Name: Key

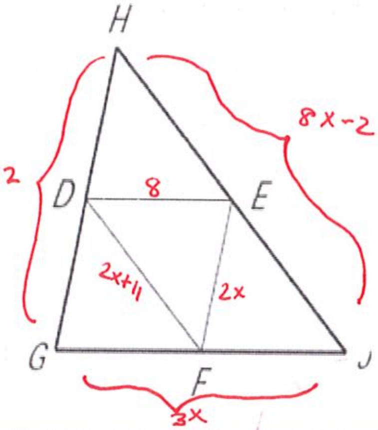
Period: _______

Academic Geometry

SHOW ALL WORK!

5.1 & 5.6 Review Worksheet

1. **Use ΔGHJ where D, E, and F are midpoints of the sides.**



a) If DE = 8 and GJ = 3x, find GJ.

$2(8) = 3x$

$16 = 3x$

$x = 5.\overline{3}$

GJ = 16

b) If EF = 2x and GH = 12, find EF.

$\frac{12}{2} = EF$

EF = 6

c) If HJ = 8x − 2 and DF = 2x + 11, find HE.

$2(2x+11) = 8x-2$

$4x + 22 = 8x - 2$

$24 = 4x$

$x = 6$

HE = DF = 2(6)+11

HE = 23

d) If HD = 3x + 29 and DG = 14x + 7, find EF.

$3x+29 = 14x+7$

$22 = 11x$

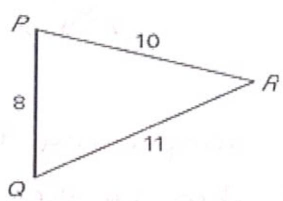
$x = 2$

EF = HD = 3(2)+29

EF = 35

List the sides AND angle in order from least to greatest.

2.



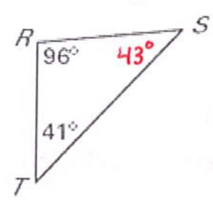
Sides:

PQ, PR, QR

Angles:

$\angle R$, $\angle Q$, $\angle P$

3.



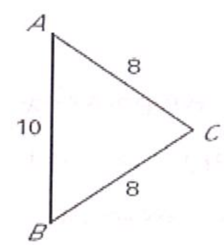
Sides:

RS, RT, TS

Angles:

$\angle T$, $\angle S$, $\angle R$

4.



Sides:

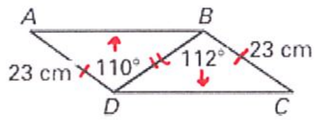
AC & BC, AB

Angles:

$\angle A$ & $\angle B$, $\angle C$

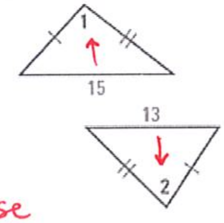
Complete the statement with <, >, or =. Then explain using a theorem.

5. AB <u>$<$</u> CD



Thm: Hinge Theorem

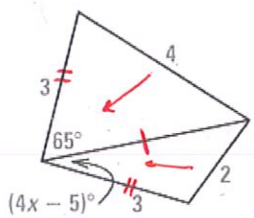
6. $m\angle 1$ <u>$>$</u> $m\angle 2$



Thm: Hinge Thm Converse

Use an inequality to describe a restriction on the value of x as determined by the Hinge Theorem or its Converse.

7.



$$4x - 5 < 65$$
$$+5 \quad +5$$
$$4x < 70$$
$$\frac{4x}{4} < \frac{70}{4}$$
$$x < 17.5$$

Write an indirect proof. (It may be helpful to draw a picture for each)

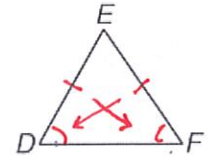
8. Given: Equiangular ΔREN

Prove: RE = EN

Assume temporarily that RE ≠ EN. Then ΔREN is not equilateral. (Not all sides =) Since the triangle is not equilateral, then it is not equiangular. This is a contradiction of the given that ΔREN is an equiangular triangle. Therefore our assumption is false. It follows that RE = EN.

9. Given: $m\angle D \neq m\angle F$

Prove: $DE \neq EF$



Assume temporarily that DE = EF. Then, by the Base Angles Theorem, m∠D = m∠F. This is a contradiction of the given that m∠D ≠ m∠F. Therefore our assumption is false. It follows that DE ≠ EF.