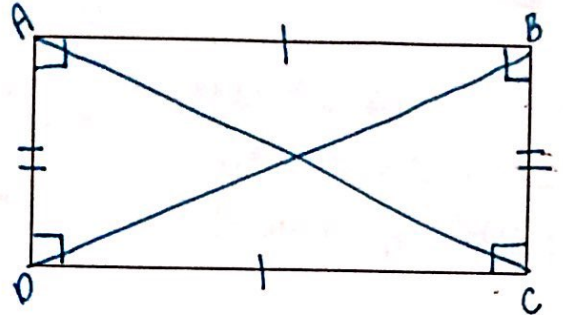


Day 3 – Properties of Rectangles, Rhombi, and Squares – Notes

Parallelograms can be broken down into three more specific types of quadrilaterals with the same properties as parallelograms. The three specific types also have some of their own properties. We are going to explore Geogebra (<https://www.geogebra.org/m/eD8JPPxi> & <https://www.geogebra.org/m/dEEPmFhd>) to determine this properties.

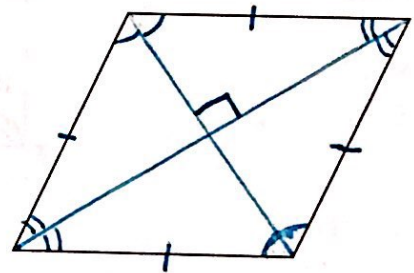
Rectangle

- All properties of parallelograms plus...
- Diagonals are congruent ($\overline{AC} \cong \overline{BD}$)
- Four right angles



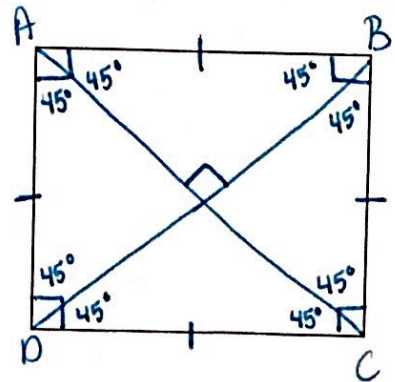
Rhombus

- All properties of parallelograms plus...
- Diagonals bisect angles
- Diagonals are perpendicular
- Four sides are congruent



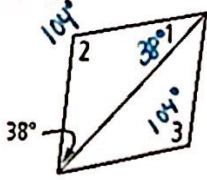
Square

- All properties of parallelograms plus...
- Four right angles
- Four congruent sides
- Diagonals are perpendicular, congruent ($\overline{AC} \cong \overline{BD}$) & bisect opposite angles and each other



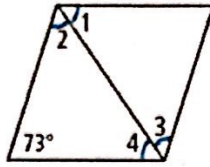
Practice: The following figures are rhombi. Find the measures of the missing angles.

a.



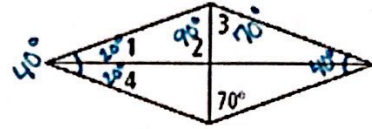
$\angle 1 = 38^\circ$ (diagonals bisect \angle 's)
 $\angle 2 = 104^\circ$ (triangle sum)
 $\angle 3 = 104^\circ$ (opp \angle 's are \cong)

b.



$\angle 1, \angle 2, \angle 3, \angle 4$
 $=$
 53.5°

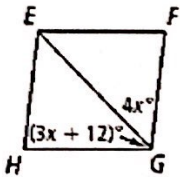
c.



$\angle 1 = 20^\circ$ (diagonals bisect \angle 's)
 $\angle 2 = 90^\circ$ (diagonals are \perp)
 $\angle 3 = 70^\circ$ (diagonals bisect \angle 's)
 $\angle 4 = 20^\circ$ (diagonals bisect \angle 's)

Practice: Find the value of each variable for each diagram. The type of parallelogram is stated.

d. Rhombus

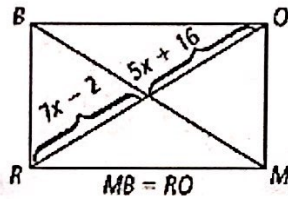


$3x + 12 = 4x$

$12 = x$

Diagonals bisect angles

e. Rectangle



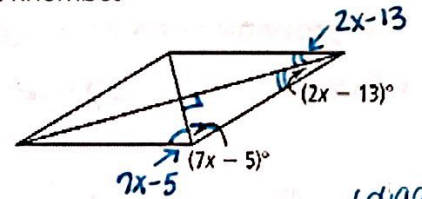
$7x - 2 = 5x + 16$

$2x = 18$

$x = 9$

diagonals bisect each other

f. Rhombus



consecutive \angle 's are supp / diagonals bisect \angle 's

$2x - 13 + 2x - 13 + 7x - 5 + 7x - 5 = 180$

$18x - 36 = 180$

$18x = 216$

$x = 12$

OR

$7x - 5 + 2x - 13 + 90 = 180$

$9x + 72 = 180$

$9x = 108$

$x = 12$

Triangle Sum Thm