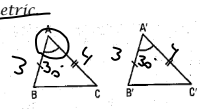
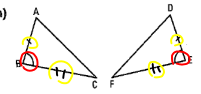
THEOREMS OF CONGRUENCE

Theorem of congruence SAS (Side Angle Side): Two triangles with corresponding congruent angle contained between corresponding congruent sides are isometric

$\angle A \cong \angle A'$, $\overline{AB} \cong \overline{A'B'}$, $\overline{AC} \cong \overline{A'C'}$ $\Rightarrow$ $\Delta ABC \cong \Delta A'B'C'$



Indicate the missing isometry to conclude that triangles ABC and DEF are congruent by SAS.

a) 

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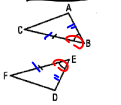
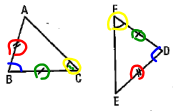
c) 

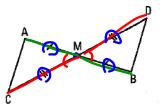
Nov 1-8:46 AM

The triangles on the right have two sides of triangle ABC that are congruent to two sides of triangle DEF, and angle C is congruent to angle F. Explain why these two triangles are not necessarily congruent.



Two segments AB and CD bisect each other at point M. Justify the statements which prove that triangles AMC and BMD are congruent.

Hypothesis: – M is the mid-point of $\overline{AB}$.
– M is the mid-point of $\overline{CD}$.

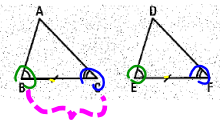


Statement	Justification
1. $\angle AMC \cong \angle BMD$	V.O.
2. $\overline{MA} \cong \overline{MB}$	Midpoint
3. $\overline{MC} \cong \overline{MD}$	Midpoint
4. $\Delta AMC \cong \Delta BMD$	SAS

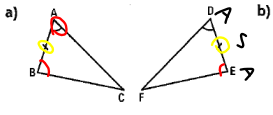
Nov 1-9:09 AM

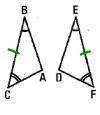
Theorem of congruence ASA (Angle Side Angle): Two triangles with corresponding congruent sides contained between congruent corresponding angles are isometric

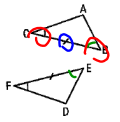
$\overline{BC} \cong \overline{EF}$, $\angle B \cong \angle E$, $\angle C \cong \angle F$ $\Rightarrow$ $\Delta ABC \cong \Delta DEF$



What is the missing isometry to deduce that triangles ABC and DEF are congruent by ASA?

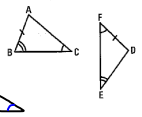
a) 

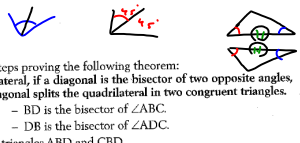
b) 

c) 

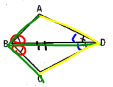
Nov 1-8:54 AM

The triangles on the right have two angles of triangle ABC that are congruent to two angles of triangle DEF, and side AB is congruent to side DF. Explain why these two triangles are not necessarily congruent.





Justify the steps proving the following theorem:
In a quadrilateral, if a diagonal is the bisector of two opposite angles, then this diagonal splits the quadrilateral in two congruent triangles.
Hypothesis: – BD is the bisector of $\angle ABC$.
– DB is the bisector of $\angle ADC$.
Consider the triangles ABD and CBD



Statement	Justification
1. $\angle ABD \cong \angle DBC$	$\angle ABC$ bisected by BD creates 2 equal $\angle$'s
2. $\overline{BD} \cong \overline{BD}$	
3. $\angle ADB \cong \angle BDC$	
4. $\Delta ABD \cong \Delta CBD$	ASA

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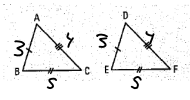
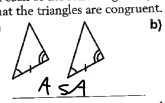
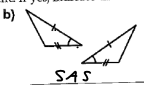
Theorem of congruence SSS (Side Side Side): Two triangles with all corresponding congruent sides are isometric.

$\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, $\overline{AC} \cong \overline{DF}$ $\Rightarrow$ $\Delta ABC \cong \Delta DEF$

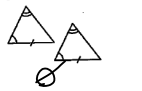


In each of the following cases, indicate whether there is sufficient information or not to prov
that the triangles are congruent. If yes, indicate the theorem of congruence that applies.

a) 
ASA

b) 
SAS

c) 
SSS

d) 

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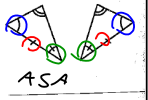
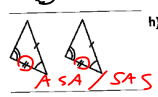
f) 
ASA

g) 
ASA / SAS

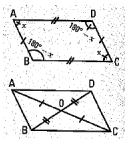
h) 
SSS / SAS

Nov 1-8:54 AM

PARALLELOGRAMS

Any quadrilateral with parallel opposite sides

1. *Opposite sides are congruent*
2. *Opposite angles are congruent*
3. *Consecutive angles are supplementary*
4. *Diagonals bisect each other*



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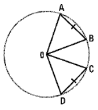
11. Justify the steps proving the following theorem:
In a circle, two congruent chords subtend two congruent central angles.



Hypothesis: – $\overline{AB} \cong \overline{CD}$

Consider the triangles AOB and COD.

Statement	Justification
1. $\overline{OA} \cong \overline{OB} \cong \overline{OC} \cong \overline{OD}$	
2. $\overline{AB} \cong \overline{CD}$	
3. $\Delta AOB \cong \Delta COD$	
4. $\angle AOB \cong \angle COD$	

Nov 1-9:17 AM