Mikey

ASA: Side length between 2 angles

SAS: An angle between 2 sides

AAS: Side length not between 2 angles

CPCTC: Corr. parts of ≅ Δs are ≅

HL: Right triangles

SSS: All three side Lengths

Corresponding Parts of Congruent Triangles are Congruent: name all the corresponding parts of $\Delta JKL \cong \Delta PQR$

Sides $\overline{JK}$ and $\overline{PQ}$

$\overline{KL}$ and $\overline{QR}$

$\overline{JL}$ and $\overline{PR}$

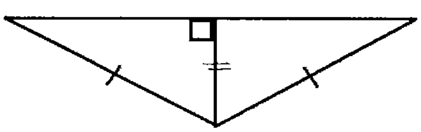
Angles $\angle JKL$ and $\angle PQR$

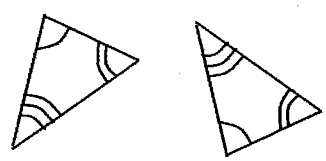
$\angle KLJ$ and $\angle QRP$

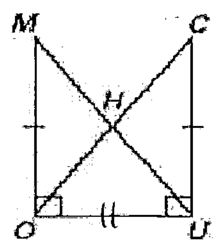
$\angle LJK$ and $\angle RPQ$

*Answers could vary

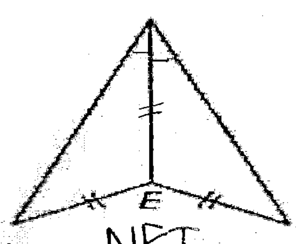
Which postulate or theorem justifies that the triangles are congruent?

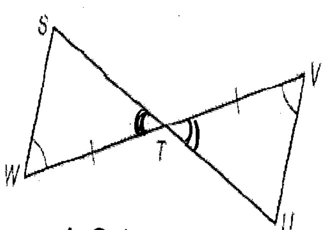


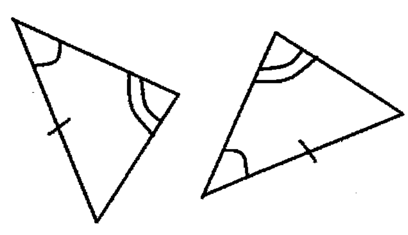




a. HL b. NEI c. SAS





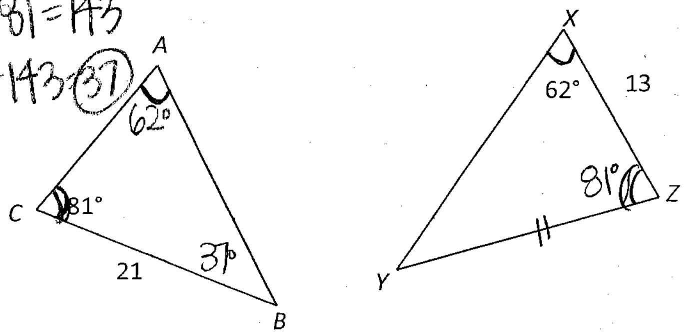


d. NEI e. ASA f. AAS

In the figures below, $\Delta ABC \cong \Delta XYZ$. Find the requested measures.

a. AC = 13 = XZ
b. $m\angle B$ = 37°
c. $m\angle A$ = 62° = $m\angle X$
d. YZ = 21 = CB

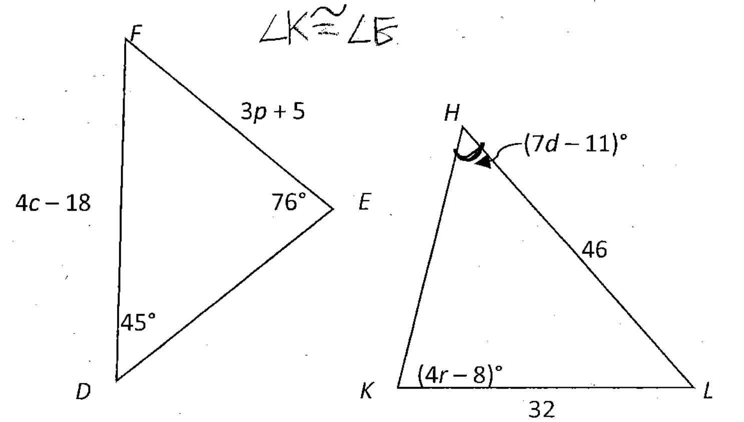
62+81=143
180-143=37



In the figures below, $\Delta DEF \cong \Delta HKL$. Set up equation and find the values of d, p, c and r.

$\angle H \cong \angle D$ $\quad \overline{FE} \cong \overline{LK}$ $\quad \overline{FD} \cong \overline{LH}$

$\angle K \cong \angle E$



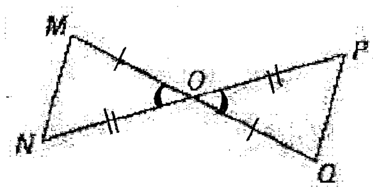
7d-11=45	3p+5=32	4c-18=46	4r-8=76
7d=56	3p=27	4c=64	4r=84
d=8	p=9	c=16	r=21

*Use the order from congruence statement to match up parts:

ΔDEF
ΔHKL

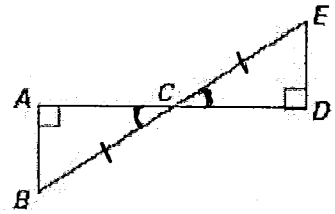
Complete the 2-column proof for the following:

Given: O is the midpoint of $\overline{MQ}$
O is the midpoint of $\overline{NP}$
Prove: $\Delta MON \cong \Delta QOP$



Statements	Reasons
O is the midpoint of $\overline{MQ}$	Given
O is the midpoint of $\overline{NP}$	Given
$\overline{MO} \cong \overline{QO}$	Def of midpoint
$\overline{NO} \cong \overline{PO}$	Def. of midpoint
$\angle MON \cong \angle QOP$	Vertical Angles are Congruent
$\Delta MON \cong \Delta QOP$	SAS

Finish the 2-column proof for the following:



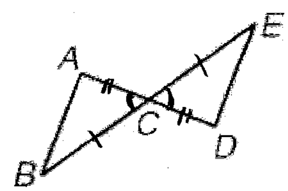
Given: $\overline{AB} \perp \overline{AD}$ & $\overline{DE} \perp \overline{AD}$

C is the midpoint of $\overline{BE}$

Prove: $\Delta ABC \cong \Delta DEC$

Statements	Reasons
$\overline{AB} \perp \overline{AD}$ & $\overline{DE} \perp \overline{AD}$	Given
$\angle BAC$ & $\angle EDC$ are rt. $\angle$s	Definition of Perpendicular
$\angle BAC \cong \angle EDC$	All rt. $\angle$s are $\cong$
C is the midpoint of $\overline{BE}$	Given
$\overline{BC} \cong \overline{EC}$	Def. of midpoint
<ACB ≅ <DCE	Vertical $\angle$s are $\cong$
$\Delta ABC \cong \Delta DEC$	AAS

Write a 2-column proof for the following:



Given: C is the midpoint of BE

C is the midpoint of AD

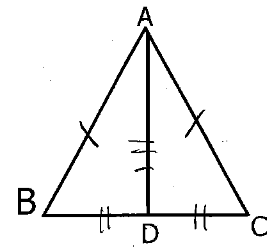
Prove: $\Delta ABC \cong \Delta DEC$

Statements	Reasons
1. C is the midpoint of $\overline{BE}$	Given
2. C is the midpoint of $\overline{AD}$	Given
3. $\overline{BC} \cong \overline{EC}$	Def. of midpoint
4. $\overline{AC} \cong \overline{DC}$	Def. of midpoint
5. $\angle BCA \cong \angle ECD$	Vertical $\angle$s are $\cong$
6. $\Delta ABC \cong \Delta DEC$	SAS

Write a 2-column proof for the following:

Given: $\overline{AB} \cong \overline{AC}$, D is a midpoint of $\overline{BC}$

Prove: $\Delta ABD \cong \Delta ACD$



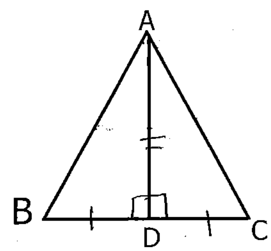
Statements | Reasons

Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$	Given
2. D is a midpoint of $\overline{BC}$	Given
3. $\overline{BD} \cong \overline{CD}$	Def. of midpoint
4. $\overline{AD} \cong \overline{AD}$	Reflexive property
5. $\Delta ABD \cong \Delta ACD$	SSS

Write a 2-column proof for the following:

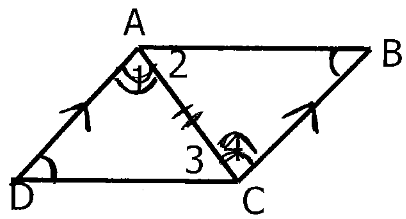
Given: $\overline{AD} \perp \overline{BC}$, $\overline{AD}$ bisects $\overline{BC}$

Prove: $\Delta ABD \cong \Delta ACD$



Statements	Reasons
1. $\overline{AD} \perp \overline{BC}$	Given
2. $\angle BDA$ & $\angle CDA$ are rt. $\angle$s	Def. of $\perp$
3. $\angle BDA \cong \angle CDA$	All right $\angle$s are $\cong$
4. $\overline{AD}$ bisects $\overline{BC}$	Given
5. $\overline{BD} \cong \overline{CD}$	Def. of bisects
6. $\overline{AD} \cong \overline{AD}$	Reflexive property
7. $\Delta ABD \cong \Delta ACD$	SAS

Write a 2-column proof for the following:



Given: $\overline{AD} \parallel \overline{BC}$, $\angle B \cong \angle D$

Prove: $\triangle ACD \cong \triangle CAB$

Statements	Reasons
1. $\overline{AD} \parallel \overline{BC}$	Given
2. $\angle 1 \cong \angle 4$	A.I.A. Thm
3. $\angle B \cong \angle D$	Given
4. $\overline{AC} \cong \overline{AC}$	Reflexive Property
5. $\triangle ACD \cong \triangle CAB$	AAS

Find the distance between each of the following pairs of points as well as each of their midpoints.

+1
(5, 5) and (6, -4)
-9

$d=\sqrt{(-9)^2+(1)^2}$

$d=\sqrt{81+1}=\sqrt{82}$

$m=\left(\frac{5+6}{2},\frac{5+-4}{2}\right)=\left(\frac{11}{2},\frac{1}{2}\right)$

+4
(-3, 4) and (1, 5)
+1

$d=\sqrt{(1)^2+(4)^2}$

$d=\sqrt{17}$

$m=\left(\frac{-3+1}{2},\frac{4+5}{2}\right)=\left(-1,\frac{9}{2}\right)$

+2
(2, 0) and (-1, 2)
-3

$d=\sqrt{(2)^2+(-3)^2}$

$d=\sqrt{4+9}$

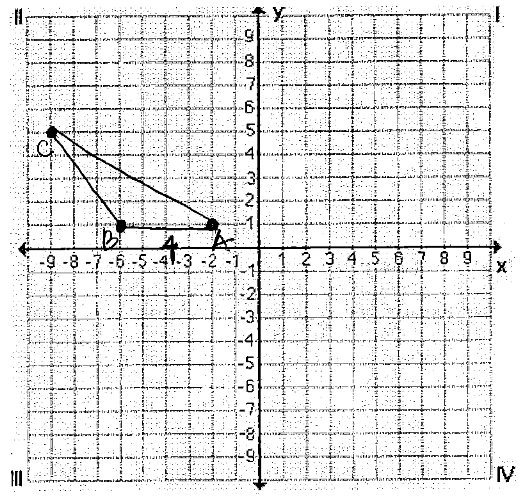
$d=\sqrt{13}$

$m=\left(\frac{2+-1}{2},\frac{0+2}{2}\right)=\left(\frac{1}{2},1\right)$

Write a paragraph proof for the following proofs.

Given: $\triangle ABC$ has coordinates A (-2 , 1), B (-6 , 1), and C (-9, 5)

Prove: $\triangle ABC$ is a scalene triangle.



$\boxed{AB=4}$

$BC=\sqrt{(-4)^2+(-3)^2}$

$=\sqrt{16+9}$

$=\sqrt{25}$

$\boxed{BC=5}$

$AC=\sqrt{(-4)^2+(-7)^2}$

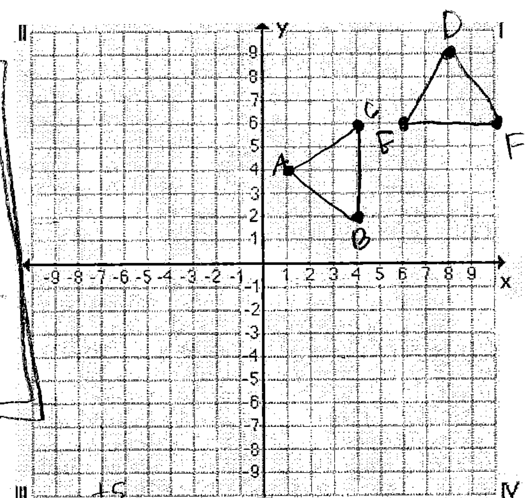
$=\sqrt{16+49}$

$\boxed{AC=\sqrt{65}}$

$\triangle ABC$ is scalene b/c all sides have diff. lengths.

Given: $\triangle ABC$ has coordinates A (1 , 4), B (4 , 2), and C (4 , 6) and $\triangle DEF$ has coordinates D (8 , 9), E (6 , 6), and F (10 , 6)

Prove: $\triangle ABC \cong \triangle DEF$ using SSS congruence postulate.



$\boxed{CB=4}$

$AB=\sqrt{(-2)^2+(3)^2}$

$AB=\sqrt{4+9}$

$\boxed{AB=\sqrt{13}}$

$AC=\sqrt{(2)^2+(3)^2}$

$=\sqrt{4+9}$

$\boxed{AC=\sqrt{13}}$

$\boxed{EF=4}$

$DE=\sqrt{(-3)^2+(-2)^2}$

$DE=\sqrt{9+4}$

$\boxed{DE=\sqrt{13}}$

$DF=\sqrt{(-3)^2+(2)^2}$

$DF=\sqrt{9+4}$

$\boxed{DF=\sqrt{13}}$

$\overline{EF}\cong\overline{CB}$

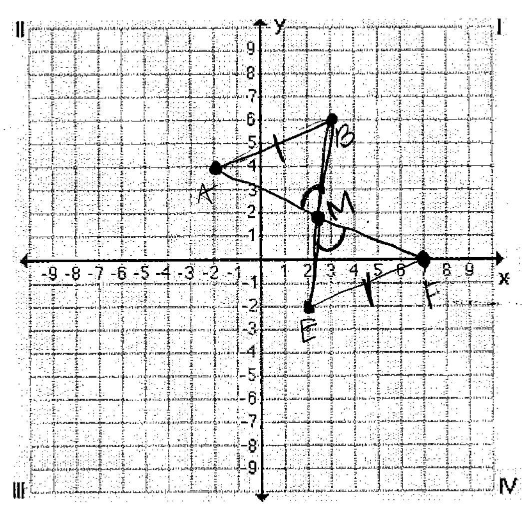
$\overline{DE}\cong\overline{AB}$

$\overline{DF}\cong\overline{AC}$

So $\triangle ABC\cong\triangle DEF$ by SSS

Given: $\overline{AB}$ has endpoints A(-2 , 4) and B(3 , 6) and $\overline{EF}$ has endpoints E(2 , -2), and F(7 , 0), and $\overline{AF}$ and $\overline{EB}$ intersect at M.

Prove: $\triangle ABM \cong \triangle FEM$



NEI. In order to prove this you would need to know the coordinates of M. We could assume M is the midpoint of $\overline{AF}$ & $\overline{EB}$, but we don't assume in Geometry. ☺

$AB=\sqrt{(2)^2+(5)^2}$

$AB=\sqrt{29}$

$EF=\sqrt{(2)^2+(5)^2}$

$EF=\sqrt{29}$

$\angle AMB\cong\angle FMB$ b/c vertical $\angle$s are $\cong$

$\overline{AB}\cong\overline{EF}$