NAME _____ DATE _____HR__

HONORS GEOMETRY - CHAPTER 3

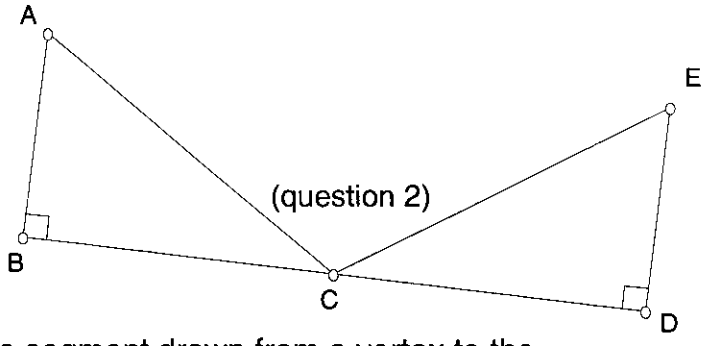
PRACTICE TEST/ Study Guide

1) A(n) _scalene_____ triangle has no two sides congruent.

2) Given: $\overline{BC} \cong \overline{DC}$
Prove: $\Delta ABC \cong \Delta EDC$

What additional two sides need to be congruent if this is proven using HL?

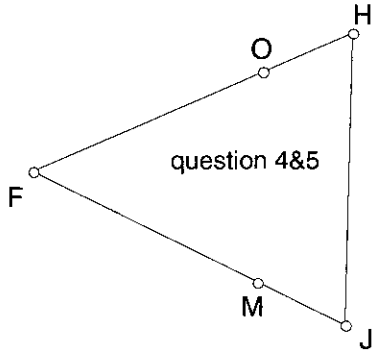
___$\overline{AC} \cong \overline{EC}$___



(question 2)

3) In a triangle, what name is given to a line segment drawn from a vertex to the midpoint of the opposite side?

__median_____



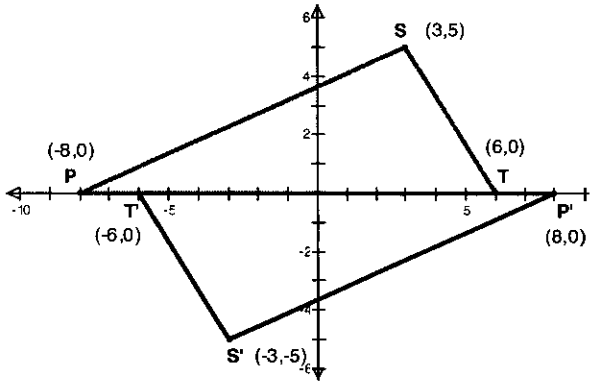
question 4&5

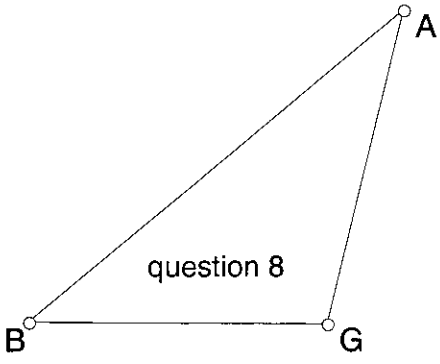
4) If $\overline{FH} \cong \overline{FJ}$, name the base angles.
_____∠H and ∠J_____

5) If $\overline{FH} \cong \overline{FJ}$ and $\overline{FO} \cong \overline{FM}$,
then what property justifies that $\overline{HO} \cong \overline{JM}$?
___Subtraction_____

6) In a triangle, what name is given to a line segment that is drawn from a vertex and ⊥ to the opposite side?
__altitude_____

7) If ΔSTP is rotated clockwise 180° about the origin, the coordinates of S' are _(-3,-5)____.
(see new graph – red triangle ΔPST is the given triangle, and the blue triangle is the triangle created by rotating ΔPST 180°)





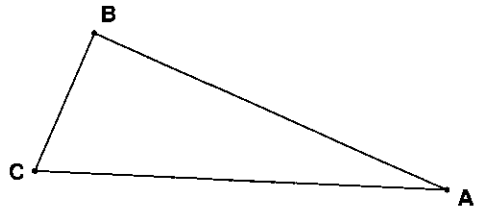
question 8

8) The perimeter of ΔBAG is 43.
AG = 16
AB = x + 4
BG = 2x +2
Is ΔBAG scalene, isosceles, or equilateral?
_____? (hint: solve for x)

16 + x + 4 + 2x + 2 = 43 22 + 3x = 43 3x = 21 x = 7
So, AB = 11, BG = 16, and AG = 16. Thus the triangle is ISOSCELES.

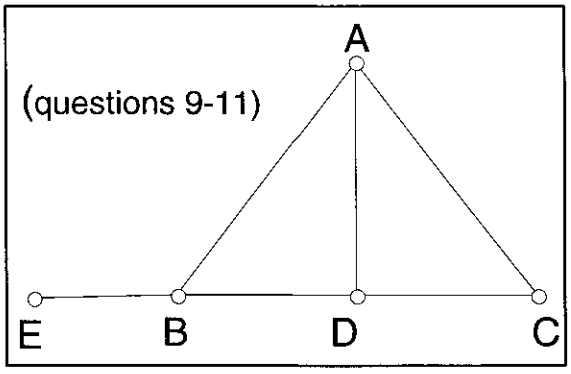
8.5) In ΔABC, $\overline{AC} > \overline{AB} > \overline{BC}$. Draw a picture and list the three angles in order from smallest to biggest.

One such picture could be that shown to the right.



∠A > ∠C > ∠B

(9-11) Given: $\overline{AD}$ is an altitude to $\overline{BC}$
$\overline{AD}$ is a median to $\overline{BC}$
m∠ABC = $(y^2)°$
m∠ACB = $(2x - 3)°$
BD = 40
CD = x + 2y



Since a segment is congruent to itself by the reflexive property, you can say that AD = AD. The definition of median tells us that D is the midpoint of BC, so BD = CD, and the definition of altitude tells us that we have right angles ∠ADB and ∠ADC, which are congruent, so ΔABD ≅ ΔACD by ASA.

Therefore, m∠ABD=m∠ACD, since these angles are corresponding parts of ≅ triangles.

$y^2 = 2x - 3$ or $y^2 - 2x + 3 = 0$

Since BD = CD, 40 = x + 2y or 40-2y=x

Substituting, we get $y^2 - 2(40 - 2y) + 3 = 0$ $y^2 - 80 + 4y + 3 = 0$ $y^2 + 4y - 77$

(y + 11) (y – 7) = 0 So, y = -11 or y = 7.

Make sure to check that you find both x-values and that both pairs of values give positive angle and side values. Make a table:

Y	X	m∠ABD	m∠ACD	DC	m∠ABE
-11	62	$(-11)^2 = 121$	2(62) – 3 = 121	62-22 = 40	xxx
7	26	$7^2 = 49$	2(26) – 3 = 49	26 + 2(7) = 40	131°

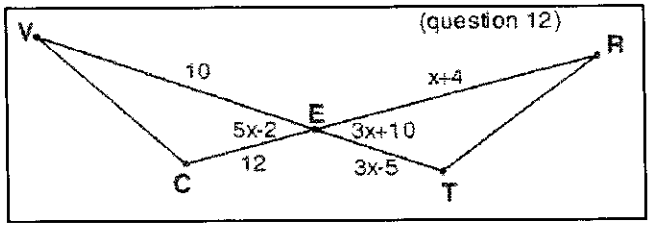
Why doesn't y = -11, x = 62 work in this triangle? Look carefully at the measures of the angles in ΔABC.

9) x = ___62 or 26_____ (show both answers and put a single line through the one(s) that don't work, if there are any!)

10) y = __-11 or 7_____ (show both answers and put a single line through the one(s) that don't work, if there are any!)

11) m∠ABE = ___131°_____

12) Given: EC = 12
ET = 3x – 5
VE = 10
ER = x + 4
m∠VEC = 5x – 2
m∠RET = 3x + 10

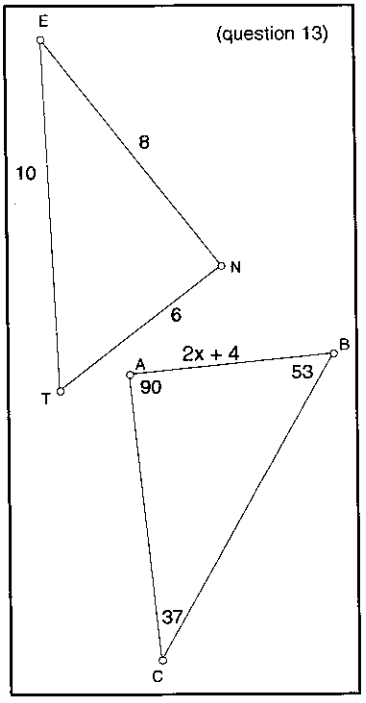


5x – 2= 3x + 10 (vert. angles are ≅) x = 6

a) x = _____6_____

Therefore, ET = 28 and ER = 10. Since EC ≠ ET, the triangles are NOT congruent.

b) (**Circle** either) *True* or (*False*:) ΔVEC ≅ ΔRET



13) Given: ΔABC ≅ ΔNTE

m∠E = ___37°_____

x = ____1_____

First, list your Corresponding Parts....

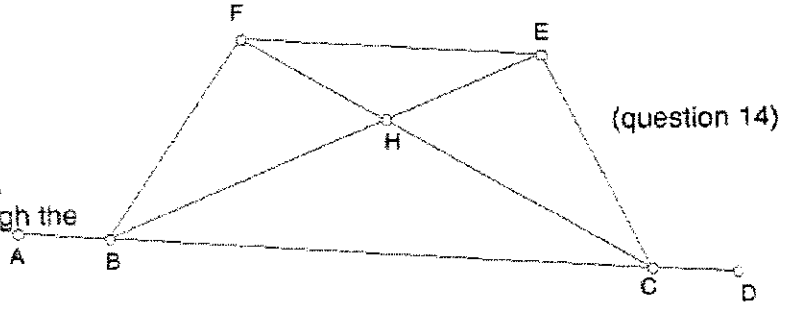
AB = NT BC = TE AC = NE

∠A ≅ ∠N ∠B ≅ ∠T ∠C ≅ ∠E

Since ∠C ≅ ∠E, then m∠E = 37°

Since AB = NT, then 2x + 4 = 6.... so x = 1

14) Given: ∠EBC ≅ ∠FCB
∠ABF ≅ ∠DCE
$\overline{CH} \cong \overline{FB}$
Prove: ΔEHC is an isosceles Δ
(mark your picture as you work through the proof below so you can see what is happening!)



(question 14)

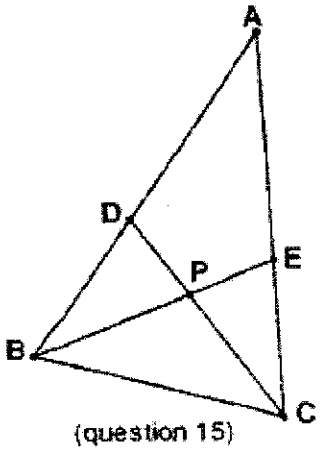
STATEMENTS		REASONS	
1.	∠EBC ≅ ∠FCB	1.	Given
2.	∠ABF is supp. to ∠FBC ∠DCE is supp. to ∠ECB	2.	If two angles form a straight angle, then they are supplementary.
3.	∠ABF ≅ ∠DCE	3.	Given
4.	∠FBC ≅ ∠ECB	4.	If 2 angles are supplementary to congruent angles, then they are congruent.
5.	$\overline{BC} \cong \overline{CB}$	5.	Reflexive Property
6.	ΔFBC ≅ ΔECB	6.	ASA (1, 5, 4)
7.	$\overline{FB} \cong \overline{EC}$	7.	CPCTC (corresponding parts of congruent triangles are congruent!)
8.	$\overline{CH} \cong \overline{FB}$	8.	Given
9.	$\overline{EC} \cong \overline{CH}$	9.	Transitive or substitution property
10.	ΔEHC is an isosceles Δ	10.	If a triangle has at least two congruent sides, then it is isosceles.

15) Given: $\overline{AB} \cong \overline{AC}$

D is the midpoint of $\overline{AB}$

E is the midpoint of $\overline{AC}$

Prove: ΔPBC is isosceles



(question 15)

(mark your picture as you work through the proof below so you can see what is happening!)

Statements	Reasons
1. $\overline{AB} \cong \overline{AC}$ D is the midpoint of $\overline{AB}$ E is the midpoint of $\overline{AC}$	1. Given
2. $\angle ABC \cong \angle ACB$	2. If two sides of a triangle are congruent, then the sides opposite those angles are congruent.
3. $\overline{BC} \cong \overline{CB}$	3. Reflexive Property
4. $\overline{DB} \cong \overline{EC}$	4. Division Property
4. $\Delta DBC \cong \Delta EBC$	4. SAS
5. $\angle PBC \cong \angle PCB$	5. CPCTC
6. ΔPBC is isosceles	6. If at least two angles of a triangle are congruent, then the triangle is isosceles.

NOTE: These will NOT be extra credit on the exam. A construction on this exam is worth 9 points on the chapter 3 exam!!!

16. Construct (with a compass and straightedge) the centroid of the triangle below. Label it point C.

17. On the same triangle (or trace it and do it separately), construct the orthocenter and label it O.