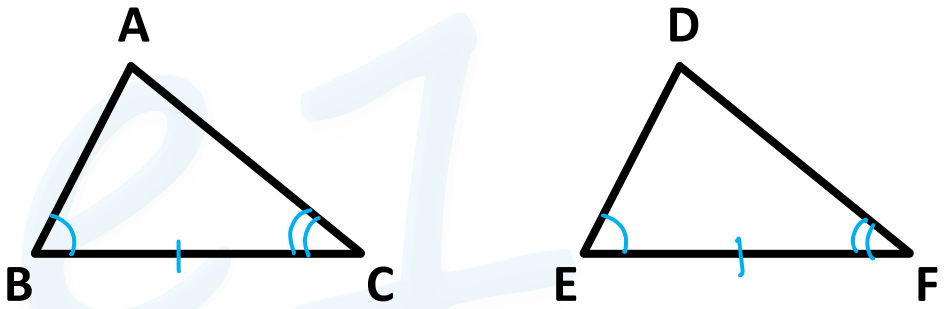


$\triangle ABC \cong \triangle DEF$

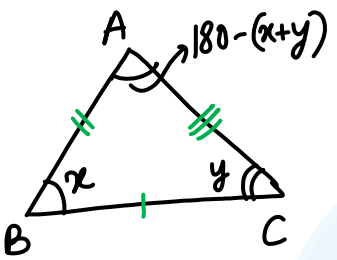


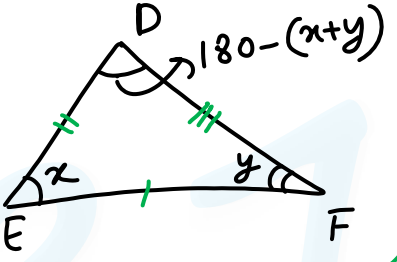
$\triangle ABC \cong DEF$ [Can't Say]

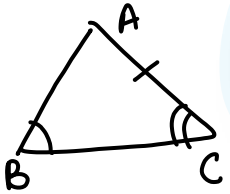
ASA / AAS / SAA Rule:

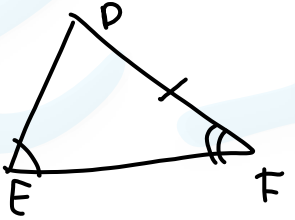


$\triangle ABC \cong \triangle DEF$









$\Delta ABC \cong \Delta DEF$

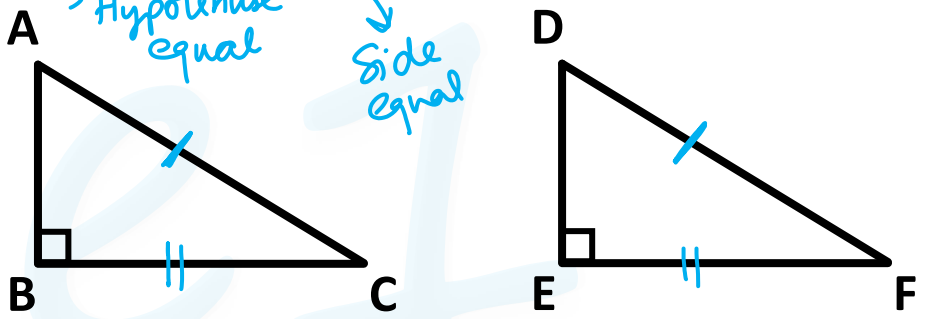
① SSS
② SAS
③ ASA, SAA, AAS
④ RHS

RHS Rule:

Right angle

Hypotenuse equal

Side equal



✓ R ✓ H S ✓

$\triangle ABC \cong \triangle DEF$

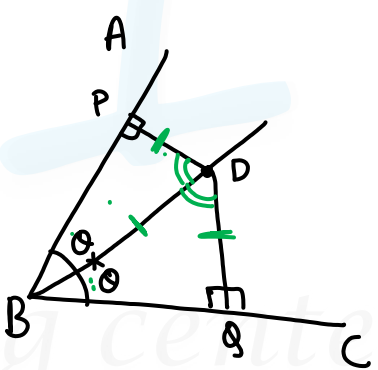
Let's prove something:

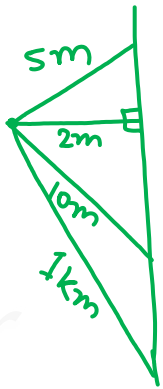
1. **Any point on the angle bisector of an angle is equidistant from the arms of the angle.**

कोण समद्विभाजक पर स्थित कोई भी बिंदु कोण की दोनों भुजाओं से समान दूरी पर होता है.

ASA

$\Delta BPD \cong \Delta BQD$

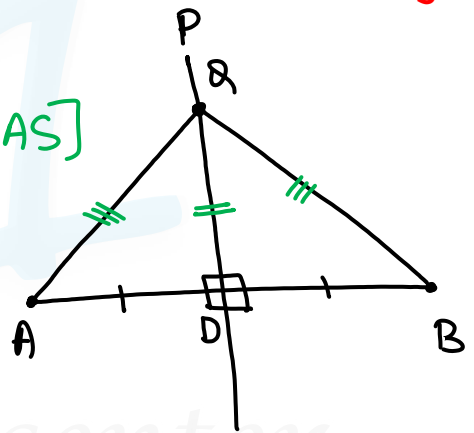




2. **Any point the perpendicular bisector of a line segment is equidistant from the ends of the line segment.**

किसी रेखाखंड के लम्ब सम्द्विभाजक पर स्थित कोई भी बिंदु रेखाखंड के दोनों सिरों से बराबर दूरी पर होगा.

$\triangle ADP \cong \triangle BDQ$ [SAS]

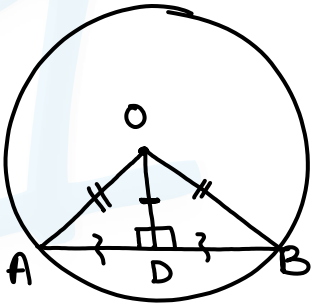


3. **Perpendicular drawn on a chord from the center of the circle bisects the chord.**

वृत के केंद्र से जीवा पर खींचा गया लम्ब जीवा को समद्विभाजित करता है.

RHS

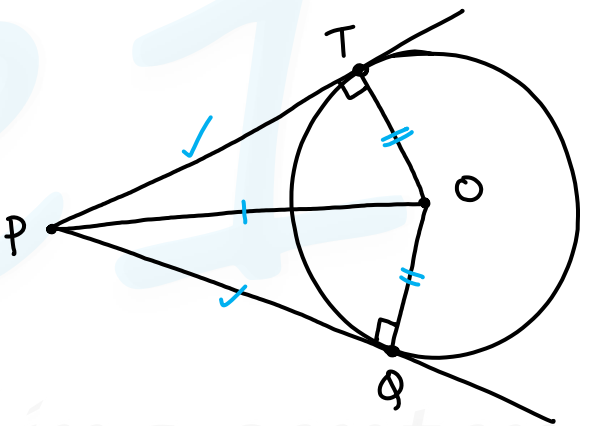
$\triangle OAD \cong \triangle OBD$



4. **Tangents drawn form an exterior point to a circle are equal in length.**

वृत के बाहर स्थित बिंदु से खींची गयी स्पर्श रेखाएं समान लम्बाई की होती हैं.

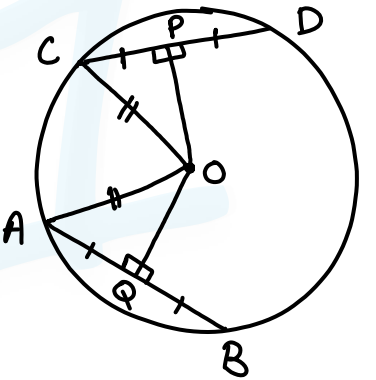
RHS ✓

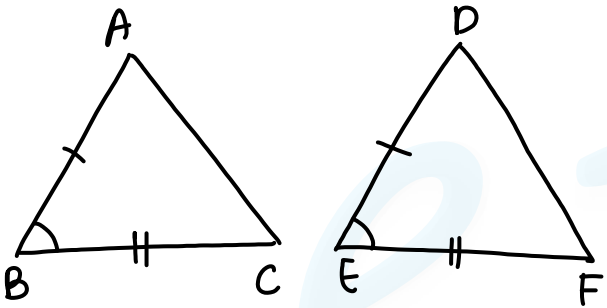


5. **Equal chords in a circle are equidistant from the center of the circle.**

किसी वृत में समान लम्बाई की जीवाएं, केंद्र से समान दूरी पर होती हैं.

RHS





1. In ΔABC and ΔDEF, AB=DE and BC=EF, then one can say that ΔABC is congruent to ΔDEF if

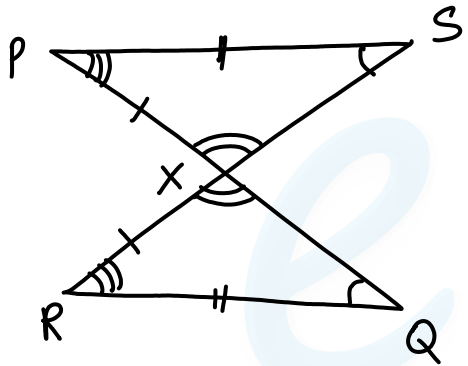
त्रिभुज ΔABC और ΔDEF में अगर AB=DE और BC=EF है तो ΔABC, ΔDEF के सर्वान्गसम होगा अगर:

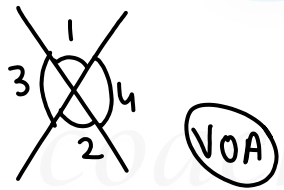
a) $\angle BAC = \angle EDF$

b) $\angle ACB = \angle EDF$

c) $\angle ACB = \angle DEF$

d) $\angle ABC = \angle DEF$





2. Two line segments, PQ and RS intersect at X in such a way that XP=XR. If $\angle PSX = \angle RQX$, then one must have

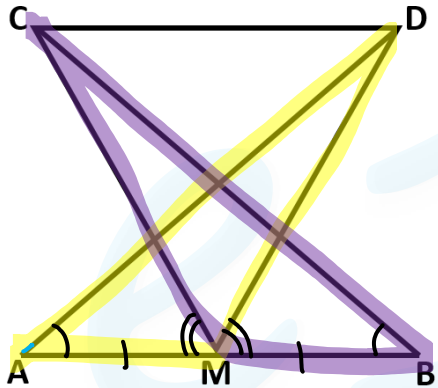
दो रेखाएं PQ और RS किसी बिंदु X पर इस प्रकार प्रतिछेद करती हैं कि XP=XR है| अगर $\angle PSX = \angle RQX$ है तो :

a) $PR = QS$

b) $PS = RQ$

c) $\angle XSQ = \angle XRP$

d) $ar(\triangle PXR) = ar(\triangle QXS)$

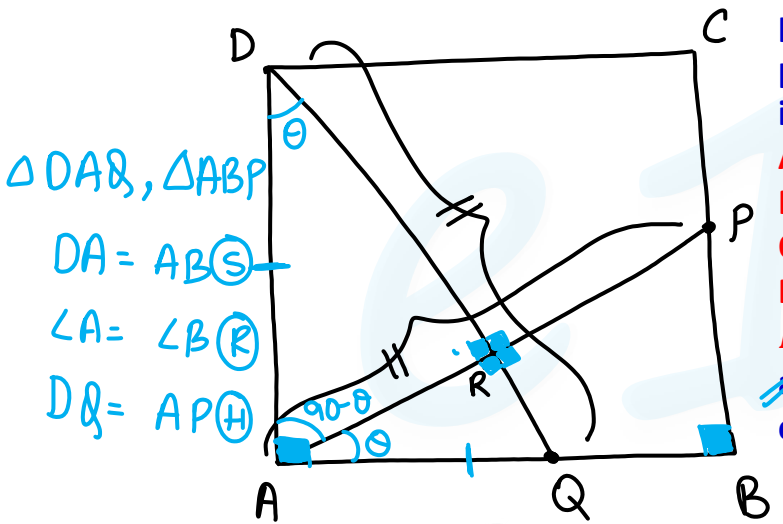


3. In the figure given below, M is the mid-point of AB and $\angle DAB = \angle CBA$ and $\angle AMC = \angle BMD$. Then the triangle ADM is congruent to the triangle BCM by

निम्न दी गई आकृति में, M भुजा AB का मध्य बिंदु है और $\angle DAB = \angle CBA$ और $\angle AMC = \angle BMD$ है| तो त्रिभुज ADM और त्रिभुज BCM किस नियम के अंतर्गत सर्वांगसम होंगे?

a) SAS rule
b) SSS rule
c) ASA rule
d) AAA rule

CDS 5 Feb 2017

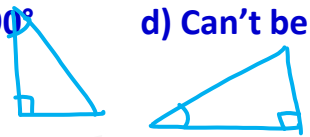


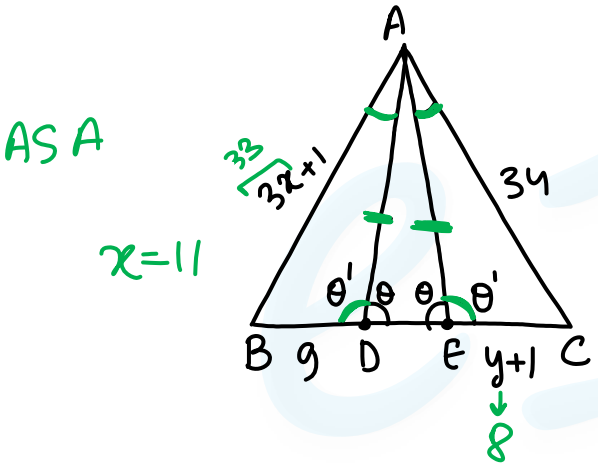
4. ABCD is a square. A is joined to a point P on BC and D is joined to a point Q on AB. If $AP = DQ$ and AP intersects DQ at R, then $\angle DRP$ *is*:

ABCD एक वर्ग है| A ,BC पर एक बिन्दु P से जुड़ा हुआ है ओर D ,AB पर बिन्दु Q से जोड़ा हुआ है, यदि AP और DQ, R पर प्रतिछेद करता है और $AP = DQ$ है तो $\angle DRP$ =?

a) 60° b) 120°

c) 90° d) Can't be determined



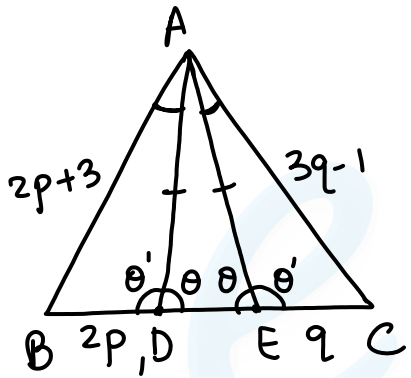


5. Let D and E be two points on the side BC of ΔABC such that $AD = AE$ and $\angle BAD = \angle EAC$. If $AB = (3x + 1)\ cm$, $BD = 9\ cm$, $AC = 34\ cm$ and $EC = (y + 1)$ cm, then the value of $(x + y)$ is:

माना की ΔABC की भुजा BC पर बिन्दु D और E इस प्रकार है की $AD = AE$ और $\angle BAD = \angle EAC$ है| यदि $AB = (3x + 1)\ cm$, $BD = 9\ cm$, $AC = 34\ cm$ और $EC = (y + 1)$ cm है, तो $(x + y)$ का मान ज्ञात कीजिए|

a) 19
b) 16
c) 20
d) 17

SSC CGL T2, 16 Nov 2020



ASA ✓

6. In a triangle ABC, D and E are points on BC such that $AD = AE$ and $\angle BAD = \angle CAE$. If $AB = (2p + 3), BD = 2p, AC = (3q - 1)$ and $CE = q$, then find the value of $(p + q)$.

एक त्रिभुज ABC में D और E, BC पर ऐसे बिंदु है कि $AD = AE$ और $\angle BAD = \angle CAE$ है| यदि $AB = (2p + 3), BD = 2p, AC = (3q - 1)$ और $CE = q$ है, तो $(p + q)$ का मान ज्ञात कीजिए|

a) 3 b) 4.5 c) 3.6 d) 2

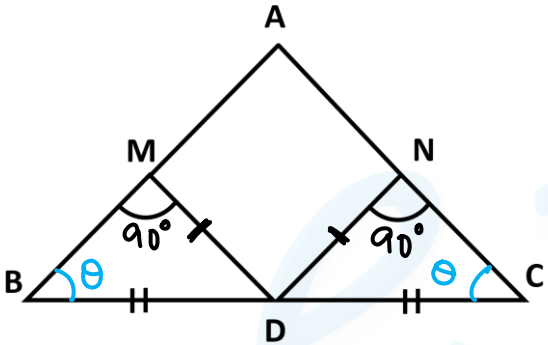
$2p+3 = 3q-1$

$2p = q$ → $2p+3 = 6p-1$

$4 = 4p$

$1 = p$

$2 = q$



7. In the adjoining figure D is the midpoint of BC of a ΔABC. DM and DN are the perpendiculars on AB and AC respectively and DM = DN, then the ΔABC is:

a) Right angled

b) Isosceles

c) Equilateral

d) Scalene

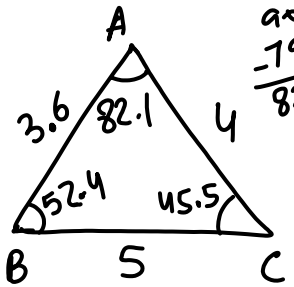
D त्रिभुज ΔABC की भुजा BC का मध्य बिंदु है| DM और DN क्रमशः भुजाओं AB और AC पर लम्ब हैं| अगर DM = DN है तो ΔABC होगा:

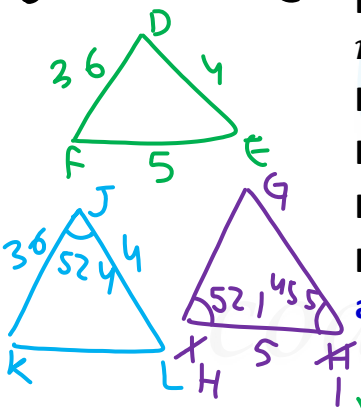
a) समकोण

b) समदोभुजी

c) समभूजी

d) विषमभूजी





90
-79
821

8. Given below are some of the measures of the sides and angles of five triangles. Which of the triangles given in the options is NOT congruent to ΔABC?

पाँच त्रिभुजों की भुजाओं और कोणों की कुछ मापें नीचे दी गई है| दिए गए विकल्पों में से कौन सा त्रिभुज ΔABC के सर्वांगसम नहीं है?

In ΔABC, $m(\overline{AB}) = 3.6cm$, $m(\overline{BC}) = 5cm$, $m(\overline{CA}) = 4cm$, $m(\angle B) = 52.4°$, $m(\angle C) = 45.5°$

In $\Delta DEF, m(\overline{DE}) = 4cm, m(\overline{EF}) = 5cm$, $m(\overline{FD}) = 3.6cm$

In $\Delta GHI, m(\overline{HI}) = 5cm, m(\angle H) = 52.4°, m(\angle I) = 45.5°$

In $\Delta JKL, m(\overline{JK}) = 3.6cm, m(\overline{LJ}) = 4cm, m(\angle J) = 52.4°$

In $\Delta MNO, m(\overline{MN}) = 3.6cm, m(\overline{NO}) = 5cm, m(\angle N) = 52.4°$

a) ΔDEF b) ΔMNO c) ΔGHI d) ΔJKL

X ✓

SSC CHSL, 6 June 2022 S3