6.6 Notes Day 1 - Properties of Kites and Trapezoids

What do you know already?! Please list (or draw a picture of) everything you know about kites and trapezoids!

Kites ***Trapezoids***

If you place two isosceles Δ's together (base-to-base), you make a quadrilateral called a kite!

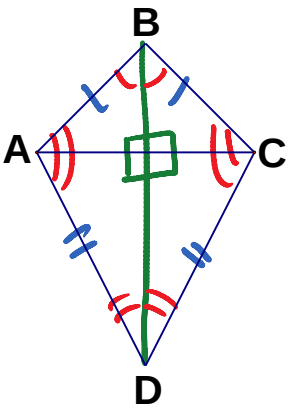
a) In the kite to the right, which sides appear to be congruent? $\overline{AB} \cong \overline{BC}$, $\overline{AD} \cong \overline{CD}$

b) Are the congruent sides opposite or consecutive?

c) Draw in the altitudes of the Δs and include the appropriate ∡ marks. What must be true about the diagonals of the kite? They are ⊥

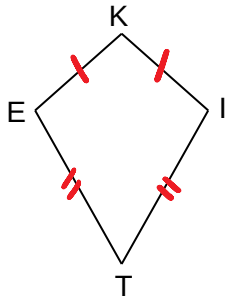
d) Which ∡'s of the Δ are ≅? $\measuredangle ABC \cong \measuredangle CBA$, $\measuredangle CDB \cong \measuredangle ADB$, $\measuredangle BAD \cong \measuredangle BCD$

e) Which ∡'s of the kite are ≅? $\measuredangle BAD \cong \measuredangle BCD$



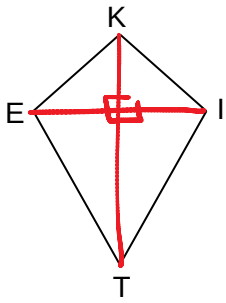
Properties of Kites

#1 2 pairs of consecutive sides are ≅



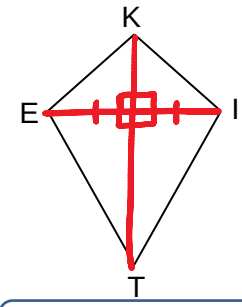
$\overline{EK} \cong \overline{IK}$
$\overline{ET} \cong \overline{IT}$

#2 Diagonals are ⊥



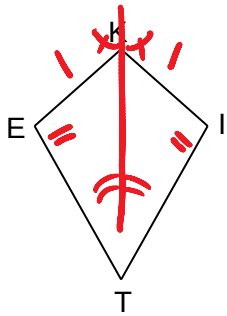
$\overline{EI}$ is ⊥ to $\overline{KT}$

#3 One diagonal is the ⊥ bisector of the other



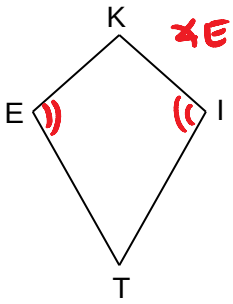
$\overline{KT}$ is ⊥ bisector of $\overline{EI}$

#4 One diagonal bisects a pair of opp ∡'s

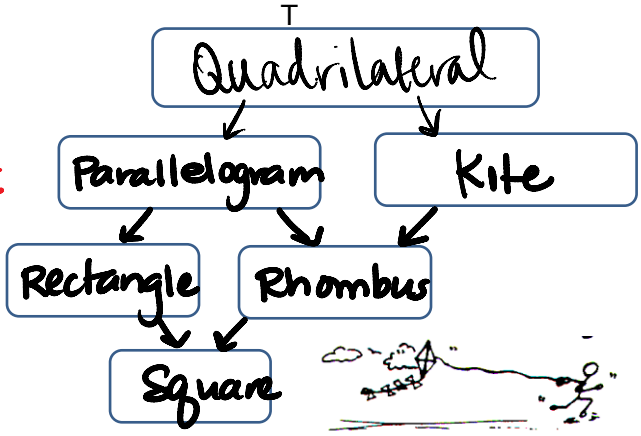


$\overline{KT}$ bisects $\measuredangle EKI$ and $\measuredangle ETI$

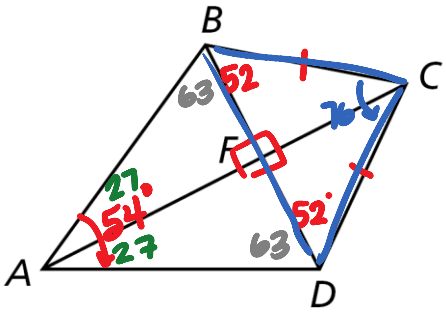
#5 One pair of opp ∡'s are ≅



$\measuredangle E \cong \measuredangle I$



1) In Kite ABCD, m∠DAB = 54°, and m∠CDF = 52°. Find each measure.



$52+52+a=180$
$104+a=180$
$a=76$

a) m∠BCD = 76.

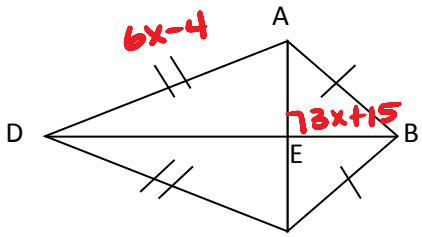
b) m∠ABC = 63.

c) m∠FDA = 63.

$27+90+b=180$
$117+b=180$
$b=63$

2) Given: ABCD is a Kite
AD = 6x – 4
∠AEB = 3x + 15

Find: DC

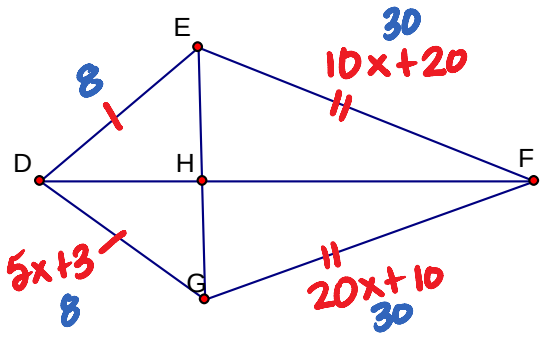


$3x+15=90$
$3x=75$
$x=25$

$AD=6(25)-4=146$
DC = 146

3) Given: $\overline{DE} \cong \overline{DG}$
EF = 10x + 20
GF = 20x + 10
DG = 5x + 3

Find the perimeter of Kite DEFG.

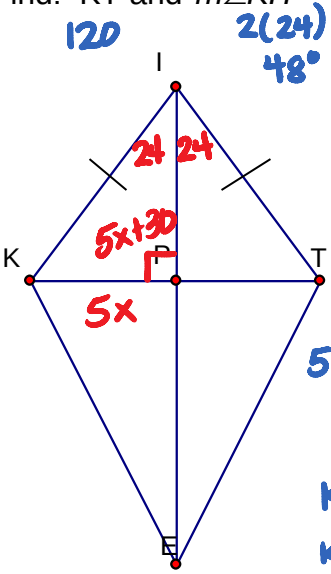


$20x+10=10x+20$
$10x=10$
$x=1$

$P=2(8)+2(30)$
$P=16+60$
P = 76

4) Given: KITE is a Kite.
$m\angle KPI = 5x + 30$
$KP = 5x$
$m\angle KIP = 24°$

Find: KT and $m\angle KIT$



$5x+30=90$
$5x=60$
$x=12$

$KP=5(12)=60$
$KT=2(60)=120$