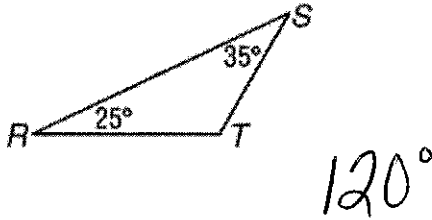


Geometry A
4.1 Angles of Triangles

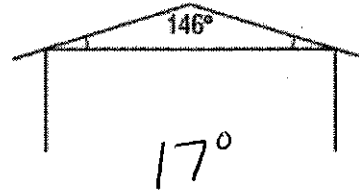
ASSIGNMENT

Name Key
Hour _____ Date _____

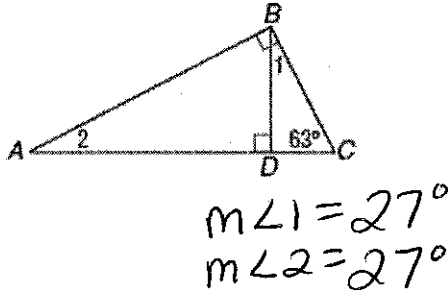
1. Find $m\angle T$.



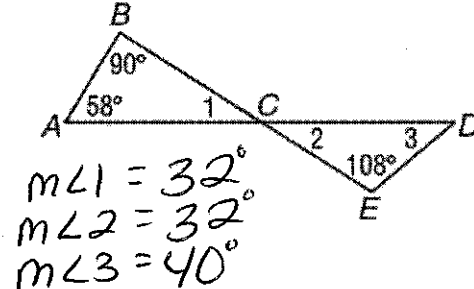
2. Find the measures of the missing angles.



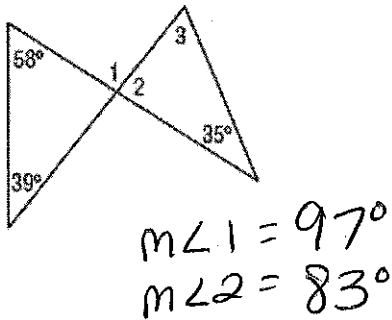
3. Find the measures of the numbered angles.



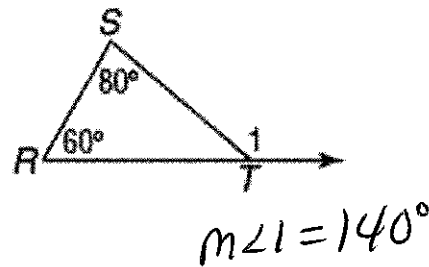
4. Find the measures of the numbered angles.



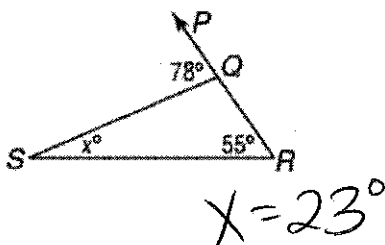
5. Find the measures of the numbered angles.



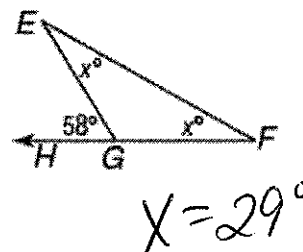
6. Find $m\angle 1$



7. Find x .



8. Find x .



Review:

9. Suppose $\angle 1$ and $\angle 2$ are vertical angles. If $m\angle 1 = 4x + 2$ and $m\angle 2 = 8x - 14$, find $m\angle 2$.

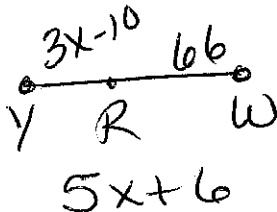
$$4x + 2 = 8x - 14$$

$$16 = 4x$$

$$4 = x$$

$$8(4) - 14 = 18$$

10. Suppose R is between Y and W . If $RY = 3x - 10$, $RW = 66$, and $YW = 5x + 6$, find RY .



$$3x - 10 + 66 = 5x + 6$$

$$3x + 56 = 5x + 6$$

$$50 = 2x$$

$$25 = x$$

Geometry A
4.2 Congruent Triangles

Name _____
Hour _____ Date _____

ASSIGNMENT

1. If $\triangle RTY \cong \triangle KNB$ complete each pair of congruent parts:

$\angle R \cong \angle K$

$\angle T \cong \angle N$

$\angle Y \cong \angle B$

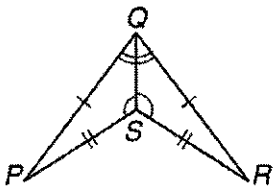
$\overline{RT} \cong \overline{KN}$

$\overline{RY} \cong \overline{KB}$

$\overline{TY} \cong \overline{NB}$

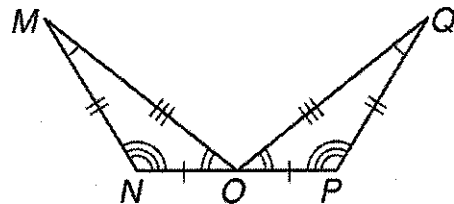
Identify the congruent triangles in each diagram.

2.



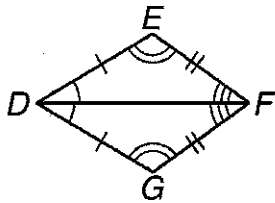
$\triangle SQP \cong \triangle SQR$

3.



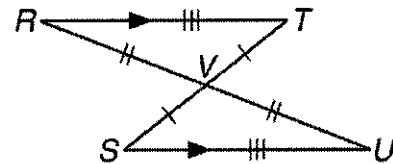
$\triangle MNO \cong \triangle QPO$

4.



$\triangle EFD \cong \triangle GFD$

5.



$\triangle RVT \cong \triangle UVS$

6. Using the diagram on the right, identify each pair of congruent parts:

$\angle R \cong \angle U$

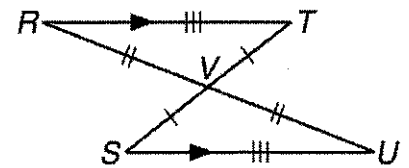
$\angle T \cong \angle S$

$\angle TVR \cong \angle SVU$

$\overline{RT} \cong \overline{US}$

$\overline{TV} \cong \overline{SV}$

$\overline{VR} \cong \overline{VU}$



Review:

For #7-10, select the property, definition, postulate, or theorem from the box below that justifies each statement. Write the property, definition, postulate, or theorem on the line provided.

reflexive property	subtraction property	distributive property
symmetric property	multiplication property	midpoint theorem
transitive property	division property	definition of an angle bisector
addition property	substitution property	vertical angles theorem
segment addition postulate	angle addition postulate	complement theorem
supplement theorem		

7. If $m\angle 4 = m\angle 5$, then $m\angle 4 + 20 = m\angle 5 + 20$

Add Prop

8. $AD = AD$

Reflexive

9. If $\overline{AB} \cong \overline{BC}$ and $\overline{BC} \cong \overline{CE}$, then $\overline{AB} \cong \overline{CE}$

Trans.

10. If $3(x + 2) = 60$, then $3x + 6 = 60$

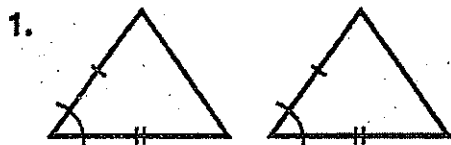
Distributive

ASSIGNMENT

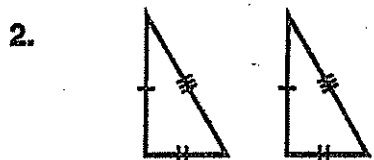
Swimming Through Triangles

What household appliance will never be able to swim?

To find out, identify whether each pair of triangles is congruent by SSS, SAS, or ASA. Circle the letter that represents this characteristic. Place the circled letters in the blanks at the bottom of the page above the corresponding problem numbers.



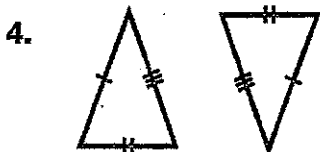
(O) SSS (T) SAS (L) ASA



(H) SSS (K) SAS (M) ASA

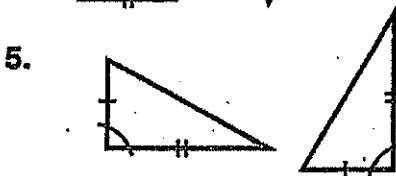


(Y) SSS (B) SAS (E) ASA

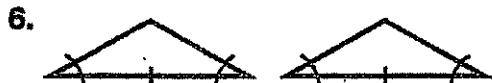


(S) SSS (A) SAS (C) ASA

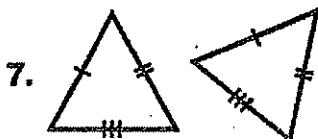
Fc
tr



(J) SSS (I) SAS (T) ASA



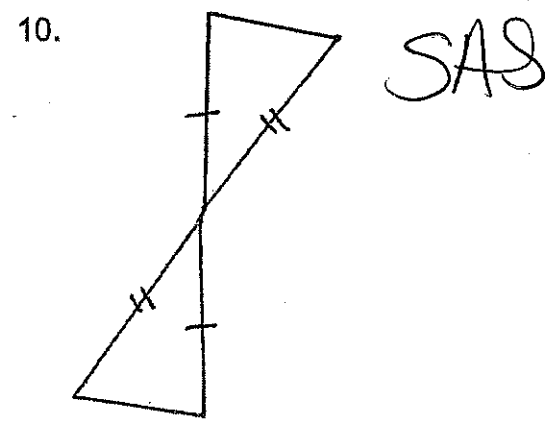
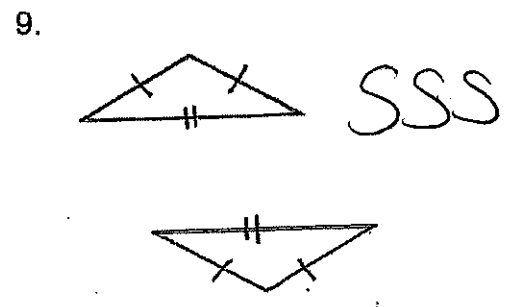
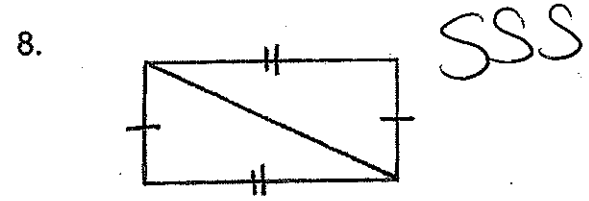
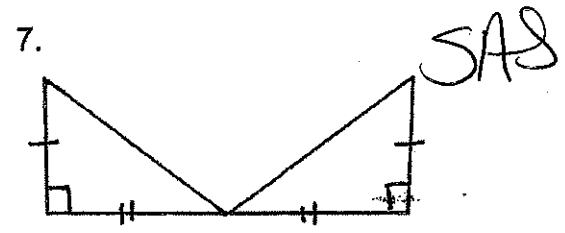
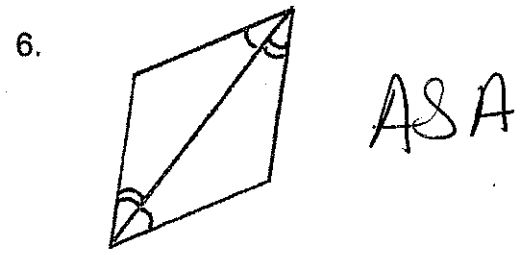
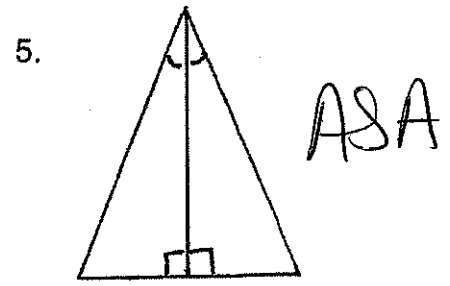
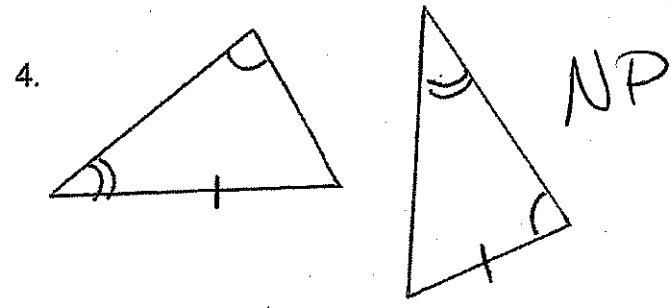
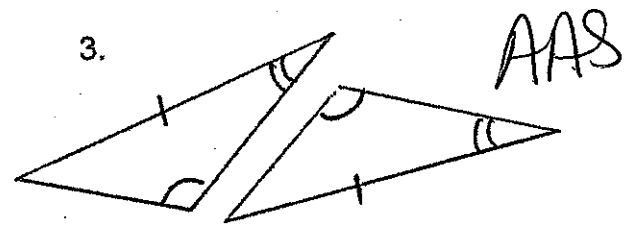
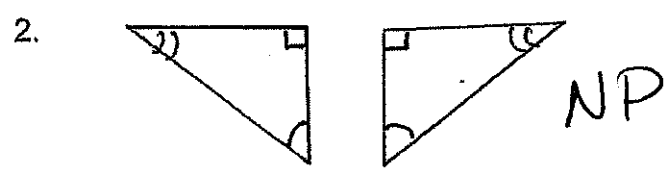
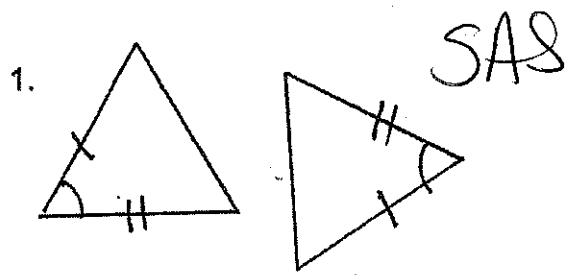
(W) SSS (R) SAS (N) ASA



(K) SSS (M) SAS (F) ASA

1 2 3 4 5 6 7

Identify whether each pair of triangle are congruent by SSS, SAS, ASA, AAS or HL. Otherwise, write "not enough information."

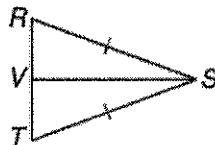


Geometry A
4.4 Triangle Congruence Proofs

Name _____
Hour _____ Date _____

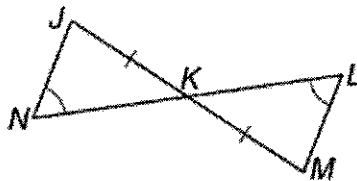
ASSIGNMENT

1. Given: $\overline{RS} \cong \overline{TS}$, V is the midpoint of \overline{RT}
Prove: $\triangle RSV \cong \triangle TSV$

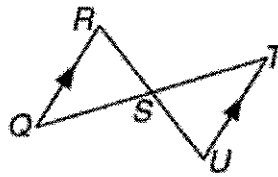


Statements	Reasons
1. $\overline{RS} \cong \overline{TS}$	1. Given
2. V is the midpt of \overline{RT}	2. Given
3. $\overline{RV} \cong \overline{TV}$	3. Midpoint Theorem
4. $\overline{VS} \cong \overline{VS}$	4. Reflexive
5. $\triangle RSV \cong \triangle TSV$	5. SSS

2. Given: $\overline{JK} \cong \overline{MK}$, $\angle N \cong \angle L$
Prove: $\triangle JKN \cong \triangle MKL$



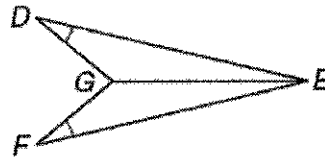
Statements	Reasons
1. $\overline{JK} \cong \overline{MK}$	1. Given
2. $\angle N \cong \angle L$	2. Given
3. $\angle JKN \cong \angle MKL$	3. Vertical Angle Thm
4. $\triangle JKN \cong \triangle MKL$	4. AAS



3. Given: $\overline{QR} \parallel \overline{TU}$, S is the midpoint of \overline{QT}
 Prove: $\overline{RS} \cong \overline{US}$

Statements	Reasons
1. $\overline{QR} \parallel \overline{TU}$	1. Given
2. $\angle Q \cong \angle T$	2. \parallel lines \rightarrow $\angle AIA \cong$
3. S is the midpoint of \overline{QT}	3. Given
4. $\overline{QS} \cong \overline{TS}$	4. Midpoint Theorem
5. $\angle RSQ \cong \angle UST$	5. Vertical Angles Theorem
6. $\triangle QSR \cong \triangle TSU$	6. ASA
7. $\overline{RS} \cong \overline{US}$	CPCTC

4. Given: $\angle D \cong \angle F$, \overline{GE} bisects $\angle DEF$
 Prove: $\overline{DG} \cong \overline{FG}$



Statements	Reasons
1. $\angle D \cong \angle F$	1. Given
2. \overline{GE} bisects $\angle DEF$	2. Given
3. $\angle DEG \cong \angle FEG$	3. Definition of Angle Bisector
4. $\overline{GE} \cong \overline{GE}$	4. Reflexive Property
5. $\triangle DEG \cong \triangle FEG$	5. AAS
6. $\overline{DG} \cong \overline{FG}$	6. CPCTC

Geometry A

4.5 Isosceles and Equilateral Triangle Proofs

Name _____

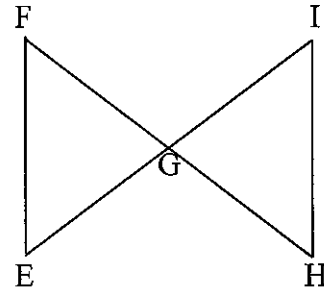
Hour _____ Date _____

ASSIGNMENT

1. Given: $\overline{FE} \cong \overline{HI}$

G is the midpoint of both \overline{EI} and \overline{FH} .

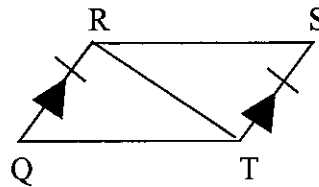
Prove: $\triangle FEG \cong \triangle HIG$



1. $\overline{FE} \cong \overline{HI}$	1. Given
2. G is the midpoint of both \overline{EI} and \overline{FH} .	2. Given
3. $\overline{EG} \cong \overline{GI}$	3. Midpoint Theorem
4. $\overline{FG} \cong \overline{GH}$	4. Midpoint Theorem
3. $\triangle FEG \cong \triangle HIG$	3. SSS

2. Given: $\overline{RQ} \parallel \overline{TS}$; $\overline{RQ} \cong \overline{TS}$

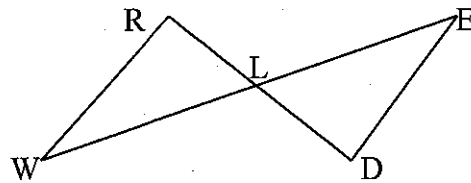
Prove: $\triangle QRT \cong \triangle STR$



1. $\overline{RQ} \parallel \overline{TS}$	1. Given
2. $\overline{RQ} \cong \overline{TS}$	2. Given
3. $\angle QRT \cong \angle STR$	3. $\text{AIA} \cong \leftrightarrow \parallel \text{lines}$
4. $\overline{RT} \cong \overline{RT}$	4. Reflexive
5. $\triangle QRT \cong \triangle STR$	5. SAS

3. Given: L is the midpoint of \overline{WE} ; $\overline{WR} \parallel \overline{ED}$

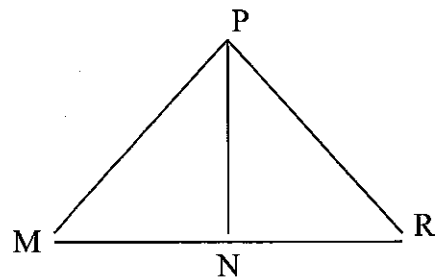
Prove: $\triangle WRL \cong \triangle EDL$



1. L is the midpoint of \overline{WE}	1. Given
2. $\overline{WR} \parallel \overline{ED}$	2. Given
3. $\overline{WL} \cong \overline{LE}$	3. Midpoint Theorem
4. $\angle RWL \cong \angle DEL$	4. AIA $\cong \leftrightarrow$ // lines
5. $\angle RLW \cong \angle DLE$	5. Vertical Angle Thm
6. $\triangle WRL \cong \triangle EDL$	6. ASA

4. Given: $\triangle MPR$ is isosceles with vertex P,
 $\overline{PN} \perp \overline{MR}$

Prove: $\overline{MN} \cong \overline{NR}$

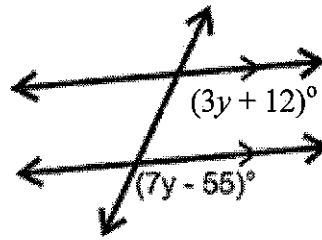


1. $\triangle MPR$ is isosceles with vertex P	1. Given
2. $\overline{PN} \perp \overline{MR}$	2. Given
3. $\overline{MP} \cong \overline{RP}$	3. def of isos \triangle
4. $\overline{PN} \cong \overline{PN}$	4. Reflexive
5. $\triangle MPN \cong \triangle RPN$	5. HL
6. $\overline{MN} \cong \overline{NR}$	6. CPCTC

Review:

7. Find the value of y in the figure at the right.

$$\begin{aligned} 3y + 12 &= 7y - 55 \\ 67 &= 4y \\ 16.75 &= y \end{aligned}$$



Multiple Choice:

8. Given: $m\angle A + m\angle B = 150$.

Conjecture: $\angle A$ and $\angle B$ are both acute angles.

Which one of the following is a counterexample to the conjecture?

A. $m\angle A = 100$ and $m\angle B = 50$

B. $m\angle A = 45$ and $m\angle B = 105$

C. $m\angle A = 65$ and $m\angle B = 85$

D. None of the above statements is a counterexample because the conjecture is true.

9. Which one of the following pairs of slopes are slopes corresponding to perpendicular lines?

A. $\frac{2}{3}$ and $\frac{9}{6}$

B. $-\frac{12}{8}$ and $-\frac{3}{2}$

C. $-\frac{2}{3}$ and $\frac{12}{8}$

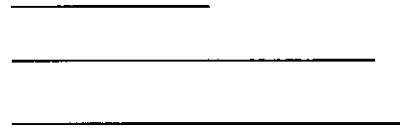
D. $\frac{10}{15}$ and $-\frac{3}{2}$

Geometry A
4.6 Constructing Triangles

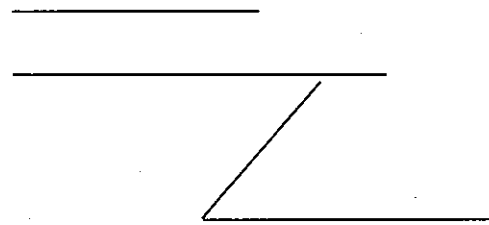
Name _____
Hour _____ Date _____

ASSIGNMENT

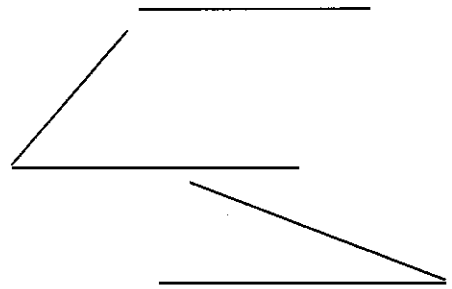
1. Construct a triangle that has the following 3 side lengths.



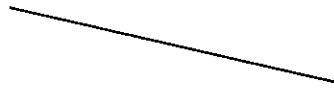
2. Construct a triangle that has the following 2 side lengths and included angle.



3. Construct a triangle that has the following angles and included side length.



4. Construct an equilateral triangle that has the following side length.



Review:

For #5 and 6, identify each pair of angles.

5. $\angle 4$ and $\angle 2$

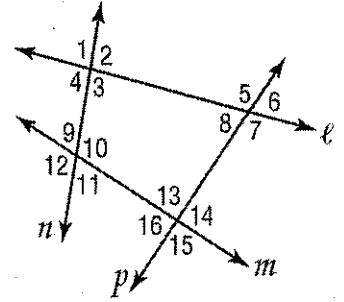
A. Alternate Interior Angles

C. Corresponding Angles

E. Vertical Angles

B. Alternate Exterior Angles

D. Consecutive Interior Angles



6. $\angle 6$ and $\angle 14$

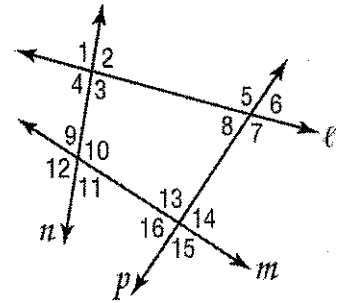
A. Alternate Interior Angles

C. Corresponding Angles

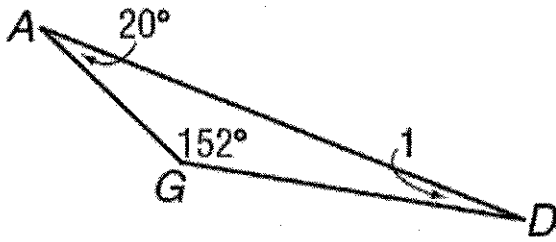
E. Vertical Angles

B. Alternate Exterior Angles

D. Consecutive Interior Angles

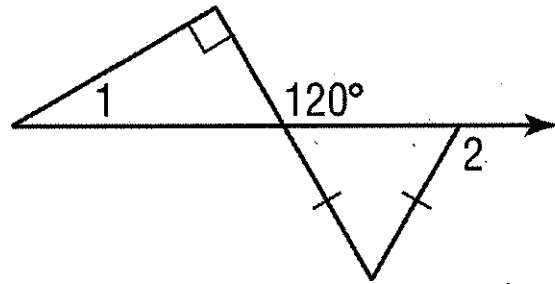


1. Find the measure of each indicated angle.



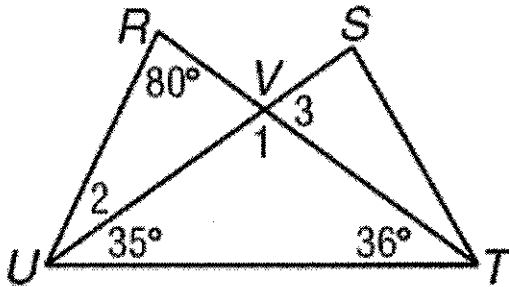
$m\angle 1 = 8^\circ$

2. Find the measure of each indicated angle.



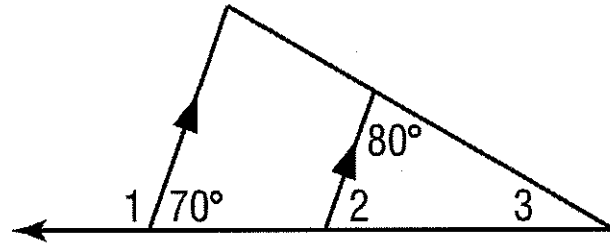
$m\angle 1 = 30^\circ$ $m\angle 2 = 120^\circ$

3. Find the measure of each indicated angle.



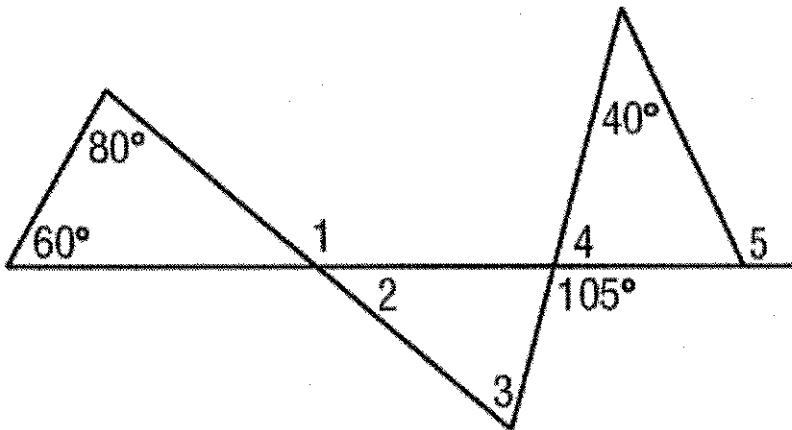
$m\angle 1 = 109^\circ$ $m\angle 2 = 29^\circ$ $m\angle 3 = 71^\circ$

4. Find the measure of each indicated angle.



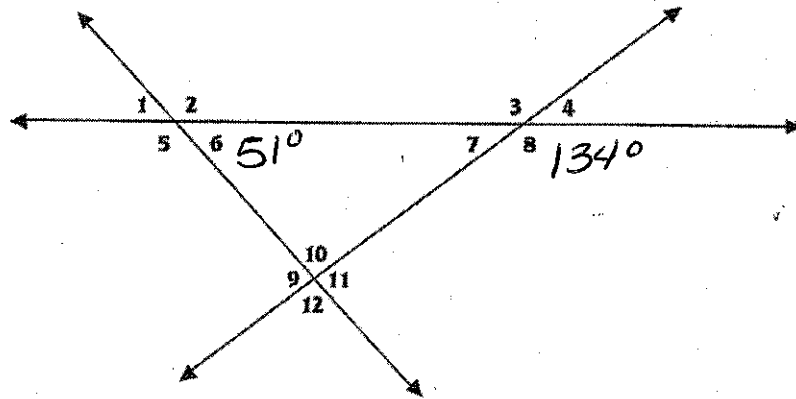
$m\angle 1 = 110^\circ$ $m\angle 2 = 70^\circ$ $m\angle 3 = 30^\circ$

5. Find the measure of each indicated angle.



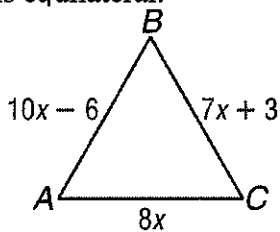
$m\angle 1 = 140^\circ$ $m\angle 2 = 40^\circ$ $m\angle 3 = 65^\circ$ $m\angle 4 = 75^\circ$ $m\angle 5 = 65^\circ$

6. Refer to the figure below.
Find the measure of each indicated angle if $m\angle 6 = 51^\circ$ and $m\angle 8 = 134^\circ$.



$m\angle 1 = 51^\circ$ $m\angle 2 = 129^\circ$ $m\angle 3 = 134^\circ$ $m\angle 4 = 46^\circ$ $m\angle 5 = 129^\circ$
 $m\angle 7 = 46^\circ$ $m\angle 9 = 97^\circ$ $m\angle 10 = 83^\circ$ $m\angle 11 = 97^\circ$ $m\angle 12 = 83^\circ$

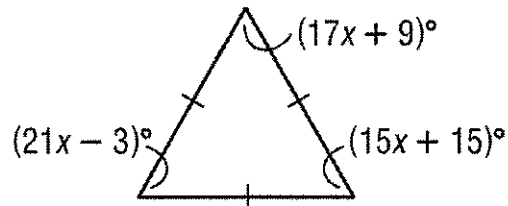
7. Find the value of x , AB , BC , and AC if $\triangle ABC$ is equilateral.



$8x = 7x + 3$
 $x = 3$

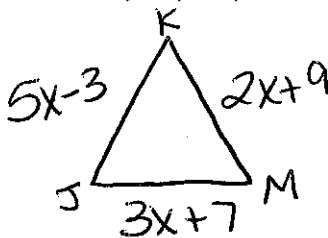
$x = 3$ $AB = 24$
 $BC = 24$ $AC = 24$

8. Find the value of x .



$17x + 9 = 15x + 15$
 $2x = 6$
 $x = 3$

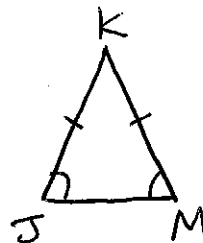
9. Suppose $\triangle JKM$ is isosceles with vertex angle K . If $JK = 5x - 3$, $JM = 3x + 7$, and $KM = 2x + 9$, find the value of x , JK , JM , and KM .



$5x - 3 = 2x + 9$
 $3x = 12$
 $x = 4$

$x = 4$ $JK = 17$
 $JM = 19$ $KM = 17$

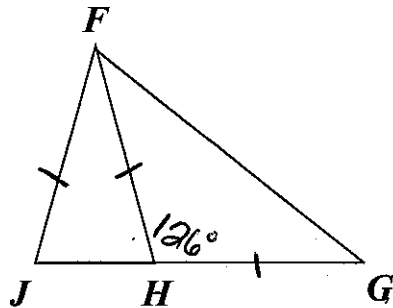
10. Suppose $\triangle JKM$ is isosceles with vertex angle K . If $m\angle J = 8x - 5$ and $m\angle M = 3x + 25$, find $m\angle K$.



$8x - 5 = 3x + 25$
 $5x = 30$
 $x = 6$

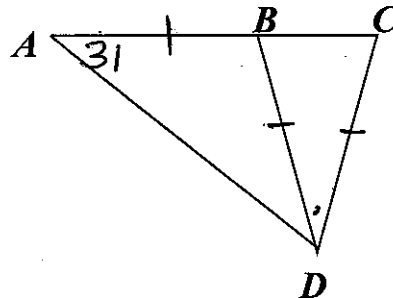
$m\angle K = 94$

11. Suppose that $\overline{FJ} \cong \overline{FH}$ and $\overline{HF} \cong \overline{HG}$.
If $m\angle FHG = 126^\circ$, find $m\angle J$.



$m\angle J = \underline{54^\circ}$

12. Suppose that $\overline{AB} \cong \overline{DB}$ and $\overline{CD} \cong \overline{BD}$.
If $m\angle A = 31^\circ$, find $m\angle BDC$.



$m\angle BDC = \underline{56^\circ}$

13. Identify the congruent triangles in the figure below.
Then name the corresponding congruent angles and congruent sides for the congruent triangles.

$\triangle FGD \cong \triangle ACB$

$\angle FGD \cong \angle ACB$

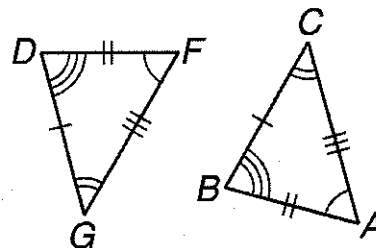
$\overline{DG} \cong \overline{BC}$

$\angle GDF \cong \angle CBA$

$\overline{FD} \cong \overline{AB}$

$\angle DFG \cong \angle BAC$

$\overline{FG} \cong \overline{AC}$



14. Identify the congruent triangles in the figure below.
Then name the corresponding congruent angles and congruent sides for the congruent triangles.

$\triangle MNO \cong \triangle LMO$

$\angle NMO \cong \angle LMO$

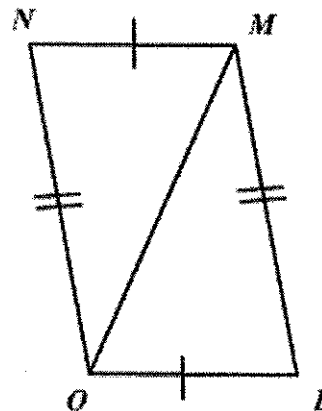
$\overline{MN} \cong \overline{OL}$

$\angle N \cong \angle L$

$\overline{OM} \cong \overline{MO}$

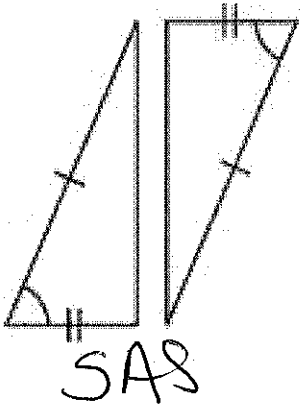
$\angle NOM \cong \angle LMO$

$\overline{NO} \cong \overline{LM}$

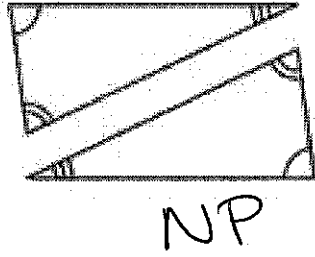


15. Determine whether you can prove that each pair of triangles is congruent by using *SSS*, *SAS*, *ASA*, *AAS*, or *HL*. If it is not possible to prove that the triangles are congruent, write **not possible**.

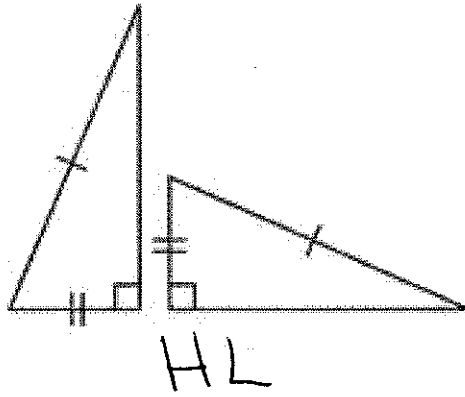
a.



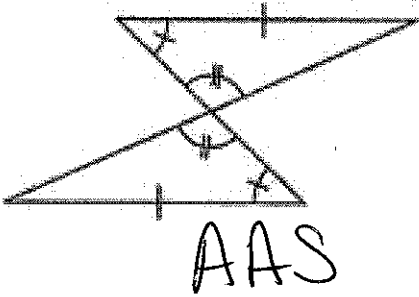
b.



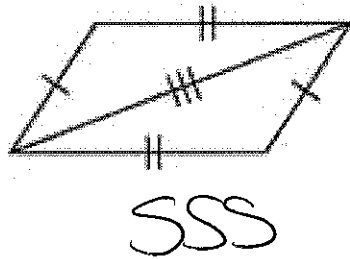
c.



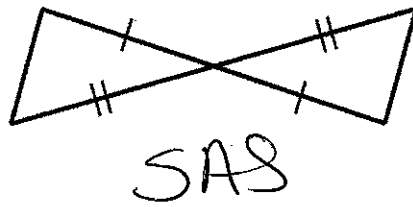
d.



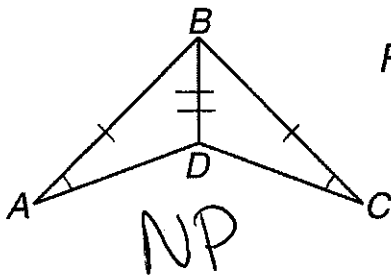
e.



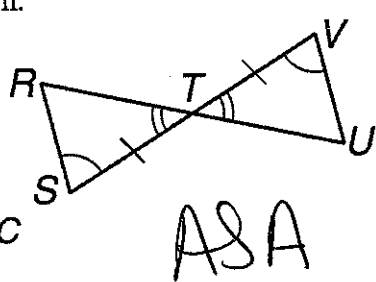
f.



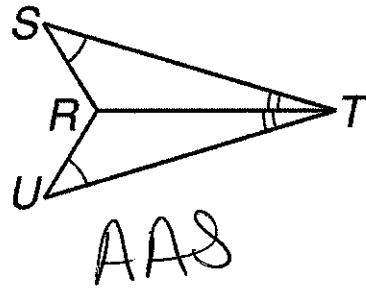
g.



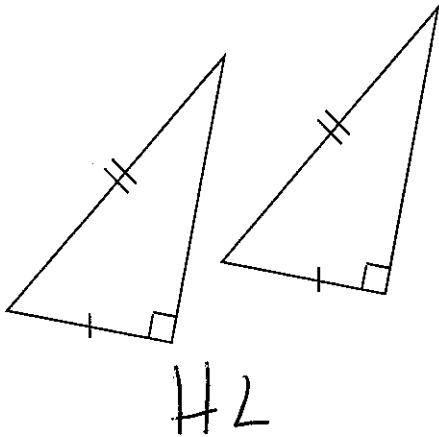
h.



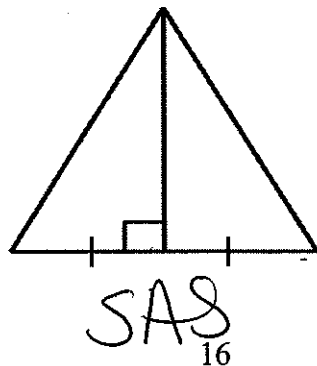
i.



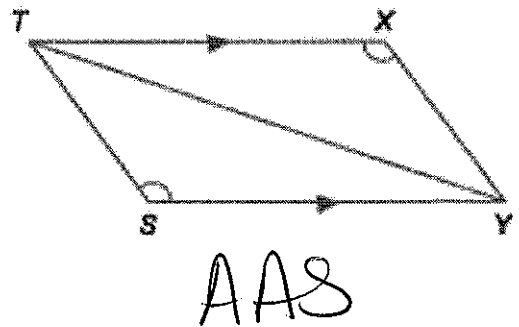
j.



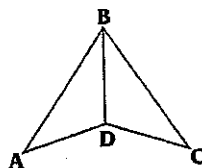
k.



l.

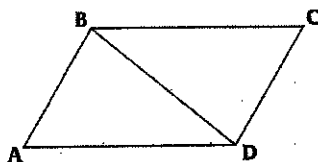


16. **Given:** \overline{BD} bisects $\angle ABC$
 $\overline{AB} \cong \overline{CB}$
Prove: $\triangle BDA \cong \triangle BDC$



Statements	Reasons
1. \overline{BD} bisects $\angle ABC$	1. Given
2. $\overline{AB} \cong \overline{CB}$	2. Given
3. $\angle ABD \cong \angle CBD$	3. def of an angle bisector
4. $\overline{BD} \cong \overline{BD}$	4. Reflexive
5. $\triangle BDA \cong \triangle BDC$	5. SAS

17. **Given:** $\angle A \cong \angle C$
 $\angle ADB \cong \angle CBD$
Prove: $\triangle ADB \cong \triangle CBD$



Statements	Reasons
1. $\angle A \cong \angle C$	1. Given
2. $\angle ADB \cong \angle CBD$	2. Given
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive
4. $\triangle ADB \cong \triangle CBD$	4. AAS

18. **Given:** P is the midpoint of \overline{NS}
 $\angle N \cong \angle S$
 $\angle MPN \cong \angle RPS$
Prove: $\overline{MN} \cong \overline{RS}$

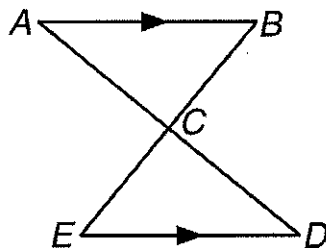


Statements	Reasons
1. P is the midpt of \overline{NS}	1. Given
2. $\angle N \cong \angle S$	2. Given
3. $\angle MPN \cong \angle RPS$	3. Given
4. $\overline{NP} \cong \overline{PS}$	4. def of a midpt
5. $\triangle MNP \cong \triangle RSP$	5. ASA
6. $\overline{MN} \cong \overline{RS}$	6. CPCTC

19. Complete the following proof.

Given: $\overline{AB} \parallel \overline{DE}$
 \overline{AD} bisects \overline{BE}

Prove: $\overline{AC} \cong \overline{DC}$

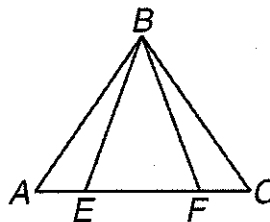


Statements	Reasons
1. $\overline{AB} \parallel \overline{DE}$	1. Given
2. \overline{AD} bisects \overline{BE}	2. Given
3. $\angle A \cong \angle D$	3. \parallel lines \rightarrow AIA \cong
4. $\overline{BC} \cong \overline{CE}$	4. def of a segment bisector
5. $\angle ACB \cong \angle DCE$	5. Vertical Angles Thm
6. $\triangle ACB \cong \triangle DCE$	6. AAS
7. $\overline{AC} \cong \overline{DC}$	7. CPCTC

20. Complete the following proof.

Given: $\overline{AE} \cong \overline{CF}$
 $\triangle ABC$ is isosceles with vertex angle $\angle B$.

Prove: $\overline{BE} \cong \overline{BC}$



Statements	Reasons
1. $\overline{AE} \cong \overline{CF}$	1. Given
2. $\triangle ABC$ is isosceles with vertex angle $\angle B$.	2. Given
3. $\overline{BA} \cong \overline{BC}$	3. Definition of an Isosceles Triangle
4. $\angle A \cong \angle C$	4. Isos \triangle Thm
5. $\triangle ABE \cong \triangle CBF$	5. SAS
6. $\overline{BE} \cong \overline{BC}$	6. CPCTC