

CHAPTER 4 REVIEW

For numbers, 1 through 7, classify the triangle by its side lengths or angles.

1. no congruent sides Scalene 2. two sides congruent Isosceles

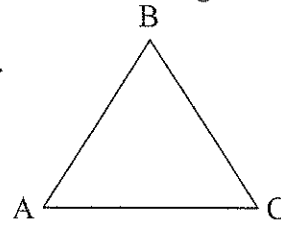
3. Angles measures: $25^\circ, 130^\circ, 25^\circ$ Obtuse 4. Angles measures: $60^\circ, 60^\circ, 60^\circ$ equiangular

5. Side lengths: 10cm, 10cm, 10cm equilateral 6. Side lengths: 3m, 4m, 5m ~~Scalene~~

7. In $\triangle ABC$, $AB = 4x - 1$, $BC = x + 5$, and $AC = 7$. Also, $\overline{AB} \cong \overline{BC}$.

$$\begin{aligned} 4x - 1 &= x + 5 \\ 3x &= 6 \\ x &= 2 \end{aligned}$$

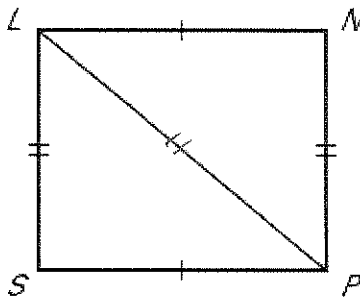
equilateral



Given, $\triangle ABC \cong \triangle DEF$. Complete the statement.

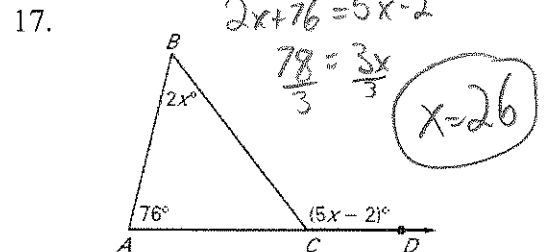
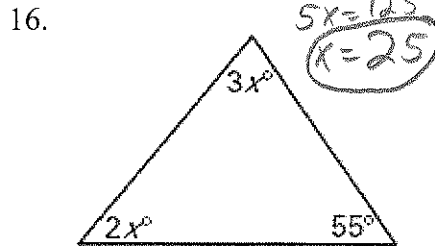
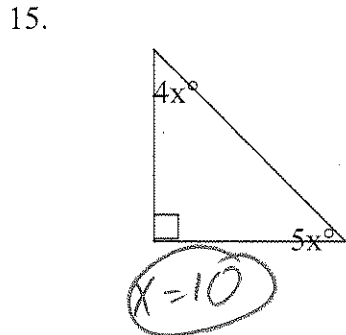
8. $\overline{EF} \cong \overline{BC}$ 9. $\angle A \cong \angle D$ 10. $\angle E \cong \angle B$
11. $m\angle C = m\angle F$ 12. $\overline{AC} = \overline{DF}$ 13. $\triangle CBA \cong \triangle FED$

Write the correct congruence statement for these triangles.



14. $\triangle SPL \cong \triangle NLP$

Find the value of x.



Using the diagrams choose the appropriate postulate or theorem that proves triangles congruence's:

A. SAS

B. SSS

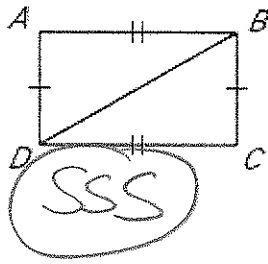
C. ASA

D. AAS

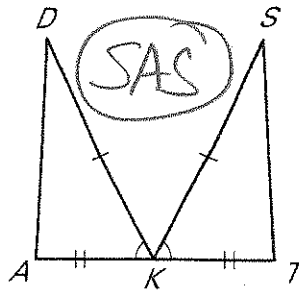
E. HL

If not, write *not enough info*.

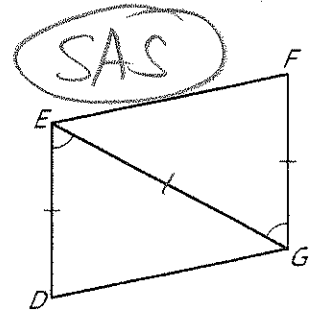
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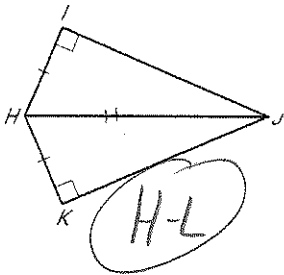
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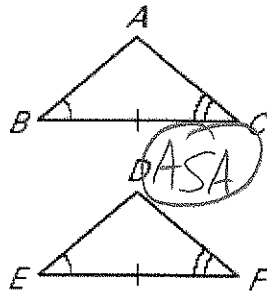
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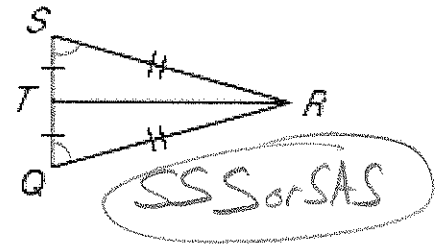
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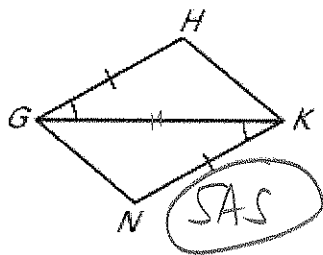
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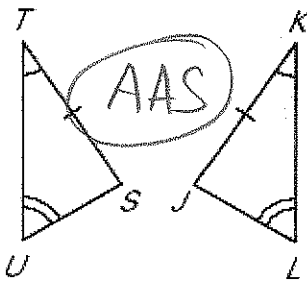
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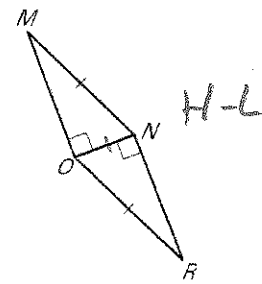
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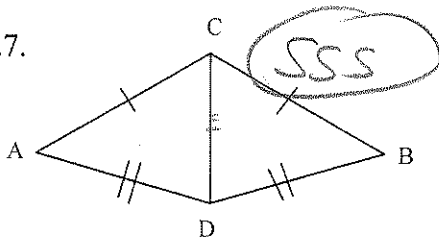
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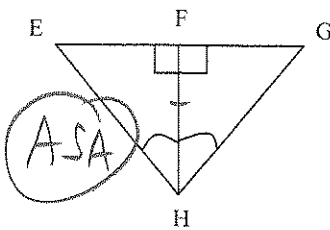
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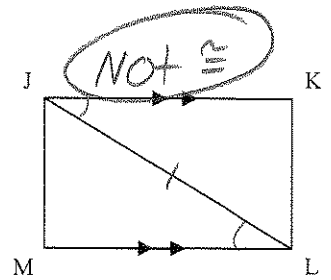
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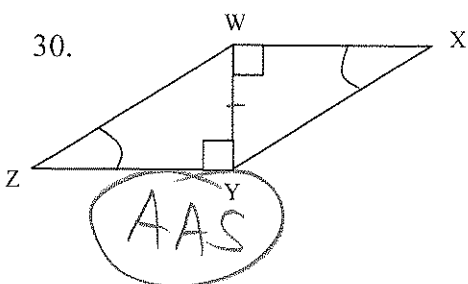
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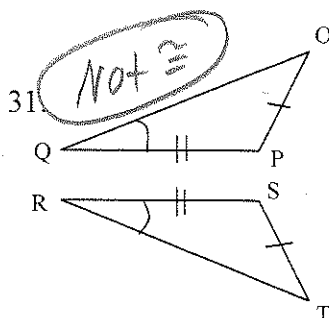
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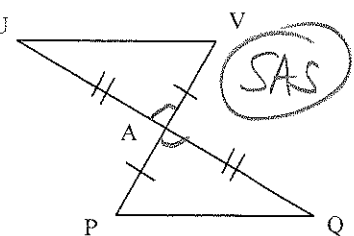
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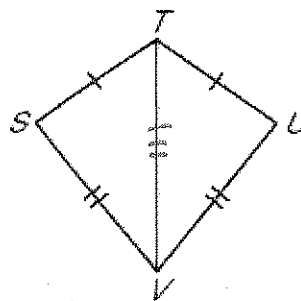
31.



32.

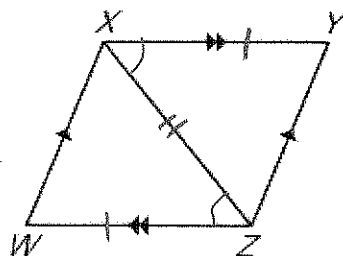


33. Proof Given: $\overline{ST} \cong \overline{UT}, \overline{SV} \cong \overline{UV}$
 Prove: $\angle TSV \cong \angle TUV$



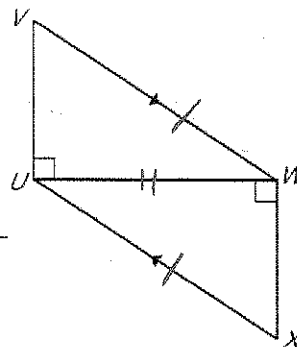
Statements	Reasons
1. $\overline{ST} \cong \overline{UT}, \overline{SV} \cong \overline{UV}$	1. Given
2. $\overline{TV} \cong \overline{TV}$	2. Reflexive
3. $\triangle TSV \cong \triangle TUV$	3. SSS
4. $\angle TSV \cong \angle TUV$	4. CPCTC

34. Proof Given: $\overline{WZ} \parallel \overline{XY}, \overline{WZ} \cong \overline{XY}$
 Prove: $\triangle XWZ \cong \triangle ZYX$



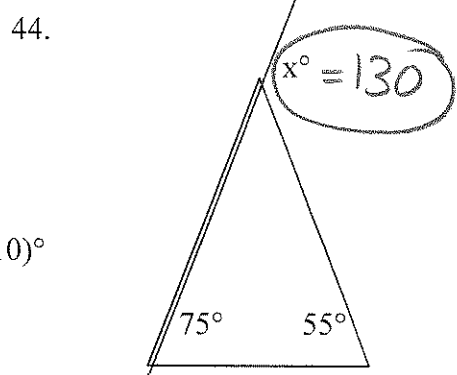
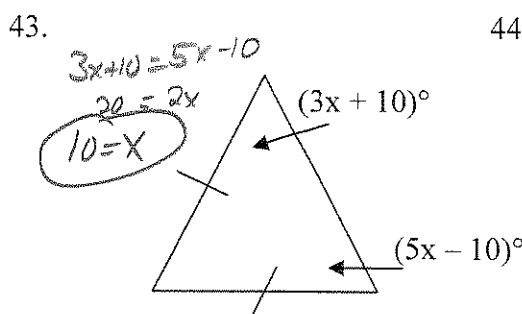
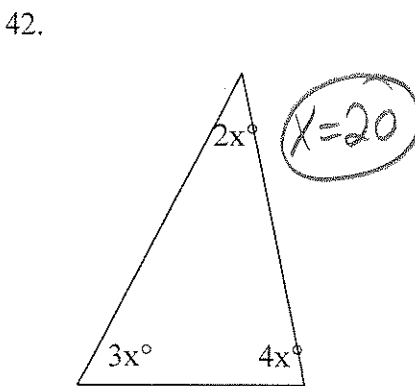
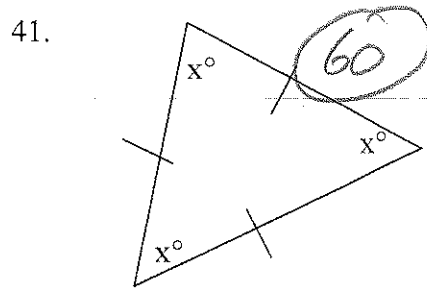
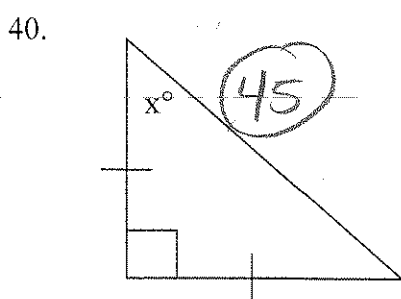
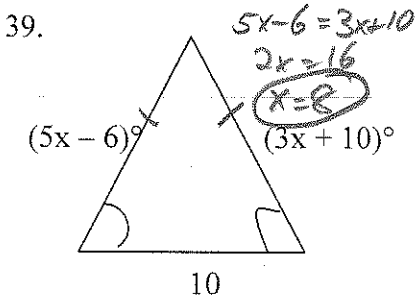
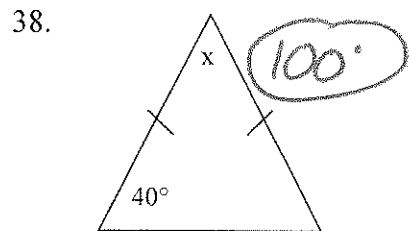
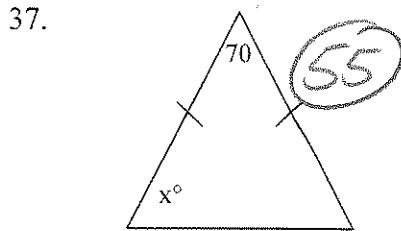
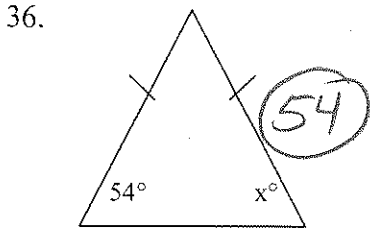
Statements	Reasons
1. $\overline{WZ} \parallel \overline{XY}, \overline{WZ} \cong \overline{XY}$	1. Given
2. $\overline{XZ} \cong \overline{XZ}$	2. Reflexive
3. $\angle WZX \cong \angle YXZ$	3. AIA \cong (alternate interior angle)
4. $\triangle XWZ \cong \triangle ZYX$	4. SAS


35. Proof Given: $\overline{VU} \perp \overline{UW}, \overline{XW} \perp \overline{UW}, \overline{VW} \cong \overline{XU}$
 Prove: $\triangle VUW \cong \triangle XWU$



Statements	Reasons
1. $\overline{VU} \perp \overline{UW}, \overline{XW} \perp \overline{UW}, \overline{VW} \cong \overline{XU}$	1. Given
2. $\overline{UW} \cong \overline{UW}$	2. Reflexive
3. $\angle VUW$ and $\angle XWU$ are right angles	3. Def. of \perp
4. $\triangle VUW \cong \triangle XWU$	4. H-L Theorem

Find the value of x for problems #36 – 44.

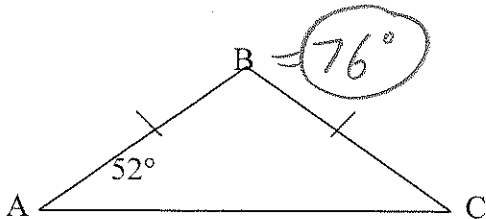


45. In $\triangle ABC$, if $\overline{AB} \cong \overline{BC}$ and $m\angle C = 50^\circ$, then find the measure of $m\angle A = 50^\circ$. 

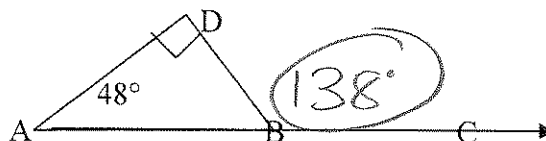
46. In $\triangle ABC$, if $\overline{AB} \cong \overline{BC}$, $AB = 6x + 9$ and $BC = x + 29$, then find $x = 4$.
 $5x = 20$

47. In $\triangle ABC$, if $\overline{AB} \cong \overline{BC}$, AB is three times the length of AC , then find the length of AB if the perimeter of the triangle is 49. $AB = 21$.
 $3x$ $3x$ x $7x = 49$ $x = 7$

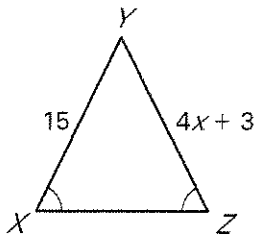
48. Find the measure of $\angle B$.



49. Find the measure of $\angle DBC$

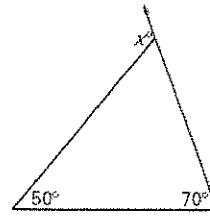


50. Find the value of x.



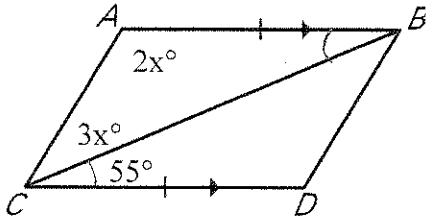
$$\begin{aligned} 4x + 3 &= 15 \\ 4x &= 12 \\ x &= 3 \end{aligned}$$

51. Find the value of x.



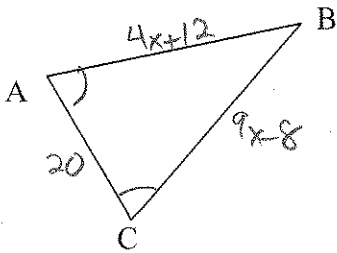
$$x = 120$$

52. Find the value of x.



$$\begin{aligned} 2x + 3x + 55 &= 180 \\ 5x &= 125 \\ x &= 25 \end{aligned}$$

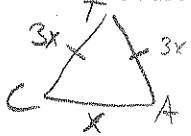
53. In $\triangle ABC$, $\angle ACB \cong \angle CAB$; $CB = 9x - 8$; $AB = 4x + 12$; $AC = 20$. Find AB.



$$\begin{aligned} 9x - 8 &= 4x + 12 \\ 5x &= 20 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} AB &= 4(4) + 12 \\ AB &= 28 \end{aligned}$$

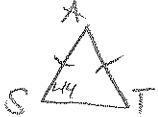
54. In $\triangle CAT$, $CT = AT$. The length of \overline{CT} is three times the length of \overline{CA} . Find the length of \overline{CT} if the perimeter of the triangle is 54 inches.



$$\begin{aligned} 7x &= 54 \\ x &= \frac{54}{7} \end{aligned}$$

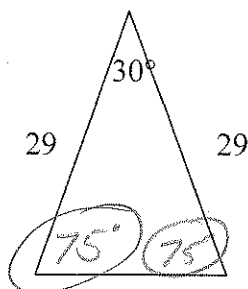
$$CT = \frac{162}{7}$$

55. In $\triangle SAT$, if $\overline{SA} \cong \overline{AT}$ and $m\angle S = 44^\circ$, then find the $m\angle T$.



$$m\angle T = 44^\circ$$

56. What is the measure of each base angle of an isosceles triangle if its vertex angle measures 30 degrees and its 2 congruent sides measure 29 units?



$$\frac{180 - 30}{2} = 75$$

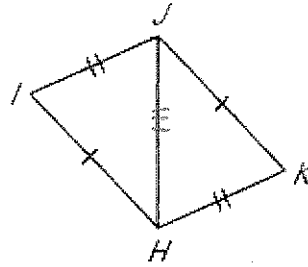
REVIEW OF PROOFS

1. **Proof** Complete the proof.

GIVEN: $\overline{HI} \cong \overline{JK}$,

$\overline{IJ} \cong \overline{KH}$

PROVE: $\triangle HIJ \cong \triangle JKH$



Statements

Reason

1. $\overline{HI} \cong \overline{JK}$; $\overline{IJ} \cong \overline{KH}$

① Given

2. $\overline{JH} \cong \overline{HJ}$

② Reflexive

3. $\triangle HIJ \cong \triangle JKH$

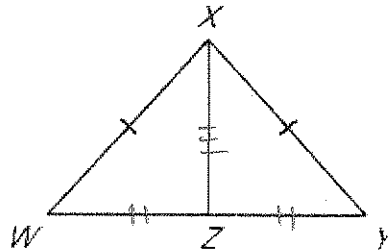
③ SSS

2. **Proof** Complete the proof.

GIVEN: $\overline{WX} \cong \overline{YX}$,

Z is the midpoint of \overline{WY}

PROVE: $\triangle WXZ \cong \triangle YXZ$



Statements

Reason

1. $\overline{WX} \cong \overline{YX}$; Z is midpoint of \overline{WY}

① Given

2. $\overline{WZ} \cong \overline{YZ}$

② Def. of Midpoint

3. $\overline{XZ} \cong \overline{XZ}$

③ Reflexive

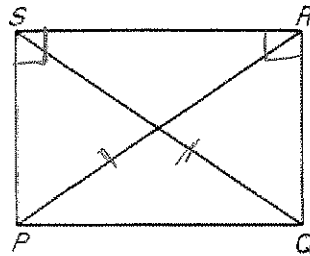
4. $\triangle WXZ \cong \triangle YXZ$

④ SSS

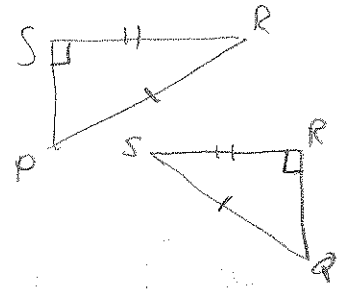
Proof Complete the proof.

GIVEN: $\overline{QS} \cong \overline{PR}$, $\overline{PS} \perp \overline{RS}$, $\overline{QR} \perp \overline{RS}$

PROVE: $\triangle PRS \cong \triangle QSR$



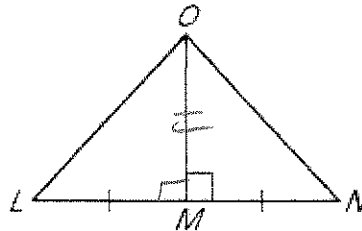
Statements	Reasons
① $\overline{QS} \cong \overline{PR}$; $\overline{PS} \perp \overline{RS}$; $\overline{QR} \perp \overline{RS}$	① Given
② $\overline{SR} \cong \overline{RS}$	② Reflexive
③ $\angle PSR$ & $\angle QRS$ are right angles	③ Def. of \perp
④ $\angle PSR \cong \angle QRS$	④ right angles \cong
⑤ $\triangle PRS \cong \triangle QSR$	⑤ HL Theorem



4. **Proof** Complete the proof.

GIVEN: $\overline{OM} \perp \overline{LN}$, $\overline{ML} \cong \overline{MN}$,

PROVE: $\triangle OML \cong \triangle OMN$

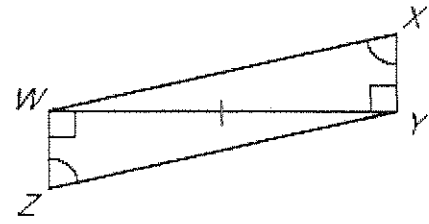


Statements	Reasons
① $\overline{OM} \perp \overline{LN}$; $\overline{ML} \cong \overline{MN}$	① Given
② $\overline{OM} \cong \overline{OM}$	② Reflexive
③ $\angle LMO$ & $\angle NMO$ are right angles	③ Def. of \perp
④ $\angle LMO \cong \angle NMO$	④ right angles \cong
⑤ $\triangle OML \cong \triangle OMN$	⑤ SAS

5. Proof Complete the proof.

GIVEN: $\angle XYW \cong \angle ZWY$, $\angle WXY \cong \angle YZW$

PROVE: $\angle XWY \cong \angle ZYW$

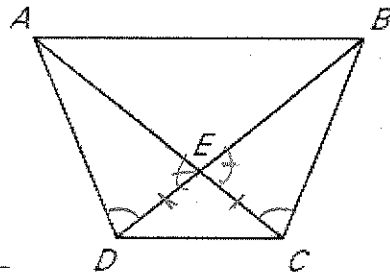


Statements	Reasons
① $\angle XYW \cong \angle ZWY$ $\angle WXY \cong \angle YZW$	① Given
② $\overline{WY} \cong \overline{YW}$	② Reflexive
③ $\triangle XWY \cong \triangle ZYW$	③ AAS
④ $\angle XWY \cong \angle ZYW$	④ CPCTC
○	R
① $\angle XYW \cong \angle ZWY$ $\angle WXY \cong \angle YZW$	① Given
② $\angle XWY \cong \angle ZYW$	② Third Angles theorem

6. Proof Complete the proof.

GIVEN: $\overline{DE} \cong \overline{CE}$, $\angle ADE \cong \angle BCE$

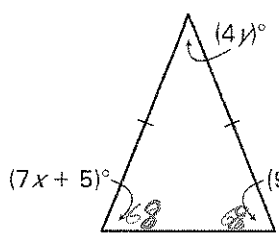
PROVE: $\angle DAE \cong \angle CBE$



Statements	Reasons
① $\overline{DE} \cong \overline{CE}$; $\angle ADE \cong \angle BCE$	① Given
② $\angle AED \cong \angle BEC$	② Vertical Angles \cong
③ $\triangle AED \cong \triangle BEC$	③ ASA
④ $\angle DAE \cong \angle CBE$	④ CPCTC

Isosceles & Equilateral Triangles Review

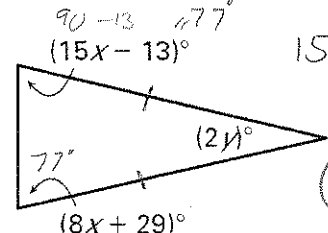
Find the values of x and y .

7.  $7x+5=9x-13$
 $18=2x$
 $9=x$

$$4y+136=180$$

$$4y=44$$

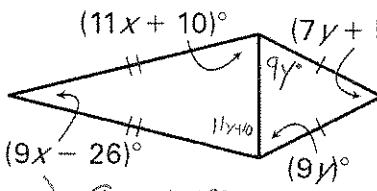
$$y=11$$

8.  $15x-13=8x+29$
 $7x=42$
 $x=6$

$$2y+154=180$$

$$2y=26$$

$$y=13$$

9.  $18y+7y+5=180$

$$2(11x+10)+9x-26=180$$

$$22x+20+9x-26=180$$

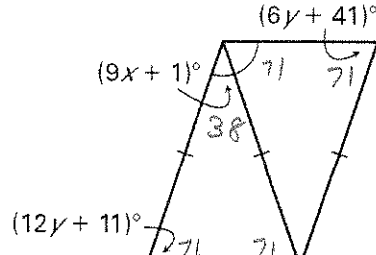
$$31x-6=180$$

$$31x=186$$

$$x=6$$

$$25y=175$$

$$y=7$$

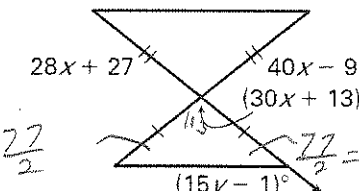
10.  $12y+11=6y+41$
 $6y=30$
 $y=5$

$$9x+1=38+71$$

$$9x+1=109$$

$$9x=108$$

$$x=12$$

11.  $15y-1+38.5=180$

$$28x+27=40x-9$$

$$36=12x$$

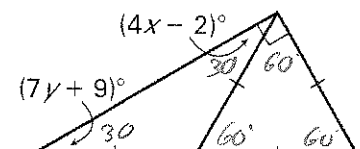
$$3=x$$

$$15y-1+38.5=180$$

$$15y+37.5=180$$

$$\frac{15y}{15}=\frac{142.5}{15}$$

$$y=9.5$$

12. 

$$7y+9=30$$

$$7y=21$$

$$y=3$$

$$4x-2=30$$

$$4x=32$$

$$x=8$$

