Name: __KEY!__ Date: _____ Hour: _____

Unit C Review: Triangles

1. Can the numbers (16.1, 28.6) and 49 be the lengths of three sides of a triangle? Explain.
= 44.7

No, 16.1 + 28.6 = 44.7, & 44.7 ≯ 49.

2. In New York, the distance from Albany to Syracuse is 148 miles and the distance from Syracuse to New York City is 256 miles. From these facts alone, what conclusion can you draw about the distance from Albany to New York City?

148 + 256 = 404
256 − 148 = 108   } → 108 < x < 404

3. Two sides of a triangle have lengths 94 cm and 212 cm. How long can the third side be?
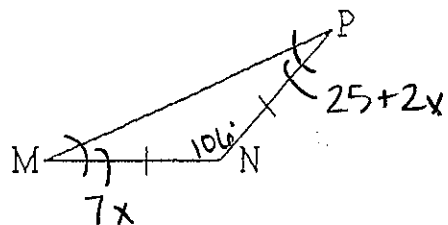
94 + 212 = 306
212 − 94 = 118   } → 118 < x < 306

4. ΔMNP below is isosceles with base MP.

a. If m∠N = 106, find m∠M.

180 − 106 = 74 ÷ 2 = [37°]

b. If m∠M = 7x and m∠P = 25 + 2x, find x and m∠N.
|___equal___|
7x = 25 + 2x
−2x   −2x
5x = 25

$\frac{5x}{5} = \frac{25}{5}$

[x = 5]

∠M = 7·5
= 35, so ∠P = 35
then [∠N = 110°]

7x

25 + 2x

M ⟋⟍ 106 N
       7x

5. ΔABC ≅ ΔDEF. Identify the six pairs of congruent parts below.
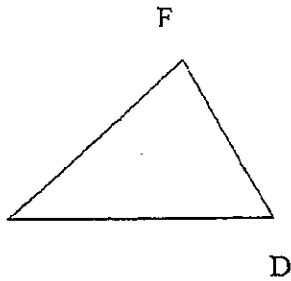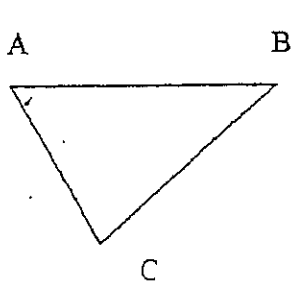
$\overline{AC}$ ≅ $\overline{DF}$ $\overline{DF}$ ≅ $\overline{AC}$ ∠B ≅ ∠E

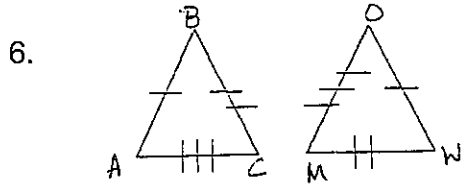$\overline{CB}$ ≅ $\overline{FE}$ ∠D ≅ ∠A   ∠F ≅ ∠C

For 6-11, use the pair of triangles to answer the questions below.
a. Determine whether the triangles are congruent.
If yes...
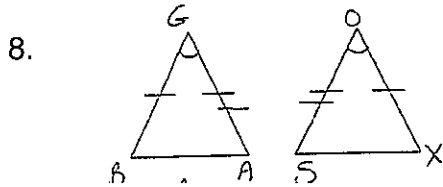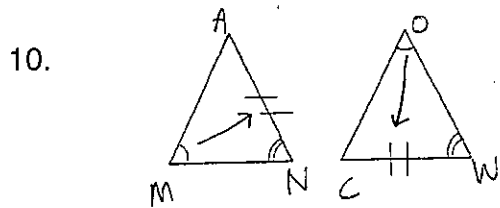b. Identify the congruency theorem.
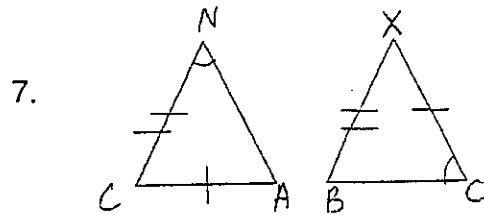c. State the corresponding vertices.

6.

a. Yes

b. SSS

c. △ABC ≅ △OWM

7.

a. No

b. n.e.i

c. ～～～～

8.

a. Yes

b. SAS

c. △RGA ≅ △XOS

9.

a. No

b. n.e.i

c. ～～～～

10.

a. Yes

b. AAS

c. △MNA ≅ △OWC

11.
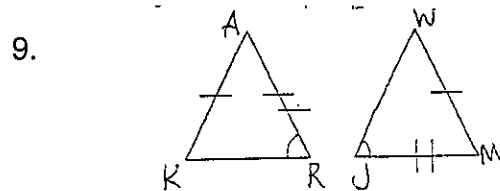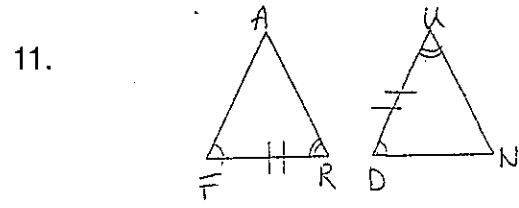
a. Yes

b. ASA

c. △FRA ≅ △DUN

12. Given MNOP is a kite with ends P and N,
    and $\overline{PT} = \overline{PS}$.
    Prove Triangle SMP ≅ Triangle TOP
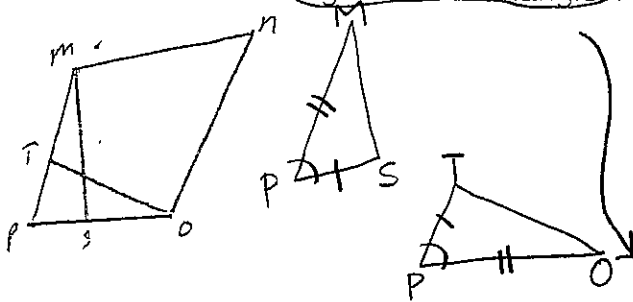
Statement	Justification
1. MNOP is kite w/ ends P & N, PT=PS	1. Given
2. PM ≅ PO	2. Defn. of a Kite
3. ∠P ≅ ∠P	3. Reflexive
4. △SMP ≅ △TOP	4. S.A.S.

13. Name 2 pairs of overlapping triangles

13. △TAP & △RAP
    △TRP & △TRA
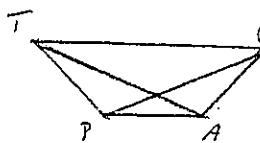
14. Given: <ETN = <SDN and
    $\overline{NT} = \overline{ND}$
    Prove: < NET = < NSD
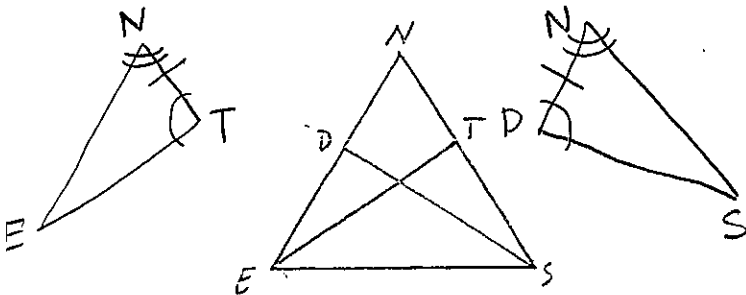
Statement	Justification
1. <ETN = <SDN and NT = ND	1. Given
2. ∠N ≅ ∠N	2. Reflexive
3. Tri. ETN ≅ Tri. SDN	3. ASA
4. < NET = < NSD	4. CPCF

15. Given: Circle w/ center o and AB ≅ CD
    Prove: < OCD ≅ < OBA
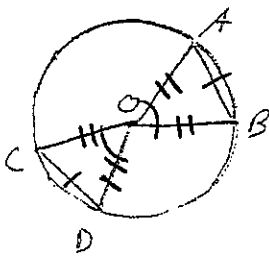
Statement	Justification
1. Circle w/ center o and AB ≅ CD	1. Given
2. OA = OB and OC = OD	2. Def. of ⊙
3. ∠COD ≅ ∠AOB	3. Vertical Angles
4. △COD ≅ △AOB	4. SAS
5. ∠OCD ≅ ∠OBA	CPCF

16. LOVE ≅ MATH.

a. Draw a picture to represent the situation and label it correctly.

b. ∠V ≅ ∠ __I__
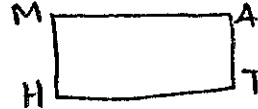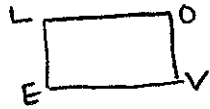
c. ∠H ≅ ∠ __E__

d. LE ≅ __MH__

e. If OV = 7, __AT__ = 7

17. If the given triangles are congruent state by which congruence theorem. If they are not, write "not enough information."

__NO__
n.e.i.

∠ angles aren't same

__HL__

__No__
n.e.i

18. Are the triangles congruent?

ASA
AAS
NO

Yes, by SSS

19. Given AE = AD and AB = AC
Prove Triangle ADB = Triangle ACE

Statement	Justification
1. AE = AD & AB = AC	1. Given
2. ∠A ≅ ∠A	2. Reflexive
3. △ADB ≅ △ACE	3. SAS

20. List the **sides** in order from LEAST to GREATEST.

B 130° 20° C

30° A

$\overline{AB} < \overline{BC} < \overline{AC}$

$180 - 30 - 20 = 130$
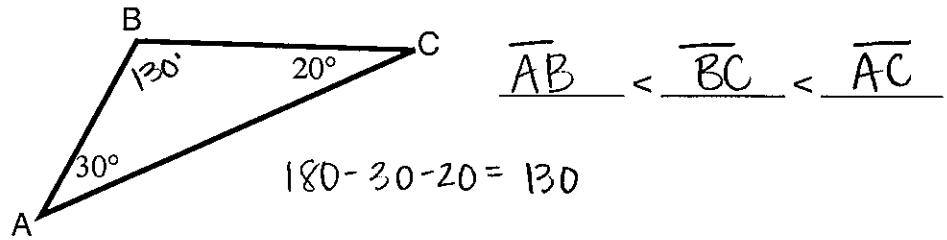
21. List the **angles** in order from LEAST to GREATEST.

A
90   80
B
120   C

$\angle B < \angle C < \angle A$
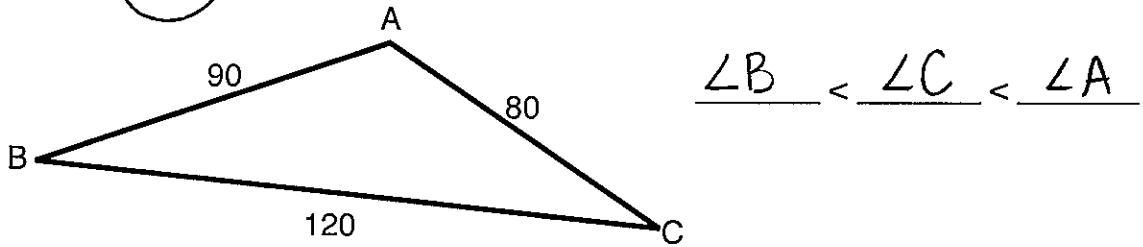
22. Given S is the mid pt of AY and $\overline{ES} = \overline{RS}$.
$\overline{AY} \perp \overline{EA}$ and $\overline{AY} \perp \overline{RY}$
Prove $\overline{EA} = \overline{RY}$
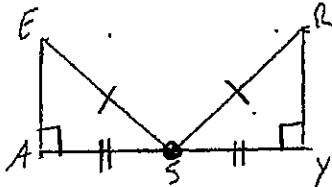
Statement	Justification
1. S is midpt of AY, ES=RS, AY⊥EA, AY⊥RY	1. Given
2. $\overline{AS} = \overline{SY}$	2. Def. of midpt.
3. TRI. EAS ≅ TRI. RYS	3. HL
4. $\overline{EA} = \overline{RY}$	4. CPCF

23. An outdoor volleyball net has ropes attached to the poles and net and then to the ground. The ropes are of equal length. The pole meets the ground at a right angle. Is it possible for ∠A and ∠B to be equal? Either way, explain your answer.

Y
A B
X   Z
R
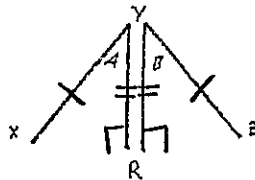
Yes, by HL the △'s are ≅, so then by CPCF ∠A ≅ ∠B.