

Consider parallelogram WXYZ.

Properties of Quadrilaterals

1. Find the measure of $\angle Z$

Opp \angle 's $\cong \Rightarrow \angle Z \cong \angle X$

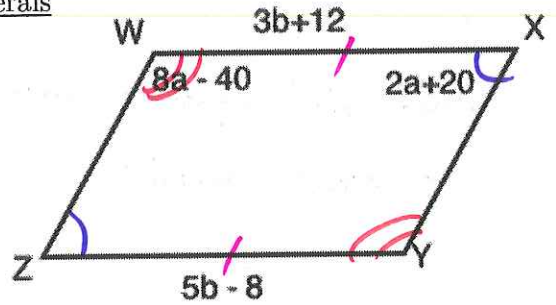
Consecutive \angle 's Supplementary: $\angle W + \angle X = 180^\circ$

$8a + 40 + 2a + 20 = 180$

$10a - 20 = 180$

$10a = 200 \rightarrow a = 20$

plug into $\angle X$:
 $2(20) + 20 = 60^\circ$



If $\angle X = 60^\circ$, $\angle Z = 60^\circ$

2. Find the length of \overline{ZY}

Parallelogram: opp sides $\cong \Rightarrow \overline{WX} \cong \overline{ZY}$

$5b - 8 = 3b + 12$

$5b = 3b + 20$

$2b = 20$

$b = 10$

plug into \overline{ZY}
 $5(10) - 8 = 50 - 8 = 42$

Consider parallelogram ABCD with diagonals intersecting at E.

3. If $AC = 12x - 6$, and $AE = 2x + 9$, find the length of EC.

Diagonals bisect each other

$2x + 9 + 2x + 9 = 12x - 6$

$4x + 18 = 12x - 6$

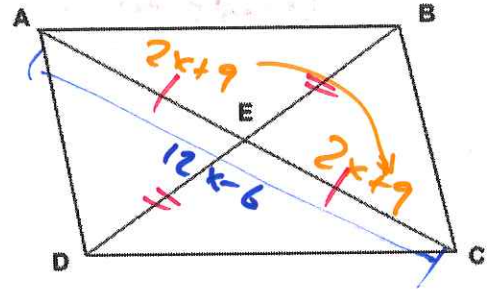
$18 = 8x - 6$

$24 = 8x$

$3 = x$

plug into \overline{AE}
 $2(3) + 9 = 6 + 9 = 15$

$\overline{AE} \cong \overline{EC}$, so $\overline{EC} = 15$



Consider rectangle ABCD for #4-5

4. If $AR = 4x - 2$ and $BR = x + 7$, find the length of AC.

Diagonals congruent $\overline{AR} \cong \overline{BR}$

$4x - 2 = x + 7$

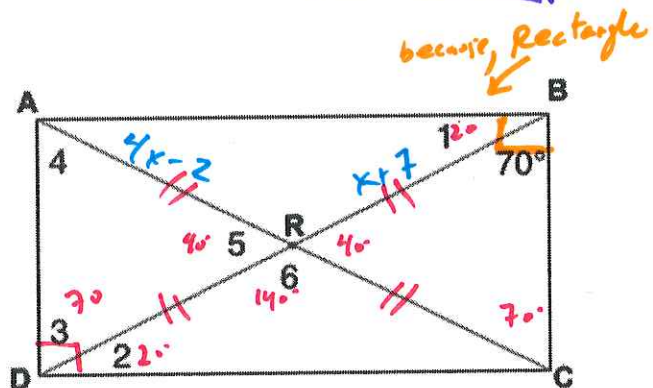
$4x = x + 9$

$3x = 9$

$x = 3$

plug into \overline{AR}
 $4(3) - 2 = 12 - 2 = 10$

$\overline{AC} \cong \overline{AR}$, so $\overline{AC} = 20$



4 Isosceles Δ 's!

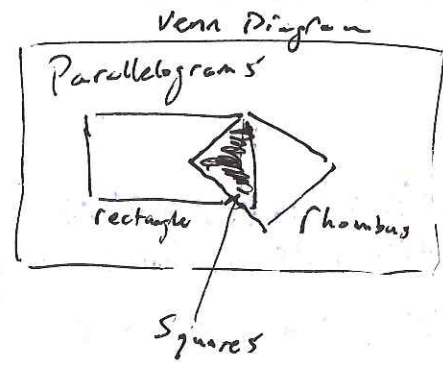
5. Find the angle measures:

$\angle 1 = 20^\circ$ $\angle 2 = 20^\circ$ $\angle 3 = 70^\circ$

$\angle 4 = 70^\circ$ $\angle 5 = 40^\circ$ $\angle 6 = 140^\circ$

6. True or false (and explain): All squares are rectangles.

True. All squares must have 4 right angles.



7. Consider rhombus WXYZ with diagonals intersecting at V.

Find the angle measures

$\angle 1 = 27^\circ$ $\angle 2 = 90^\circ$ $\angle 3 = 63^\circ$

$\angle 4 = 27^\circ$ $\angle XWZ = 126^\circ$

- Diagonals are \perp
- Diagonals are \angle bisectors

