

Name: _____

Key - Hansen

Hour: _____

Geometry A Review (2013-2014)

For 1-7, use the figure at right.

1. Name a point collinear with:

- a. X U
- b. S T
- c. V R

* Any two points are collinear! *

2. Name a line coplanar with:

- a. \overline{WX} \overline{WS}
- b. \overline{QT} \overline{QR}
- c. \overline{VR} \overline{UV}

* any line is coplanar that's not skew *

3. Find the intersection of the lines:

- a. \overline{XU} & \overline{QU} b. \overline{TS} & \overline{SR} c. \overline{TQ} & \overline{ST}

* Lines intersect at one point *

4. Find the intersection of the planes:

- a. UQT & SRT
- b. XWV & QRV
- c. WVS & XTS

* planes intersect in a line *

5. Find a line parallel to:

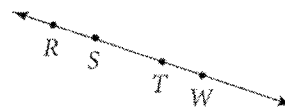
- a. \overline{WX} b. \overline{QT} c. \overline{VR}
- \overline{UV} \overline{RS} \overline{UQ} } answers may vary
- \overline{UQ} \overline{UV} \overline{XW} }

7. Find a plane parallel to:

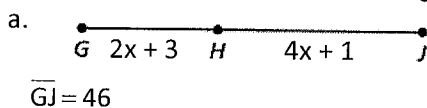
- a. UQT \overline{VRS} b. XWV \overline{TSR} c. XTS \overline{UQR}

8. At right, name a ray opposite to:

- a. \overrightarrow{SR} \overrightarrow{ST} b. \overrightarrow{TW} \overrightarrow{TS}

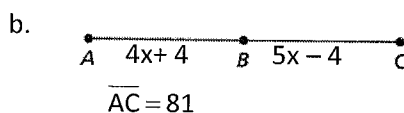


9. Find the value of x in each of the figures below.



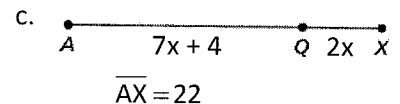
$x = 7$

$2x + 3 + 4x + 1 = 46$
 $6x + 4 = 46$
 $6x = 42$



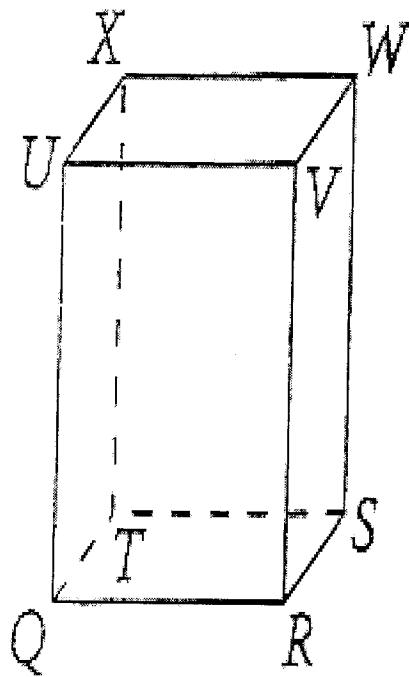
$x = 9$

$4x + 4 + 5x - 4 = 81$
 $9x = 81$



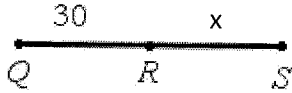
$x = 2$

$7x + 4 + 2x = 22$
 $9x = 18$



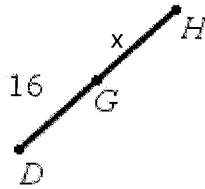
10. Find the indicated values for each midpoint problem below.

a. R is the midpoint of \overline{QS}



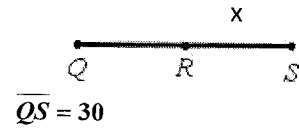
$x = \underline{30}$

b. G is the midpoint of \overline{DH}



$x = \underline{16}$

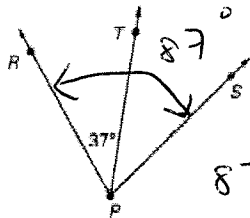
c. R is the midpoint of \overline{QS} .



$x = \underline{15}$

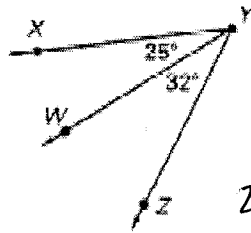
11. Find the value of the indicated angle.

a. $\angle RPS = 87^\circ$



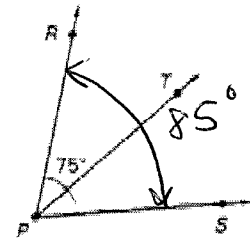
$87 - 37$
 $\angle SPT = \underline{50^\circ}$

b.



$25 + 32$
 $\angle XYZ = \underline{57^\circ}$

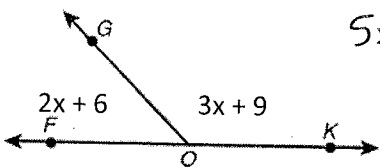
c. $\angle RPS = 85^\circ$



$\angle SPT = \underline{10^\circ}$

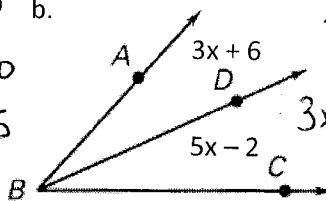
12. Find the value of x in each of the figures below.

a. $2x + 6 + 3x + 9 = 180$



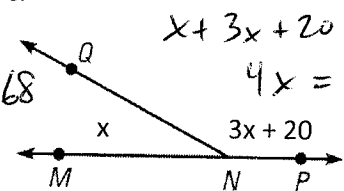
$5x + 15 = 180$
 $5x = 165$
 $x = \underline{33}$

$\angle ABC = 68^\circ$



$3x + 6 + 5x - 2 = 68$
 $8x + 4 = 68$
 $8x = 64$
 $x = \underline{8}$

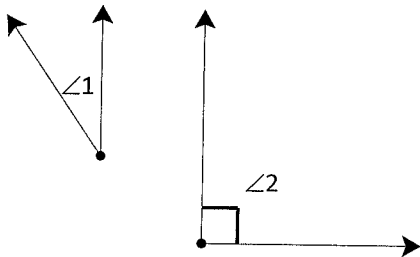
c.



$x + 3x + 20 = 180$
 $4x = 160$
 $x = \underline{40}$

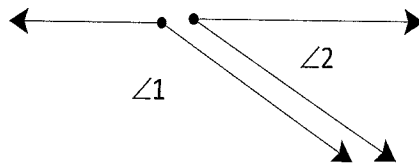
13. Classify $\angle 1$ & $\angle 2$ as acute, obtuse, right, or straight.

a.



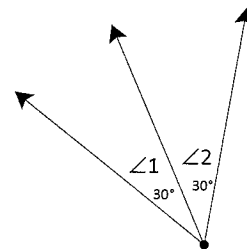
$\angle 1$: Acute
 $\angle 2$: Right

b.



$\angle 1$: Obtuse
 $\angle 2$: acute

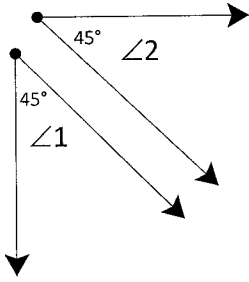
c.



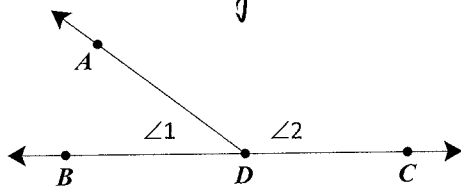
$\angle 1$: Acute
 $\angle 2$: Acute

14. Which angle pair terms (complementary, supplementary, congruent, vertical, and/or adjacent) best fit $\angle 1$ & $\angle 2$ in the figures below. Each figure may have more than one answer.

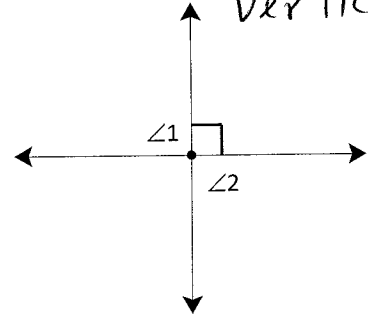
a. Congruent, Complim.



b. Supp., adjacent



c. Supp, Congruent, vertical



15. In each conditional, underline the hypothesis once and the conclusion twice.

a. If you get hit in dodgeball, then you are out.

b. If you score a TD, your team gets six points.

c. Angles are supplementary if they add up to 180°.

16. Find the converse of each conditional:
 ← Switch h & c

a. If there is a full moon, then students act crazy.

IF students act crazy, then there is a full moon.

b. If students study hard for exams, then their grades improve.

IF students grades improve, then they study hard for exams.

c. If you go to college, you'll earn more money.

IF you'll earn more money, then you go to college.

17. Use the Law of Detachment to draw a conclusion. If not possible, write *not possible*.

a. Amusement parks are fun. Cedar Point is an amusement park.

Cedar point is fun.

b. If you sink a 3-pointer, you score three points. Jim scored 3 points.

Not possible

c. If two lines are perpendicular, they form a 90° angle. Lines \overline{AB} and \overline{CD} are perpendicular.

Lines \overline{AB} & \overline{CD} Form a 90° angle.

18. Use the Law of Syllogism to draw a conclusion. If not possible, write *not possible*.

a. If a number is divisible by 4, it's divisible by 2. If a number is divisible by 2, then it is even.

IF a number is divisible by 4, then it is even.

b. If you live in Detroit, you live in MI. If you live in Roseville, you live in MI.

Not possible

c. If a triangle has 3 equal sides, then it has 3 equal angles. If a triangle is equilateral, then it has 3 equal sides.

IF a triangle is equilateral, then it has 3 equal angles.

19. Determine if the following statements can be written as a biconditional statement. Explain your answer.

a. Congruent segments are segments that are equal in measure.

yes, Conditional and converse are both true!

b. To play the sport of baseball you need a bat and a ball.

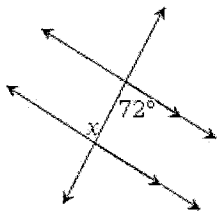
No - converse is false; could play Softball.

c. A dog is an animal that has whiskers.

No - converse is false; a cat has whiskers.

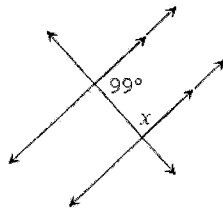
20. Find the value of x and determine what type of angles are presented on each figure (AIA, AEA, SSIA, SSEA, or Corresponding).

a.



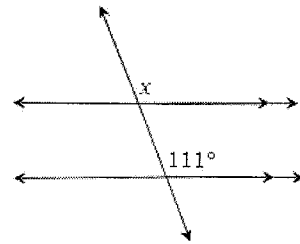
$$x = \frac{72}{\text{AIA}}$$

b.



$$x = \frac{81}{\text{SSIA}}$$

c.



$$x = \frac{111}{\text{CA}}$$

21. Use the figure to the right to determine which angle pairs with the given angle to make the given condition.

a. SSEA $\angle 7$
 $\angle 5$

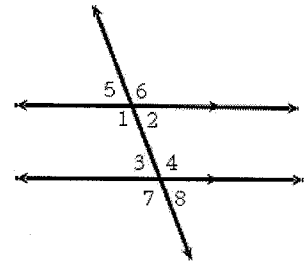
b. AEA $\angle 8$
 $\angle 5$

c. Corresponding $\angle 6$
 $\angle 4$

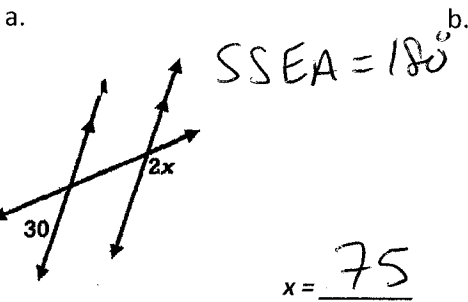
d. SSIA $\angle 4$
 $\angle 2$

e. AIA $\angle 1$
 $\angle 4$

f. Vertical $\angle 2$
 $\angle 5$

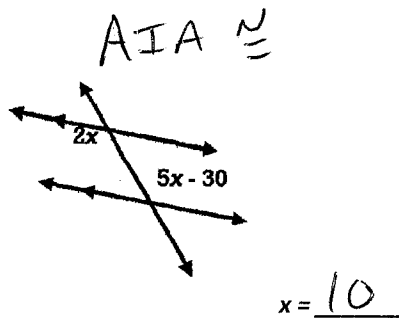


22. Find the value of x in each figure below.



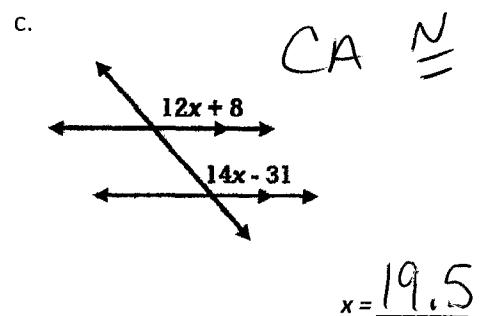
$$2x + 30 = 180$$

$$2x = 150$$



$$2x = 5x - 30$$

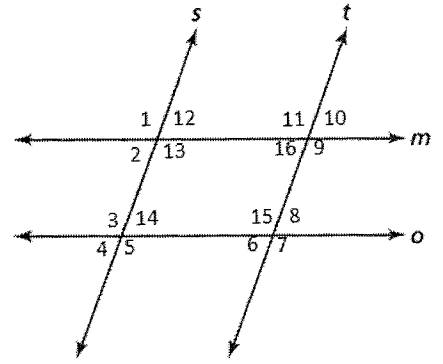
$$-3x = -30$$



$$12x + 8 = 14x - 31$$

$$39 = 2x$$

For numbers 23-24, use the diagram at the right to answer the questions.



23. Which two lines must be parallel if the following statements are true?

- a. $\angle 12 \cong \angle 14$ b. $\angle 12 + \angle 11 = 180^\circ$ c. $\angle 13 \cong \angle 11$

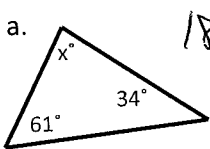
$m \parallel o$ $s \parallel t$ $s \parallel t$

24. Which two lines must be parallel if the following statements are true?

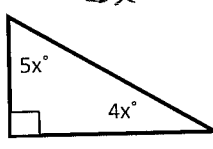
- a. $\angle 5 \cong \angle 7$ b. $\angle 2 + \angle 3 = 180^\circ$ c. $\angle 13 \cong \angle 3$

$s \parallel t$ $m \parallel o$ $m \parallel o$

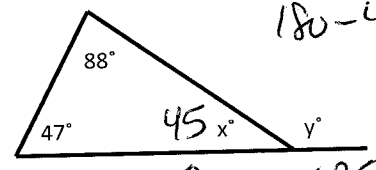
25. Find the value of each variable in each triangle.



$180 - 61 - 34$
 $x = 85^\circ$

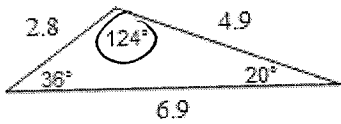


$5x + 4x + 90 = 180$
 $9x = 90$
 $x = 10$

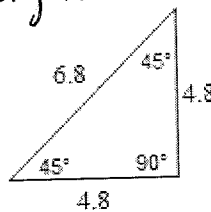


$180 - 88 - 47 = 45^\circ$
 $180 - 45 = 135^\circ$
 $x = 45^\circ$ $y = 135^\circ$

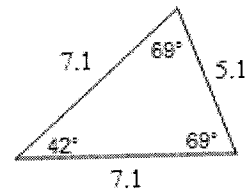
26. Classify each triangle by its side lengths (scalene, isosceles, or equilateral) and by its angle measures (acute, right or obtuse).



Obtuse Scalene

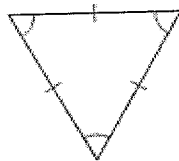


Right Isosceles



Acute Isosceles

27. Classify each triangle by its side lengths (scalene, isosceles, or equilateral) and by its angle measures (acute, right or obtuse).



Equilateral (Equiangular)

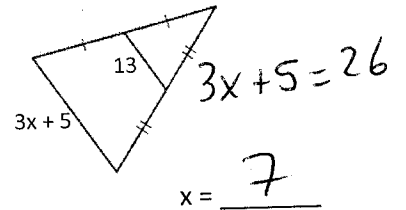
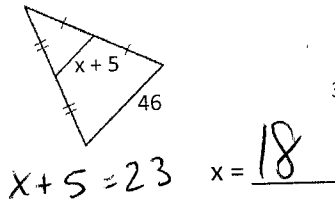
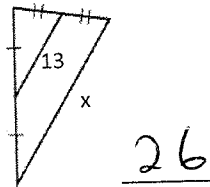
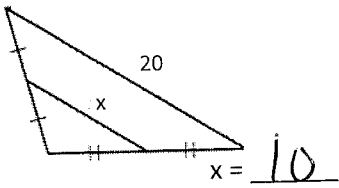


Obtuse Isosceles

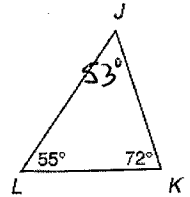
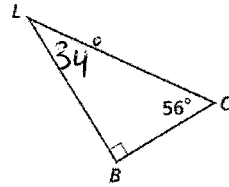
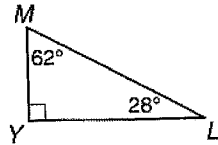
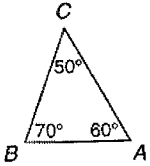


Right Scalene

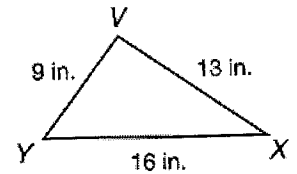
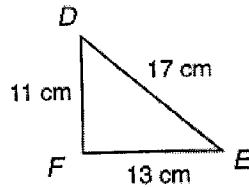
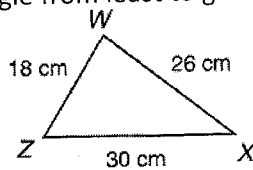
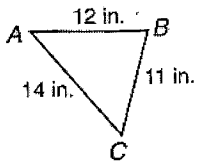
28. Use the Triangle Midsegment Theorem to find the value of x in each triangle.



29. List the sides of the triangle from least to greatest.



30. List the angles of the triangle from least to greatest.



31. Two side lengths of a triangle are given. Find the range of possible lengths for the third side. (5-5)

4, 7

$3 < x < 11$

19, 25

$6 < x < 44$

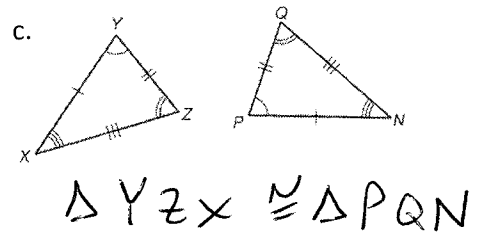
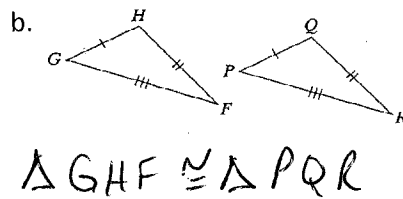
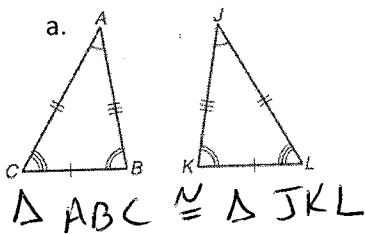
11, 13

$2 < x < 24$

5, 44

$39 < x < 49$

32. Write a congruence statement for each pair of congruent triangles.



33. If $\triangle RVL \cong \triangle HGS$, find:

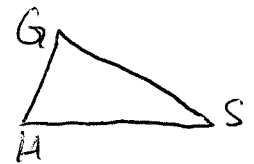
a. Sides including $\angle G$
 $\overline{GH}, \overline{GS}$

c. Side included by $\angle R$ & $\angle V$
 \overline{RV}

DRAW SKETCH

b. Angles including \overline{VL}
 $\angle V, \angle L$

d. Angle included by \overline{HG} & \overline{HS}
 $\angle H$



34. In the triangles at right, what else would be needed to prove the triangles congruent by:

a. SSS

$\overline{AC} \cong \overline{XZ}$
 $\overline{BC} \cong \overline{YZ}$

b. SAS

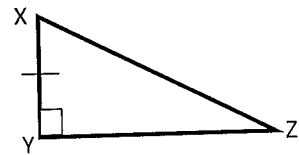
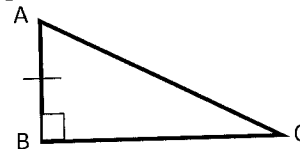
$\overline{BC} \cong \overline{YZ}$

c. ASA

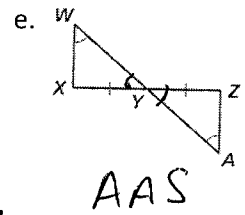
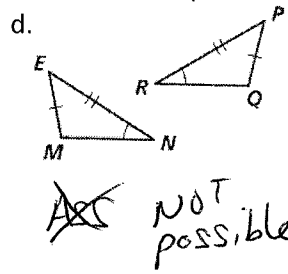
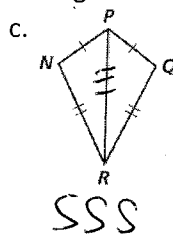
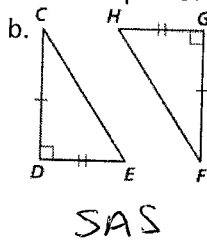
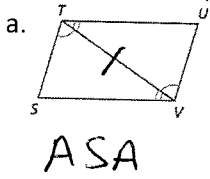
$\angle A \cong \angle X$

d. AAS

$\angle C \cong \angle Z$



35. Which postulate proves each pair of triangles congruent? If not possible, write *not possible*.

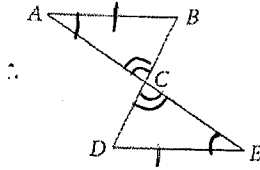


36. Complete each proof

a. Given: $\overline{AB} \cong \overline{DE}$ &

$\angle A \cong \angle E$

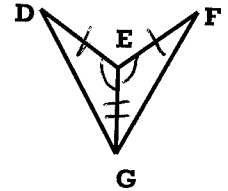
Prove: $\triangle ACB \cong \triangle ECD$



b. Given: $\overline{DE} \cong \overline{EF}$ &

$\angle DEG \cong \angle FEG$

Prove: $\triangle DEG \cong \triangle FEG$



Statement

Reason

1. $\overline{AB} \cong \overline{DE}$
2. $\angle A \cong \angle E$
3. $\angle BCA \cong \angle DCE$
4. $\triangle ACB \cong \triangle ECD$

1. Given
2. Given
3. V.I.A.T.
4. AAS

Statement

Reason

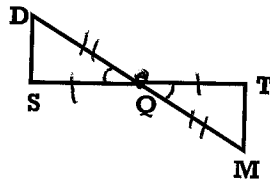
1. $\overline{DE} \cong \overline{EF}$
2. $\angle DEG \cong \angle FEG$
3. $\overline{EG} \cong \overline{EG}$
4. $\triangle DEG \cong \triangle FEG$

1. Given
2. Given
3. Reflexive
4. SAS

c. Given: Q is the midpoint of \overline{ST}

\overline{ST} bisects \overline{DM}

Prove: $\triangle DSQ \cong \triangle MTQ$



Statement

Reason

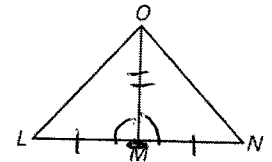
1. Q is the midpoint of \overline{ST}
2. $\overline{SQ} \cong \overline{TQ}$
3. \overline{ST} bisects \overline{DM}
4. $\overline{DQ} \cong \overline{MQ}$
5. $\angle DQS \cong \angle MQT$
6. $\triangle DSQ \cong \triangle MTQ$

1. Given
2. Definition of Midpoint
3. Given
4. Def of Bisect
5. V.I.A.T.
6. SAS

d. Given: $\angle LMO \cong \angle NMO$ &

M is the midpoint of \overline{LN}

Prove: $\triangle LOM \cong \triangle NOM$



Statement

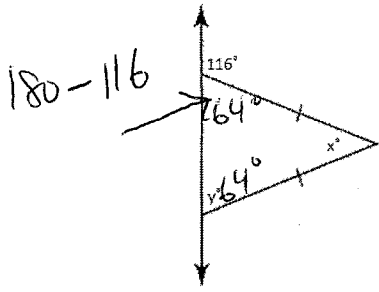
Reason

1. $\angle LMO \cong \angle NMO$
2. M is the midpoint of \overline{LN}
3. $\overline{LM} \cong \overline{NM}$
4. $\overline{OM} \cong \overline{OM}$
5. $\triangle LOM \cong \triangle NOM$

1. Given
2. Given
3. Def of midpoint
4. Reflexive
5. SAS

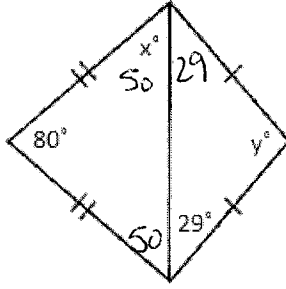
37. Find the value of each variable in the triangles below:

a.



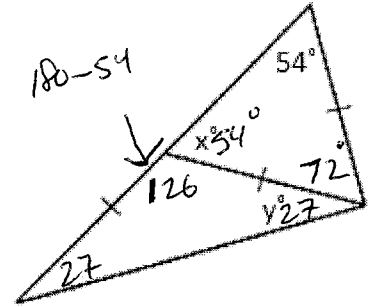
$x = \underline{52^\circ}$ $y = \underline{64^\circ}$

b.



$x = \underline{50^\circ}$ $y = \underline{122^\circ}$

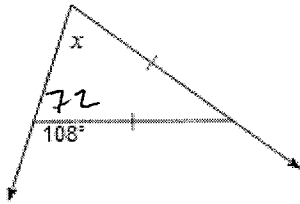
c.



$x = \underline{54^\circ}$ $y = \underline{27^\circ}$

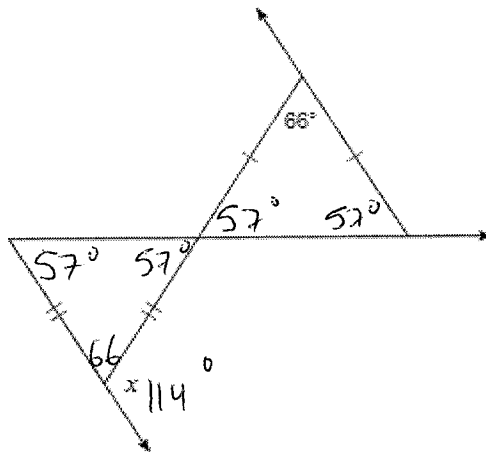
38. Find the value of each variable in the triangles below:

a.



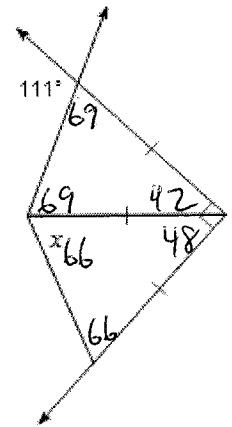
$x = \underline{72^\circ}$

b.



$x = \underline{114^\circ}$

c.



$x = \underline{66^\circ}$