Geometry (H)
Chapter 6 review 2

Name: KEY

1. Is it possible for a triangle to have sides with the lengths indicated? Write yes or no.

a. 12, 11, 4 — yes

b. $\sqrt{2}, \sqrt{3}, \sqrt{6}$ — yes; $\sqrt{2}+\sqrt{6} > \sqrt{3}$; $\sqrt{2}+\sqrt{3} > \sqrt{6}$; $3.1 > 2.4$

c, 5, 5, 15 — $5+5 \not> 15$; NO

d. ½, ¼, 1/3 — yes; $\frac{1}{4}+\frac{1}{3}$; $\frac{3}{12}+\frac{4}{12} > \frac{6}{12}$

2. Complete each statement by writing <, =, or >.

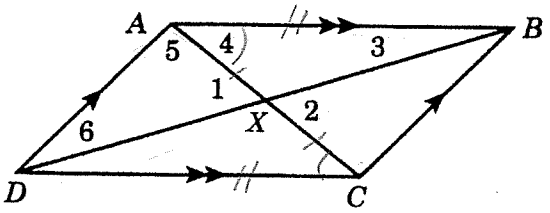
a. AX ___=___ XC

b. m∠ADC ___>___ m∠6

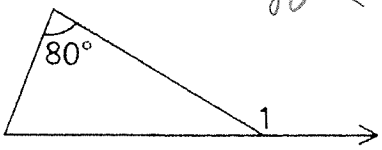
c. DX ___<___ DB

d. m∠4 ___<___ m∠2 — ext. ∠ meq. Thm

e. AD ___=___ BC



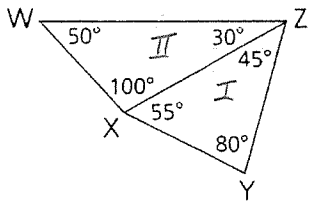
3. What are the restrictions on ∠1?



$80 < m\angle 1 < 180$

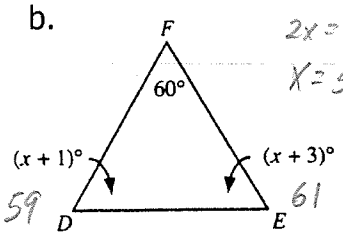
4. Name the longest segment in each diagram.

a.



$\overline{WZ}$

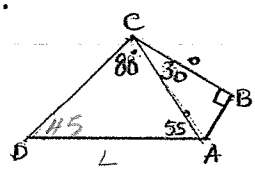
b.



$2x+4=120$; $2x=116$; $x=58$; 59; 61

$\overline{DF}$

c.



$\overline{DA}$

$\overline{XZ}$ shared bet. 2 Δs; it's largest in ΔI but only middle in ΔII.

5. The sides of a triangle are x, x, and 14. Find the possible values of x.

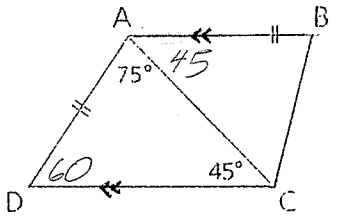
$7 < x < 14 + x$

6. A stick 8 cm long is cut into 3 pieces of integral lengths to be assembled as a triangle. What is the length of the shortest piece?

2, 3, 3

1 is impossible. Leaves 7 to be split as 4, 3. So, 2 is the shortest.

7. Given: $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \cong \overline{AD}$, $\angle DAC = 75°$, $\angle DCA = 45°$



Which is longer, $\overline{BC}$ or $\overline{DC}$?

Use SAS Inequal. Thm, $\overline{DC} > \overline{BC}$ b/c $75° > 45°$.

8. Decide if the following statements are sometimes, always or never true.

a. The first step in an indirect proof is to assume the negation of the given.

Always

b. If two isosceles triangles have congruent legs but noncongruent bases, then the triangle with longer base has the smaller base angles.

Always

c. The altitude to the base of an isosceles triangle is longer than a leg of the triangle.

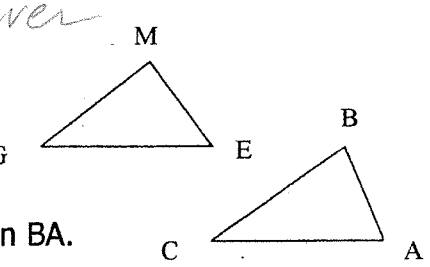
leg of isos $\triangle$

$a^2+b^2=c^2 \rightarrow c=\sqrt{a^2+b^2}$

altitude $\rightarrow$ $b^2=c^2-a^2$ $b=\sqrt{c^2-a^2}$

Never

For d – k, use the diagram at the right.



d. If GM = CB and GE = CA, then m∠G is equal to m∠C.

Sometimes

e. If GM = CB, GE = CA and m∠G < m∠C, then ME is less than BA.

always

f. If m∠A < m∠E, then BC is less than GM.

sometimes

g. If m∠A < m∠E and m∠B < m∠M, then m∠C is less than m∠G.

Never.

h. If AC > EG and AB > EM, then BC is greater than MG.

Sometimes

depends on $\measuredangle$s

i. If AC = EG, AB = EM and BC = MG, then m∠A is equal to the m∠E.

Always

SAS equality thm

j. If GM = CB, ME = BA, and m∠M < m∠B, then GE is greater than AC.

SAS Inequality

Never

k. If GM > CB and GE > CA, then ME is greater than AB.

Sometimes.

Depends on m$\measuredangle$G & m$\measuredangle$C.