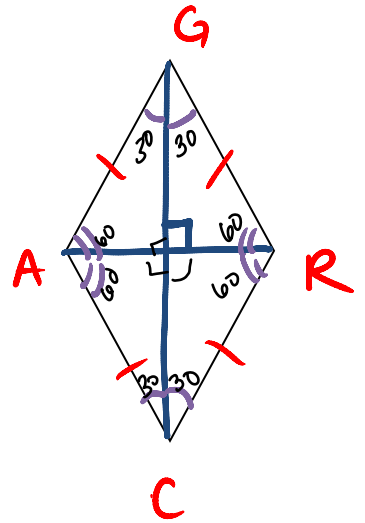


6.5 Rhombi and Square

Rhombus: Quadrilateral with 4 \cong sides. *

Theorems	Example
Diagonals of a rhombus are \perp	$\overline{GC} \perp \overline{AR}$
Each diagonal of a rhombus bisects a pair of opposite \angle 's	$\angle AGC \cong \angle RGC \cong \angle ACG \cong \angle RCG$ $\angle GAR \cong \angle RAR \cong \angle GRA \cong \angle CRA$

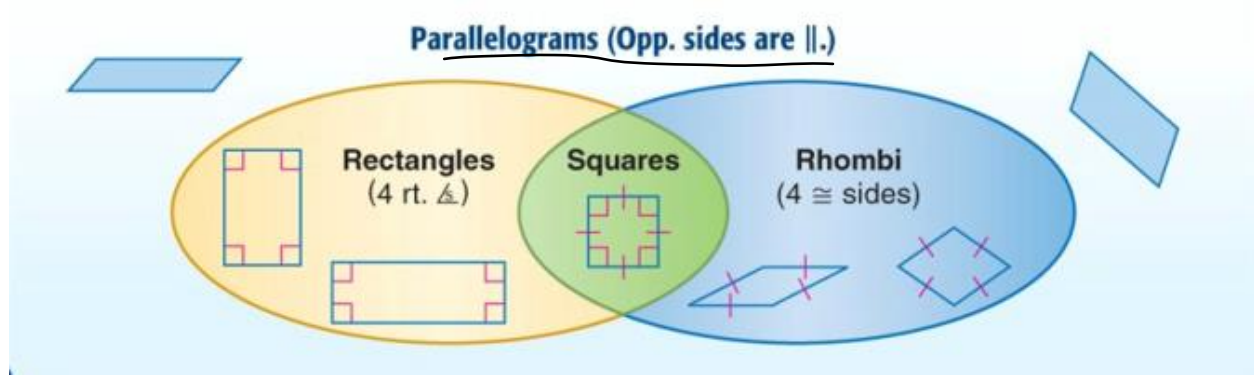


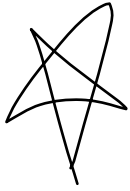
A quadrilateral is a rhombus:

- If diagonals of a parallelogram are \perp .
- If one diagonal of a parallelogram bisects a pair of opposite angles
- If one pair of consecutive sides of a parallelogram are \cong .

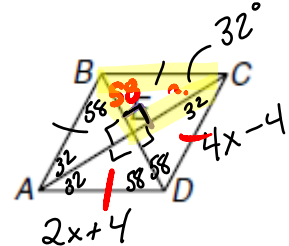
Square: Quadrilateral that is a rhombus and a rectangle

Meaning... has 4 \cong sides, has 4 rt. \angle 's





- ✓ If diagonals are ≅ and ⊥
 - Square, Rectangle, Rhombus
- ✓ If diagonals are ≅ and not ⊥
 - Rectangle
- ✓ If diagonals are ⊥ and not ≅
 - Rhombus



ABCD is a rhombus.

1. If $m\angle ABD = 60$, find $m\angle BDC$. 60
2. If $AE = 8$, find AC . 16
3. If $AB = 26$ and $BD = 20$, find AE .
4. Find $m\angle CEB$. 90
5. If $m\angle CBD = 58$, find $m\angle ACB$. 90
6. If $AD = 2x + 4$ and $CD = 4x - 4$, find x .

$$10^2 + x^2 = 26^2$$

$$100 + x^2 = 676$$

$$-100 \quad -100$$

$$x^2 = 576$$

$$x = 24$$

$$\begin{array}{r} 90 \\ +58 \\ \hline 148 \end{array} \quad \begin{array}{r} 180 \\ -148 \\ \hline 32 \end{array}$$

$$2x + 4 = 4x - 4$$

$$-2x \quad -2x$$

$$4 = 2x - 4$$

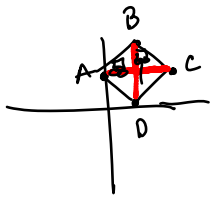
$$+4 \quad +4$$

$$8 = 2x$$

$$\frac{8}{2} = \frac{2x}{2}$$

$$4 = x$$

Determine whether the given vertices represent a parallelogram, rectangle, rhombus, or square. Explain your reasoning.



1. $A(0, 2), B(2, 4), C(4, 2), D(2, 0)$

Rhombus, Rectangle, Square

yes \perp

Slope

AC $\frac{2-2}{4-0} = \frac{0}{4} = 0$

BD $\frac{0-4}{2-2} = \frac{-4}{0} = \text{undefined}$

distance

$\sqrt{(4-0)^2 + (2-2)^2} = \sqrt{16+0} = 4$

$\sqrt{(2-2)^2 + (0-4)^2} = \sqrt{0+16} = 4$

2. $D(-2, 1), E(-1, 3), F(3, 1), G(2, -1)$

DF = 0

EG = $-\frac{4}{3}$

no \perp

DF = 5

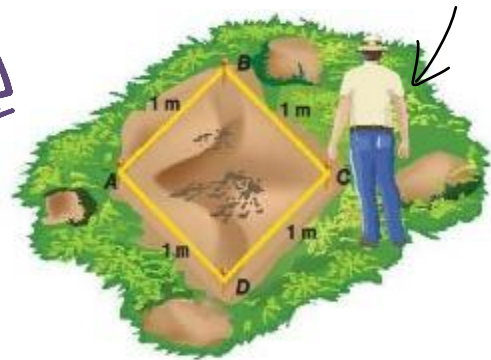
EG = 5

yes **Rectangle**

3. $A(-2, -1), B(0, 2), C(2, -1), D(0, -4)$

\perp AC \perp BD \cong AC = 4 \cong BD = 6 **no**

Rhombus



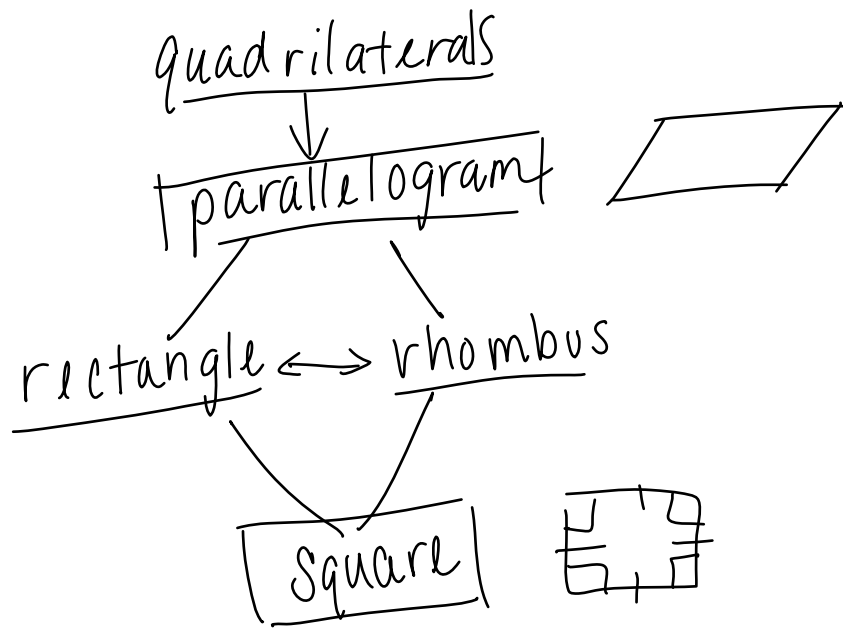
diagonal

what if:

slope $\frac{1}{2} \perp \frac{1}{2}$

dist $\sqrt{30} \cong \sqrt{31}$ **no**

none



GLASBERGEN

"I TURNED IN MY HOMEWORK TWO DAYS LATE,
BUT NORMALLY IT'S FOUR DAYS LATE,
SO TECHNICALLY IT'S EARLY!"

HW pg. 431 #7-12, 18-30

*Not odds, make sure you do all!