Chapter 8.4: Properties of Rhombuses, Rectangles, and Squares

Rhombus- a parallelogram with 4 congruent sides

Rectangle- a parallelogram with 4 right angles

Square- a parallelogram with 4 right angles and congruent sides.

Rhombus Corollary: A quad is a rhombus iff it has 4 congruent sides.

Picture:

Rectangle Corollary: A quad is a rectangle iff it has 4 right angles

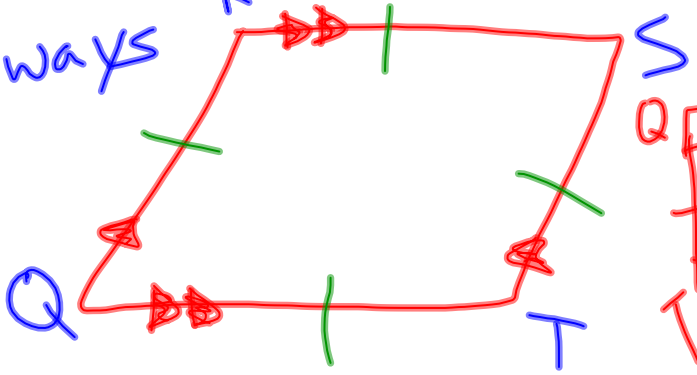
Picture:

Square Corollary: A quad is a square iff it is a rhombus and a rectangle.

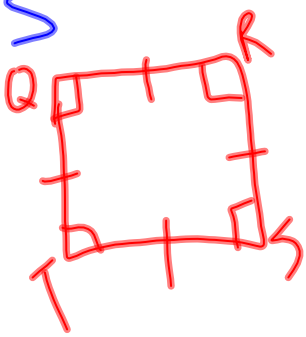
Picture:

ex. For any rhombus QRST, decide whether the statement is always or sometimes true. Draw a sketch and explain your reasoning.

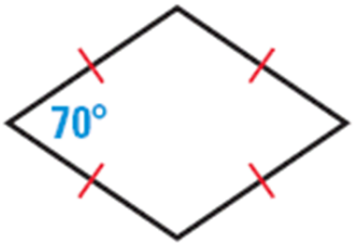
$\angle Q \cong \angle S$ always



$\angle Q \cong \angle R$ sometimes



ex. Classify the special quad. Explain your reasoning.



Theorem 8.11: A parallelogram is a rhombus iff its diagonals are perpendicular.

(intersect to make 90° angle)

Theorem 8.12: A parallelogram is a rhombus iff each diagonal bisects a pair of opposite angles.

Theorem 8.13: A parallelogram is a rectangle iff its diagonals are congruent.

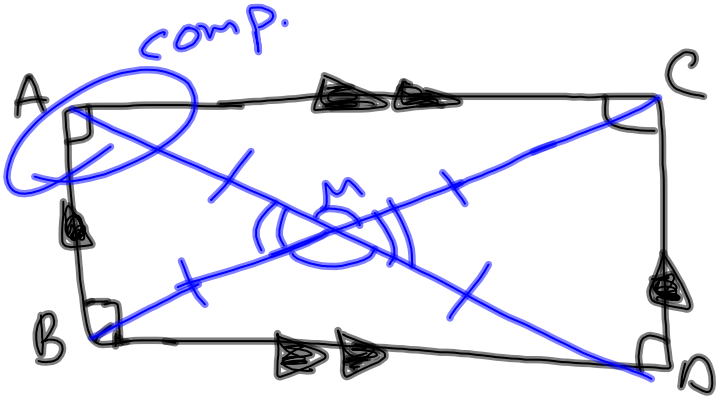
$-\frac{2}{5}$ $\frac{5}{2}$

parallel lines → same slope

perp. lines → neg. rec.

3 $-\frac{1}{3}$

Sketch rectangle ABCD. List everything you know about it.



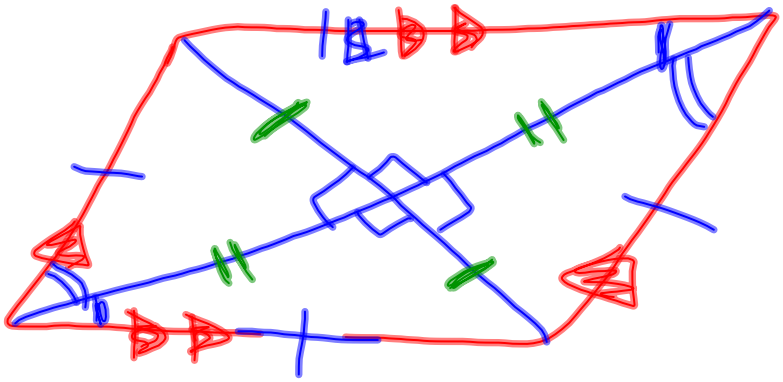
$\overline{AC} \cong \overline{BD}$

$\angle CAB \cong \angle BDC$

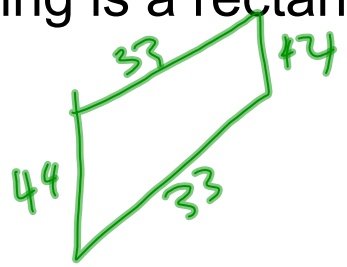
$\angle ACD \cong \angle ABL$

$\overline{AB} \cong \overline{CD}$

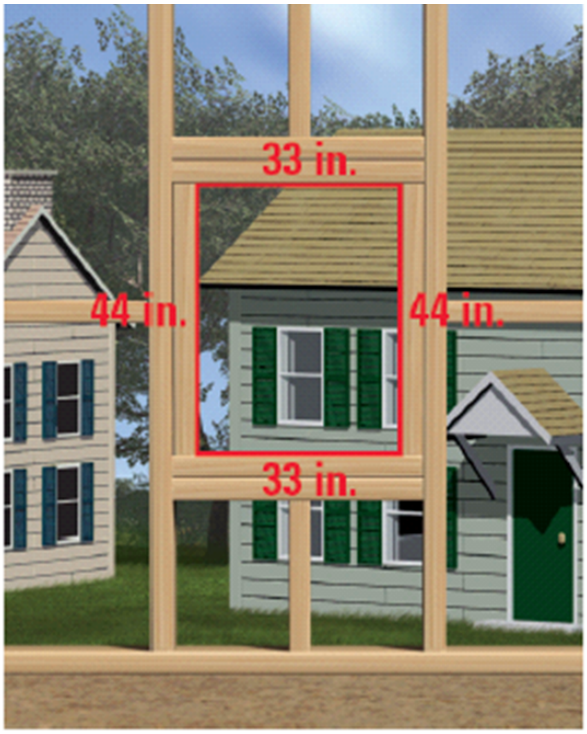
Proof Theorem 8.11: If a parallelogram has perpendicular diagonals, then its a rhombus.



Can you assume the opening is a rectangle?



The diagonals are 54.8in and 55.3in, what can you conclude?



Homework: Chapter 8.4 pg.537
#'s 4,8,10,14,20-28e,
32,34,38,40,44,46,50