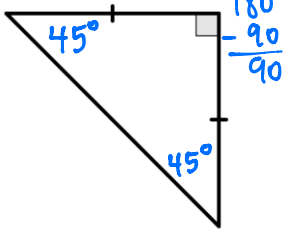
Geometry Chapter 4 Test Review Name Key

1. Write in the values of any missing angles, then classify each triangle by its angles and sides.

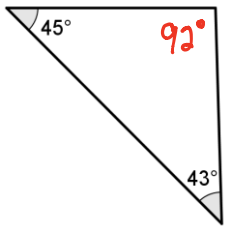
a.



180 − 90 = 90 ; 90 ÷ 2 = 45

Isosceles Right △

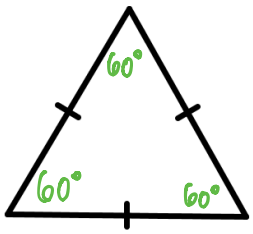
b.



45 + 43 = 88 ; 180 − 88 = 92

Scalene Obtuse △

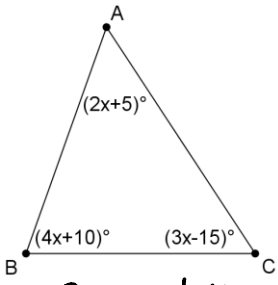
c.



Equilateral Equiangular △

2. Solve for the value of each variable. Write the measure of each angle in the diagram.

a.

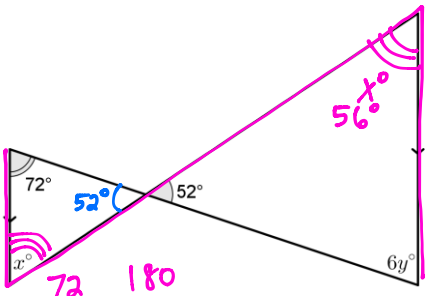


$2x+5+4x+10+3x-15=180$

$9x=180$

$\boxed{x=20}$

b.



$56+52+6y=180$

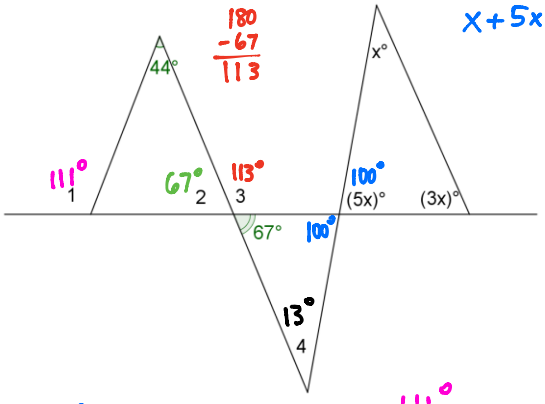
$108+6y=180$

$6y=72$

$\boxed{y=12}$

72 + 52 = 124 ; 180 − 124 = 56 = x

3. Solve for each of the indicated values.



44 + 67 = 111

180 − 67 = 113

$x+5x+3x=180$

$9x=180$

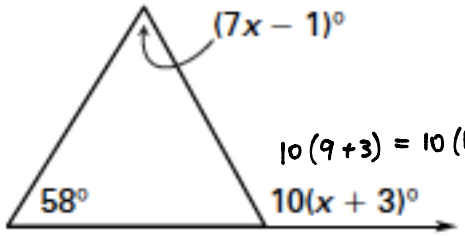
$x=20$

$5(20)=100$

67 + 100 = 167 ; 180 − 167 = 13

$x =$ 20 $m\angle 1 =$ 111° $m\angle 2 =$ 67° $m\angle 3 =$ 113° $m\angle 4 =$ 13°

4. Solve for x then find the measure of the exterior angle shown.



$10(9+3)=10(12)=120$

$58+7x-1=10(x+3)$

$7x+57=10x+30$

$57=3x+30$

$27=3x$

$9=x$

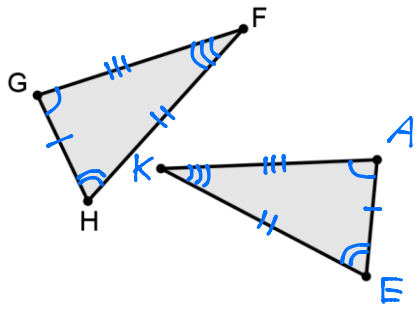
$x =$ 9 Exterior Angle = 120°

5. Label the diagram and mark all congruent corresponding parts in the diagram at the right to show $\Delta GHF \cong \Delta AEK$ and complete the statements.

$\overline{GH} \cong$ $\overline{AE}$ $\quad \angle G \cong \angle A$ $\quad \Delta FGH \cong \Delta KAE$

$\overline{GF} \cong$ $\overline{AK}$ $\quad \angle H \cong \angle E$

$\overline{HF} \cong$ $\overline{EK}$ $\quad \angle F \cong \angle K$

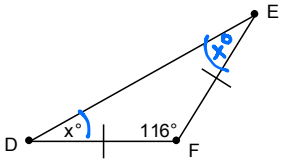


What is the reason all of these congruence statements are true?

Corresponding Parts of $\cong \Delta$'s are $\cong$

6. Solve for each variable.

a.



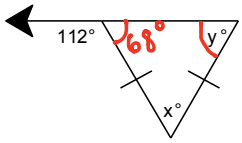
$x + x + 116 = 180$

$2x + 116 = 180$

$2x = 64$

$\boxed{x = 32}$

b.

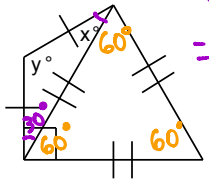


$180 - 112 = 68 = y$

$68 + x = 112$

$\boxed{x = 44}$

c.



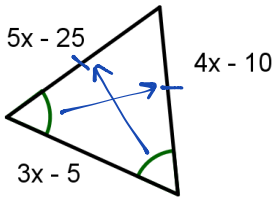
$90 - 60 = \boxed{30 = x}$

$30 + 30 + y = 180$

$60 + y = 180$

$\boxed{y = 120}$

d.



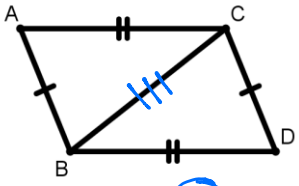
$5x - 25 = 4x - 10$

$x - 25 = -10$

$\boxed{x = 15}$

7. Determine if it is possible to prove the triangles congruent. If so, state the congruent triangles and give the reason why they are congruent. If it is not possible, explain why.

a.

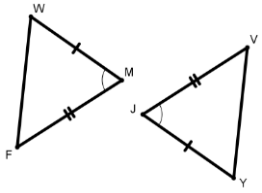


Possible: (Yes) No

Δ Congruence $\Delta ABC \cong \Delta DCB$

Reason SSS

b.

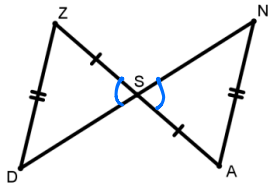


Possible: (Yes) No

Δ Congruence $\Delta WMF \cong \Delta YJV$

Reason SAS

c.

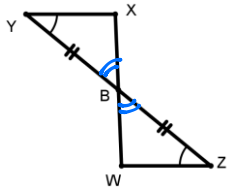


Possible: Yes (No)

Δ Congruence not $\cong$

Reason SSA does not prove Δ's $\cong$

d.

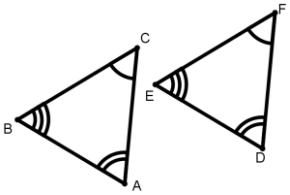


Possible: (Yes) No

Δ Congruence $\Delta YXB \cong \Delta ZWB$

Reason ASA

e.

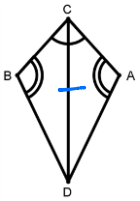


Possible: Yes (No)

Δ Congruence not $\cong$

Reason AAA does not prove Δ's $\cong$

f.



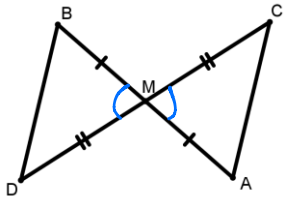
Possible: (Yes) No

Δ Congruence $\Delta BCD \cong \Delta ACD$

Reason AAS (or SAA)

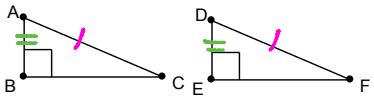
8. Write a proof.

a. Given: Labeled in picture
Prove: $\Delta DBM \cong \Delta CAM$



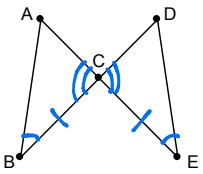
S: $\overline{MB} \cong \overline{MA}$ — Given
A: $\angle DMB \cong \angle CMA$ — Vertical $\angle$'s
S: $\overline{MD} \cong \overline{MC}$ — Given
$\Delta DBM \cong \Delta CAM$
SAS

b. Given: $\overline{AC} \cong \overline{DF}, \overline{AB} \cong \overline{DE}$
Prove: $\Delta ABC \cong \Delta DEF$



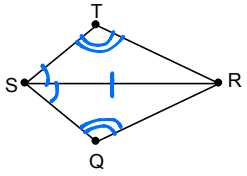
H: $\overline{AC} \cong \overline{DF}$ — Given
L: $\overline{AB} \cong \overline{DE}$ — Given
Right $\angle$: $\angle B, \angle E$ are right angles — Given
$\Delta ABC \cong \Delta DEF$
HL

c. Given: $\overline{BC} \cong \overline{EC}, \angle B \cong \angle E$
Prove: $\Delta ABC \cong \Delta DEC$



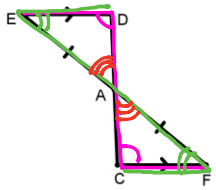
A: $\angle B \cong \angle E$ — Given
S: $\overline{BC} \cong \overline{EC}$ — Given
A: $\angle BCA \cong \angle ECD$ — Vertical $\angle$'s
$\Delta ABC \cong \Delta DEC$
ASA

d. Given: $\overline{SR}$ bisects $\angle TSQ, \angle T \cong \angle Q$
Prove: $\Delta RTS \cong \Delta RQS$



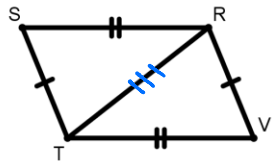
A: $\overline{SR}$ bisects $\angle TSQ$ — Given
A: $\angle T \cong \angle Q$ — Given
S: $\overline{SR} \cong \overline{SR}$ — Reflexive
$\angle TSR \cong \angle QSR$ — Def. of $\angle$ bisector
$\Delta RTS \cong \Delta RQS$
AAS or SAA

e. Given: Labeled in picture
Prove: $\overline{AD} \cong \overline{AC}$



A: $\angle DAE \cong \angle CAF$ — Vertical $\angle$'s
S: $\overline{FA} \cong \overline{EA}$ — Given
A: $\overline{DE} \parallel \overline{CF}$ — Given
$\angle E \cong \angle F$ — Alt. Int $\angle$
$\Delta DAE \cong \Delta CAF$
ASA
$\overline{AD} \cong \overline{AC}$ — corresp. parts of $\cong \Delta$'s are $\cong$

f. Given: $\overline{SR} \cong \overline{TV}, \overline{ST} \cong \overline{RV}$
Prove: $\angle S \cong \angle V$



S: $\overline{SR} \cong \overline{TV}$ — Given
S: $\overline{ST} \cong \overline{RV}$ — Given
S: $\overline{RT} \cong \overline{RT}$ — Reflexive
$\Delta STR \cong \Delta VRT$
SSS
$\angle S \cong \angle V$ — corresp. parts of $\cong \Delta$'s are $\cong$