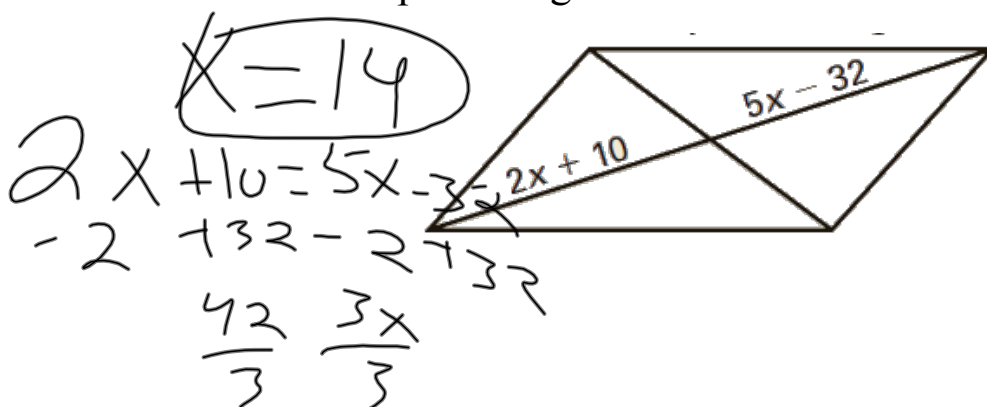# Warm Up

1.   Give five ways to prove that a quadrilateral is a
     parallelogram.

opp. sides ∥   diag. bis.
4 sides   ∠'s add 360°
opp ∠'s ≅   opp sides ≅
adj. ∠'s supp.

2.   Find the value of x in the parallelogram.

$x = 14$

$2x + 10 = 5x - 32$
$-2 \quad +32 \quad -2 \quad +32$
$\dfrac{42}{3} \quad \dfrac{3x}{3}$

$2x + 10$

$5x - 32$

8-4   Rhombuses, Rectangles, and Squares
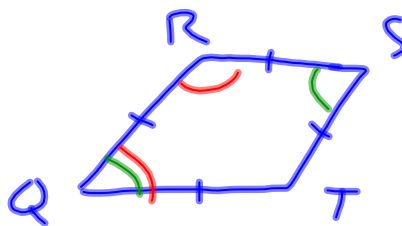
Rhombus - a parallelogram with 4 ≅ sides

Rectangle - a parallelogram with 4 rt. angles

Square - a parallelogram with 4 ≅ sides and 4 rt. ∠'s.

Ex 1   For any rhombus $QRST$, decide whether the statement is *always* or *sometimes* true. Draw a sketch and explain your reasoning.

     a. $\angle Q \cong \angle S$

            always

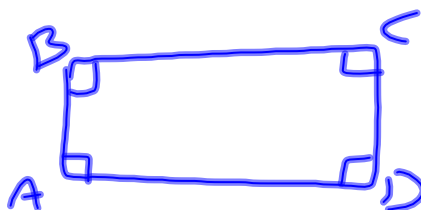   b. $\angle Q \cong \angle R$

            Sometimes

Ex. 2   For any rectangle $ABCD$, decide whether the statement is *always* or *sometimes* true. Draw a sketch and explain your reasoning.
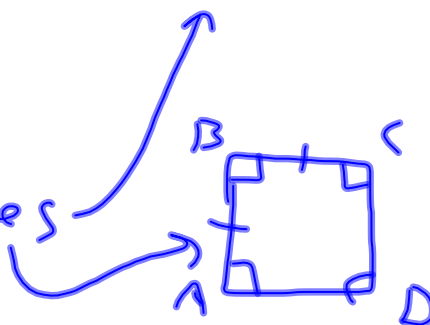
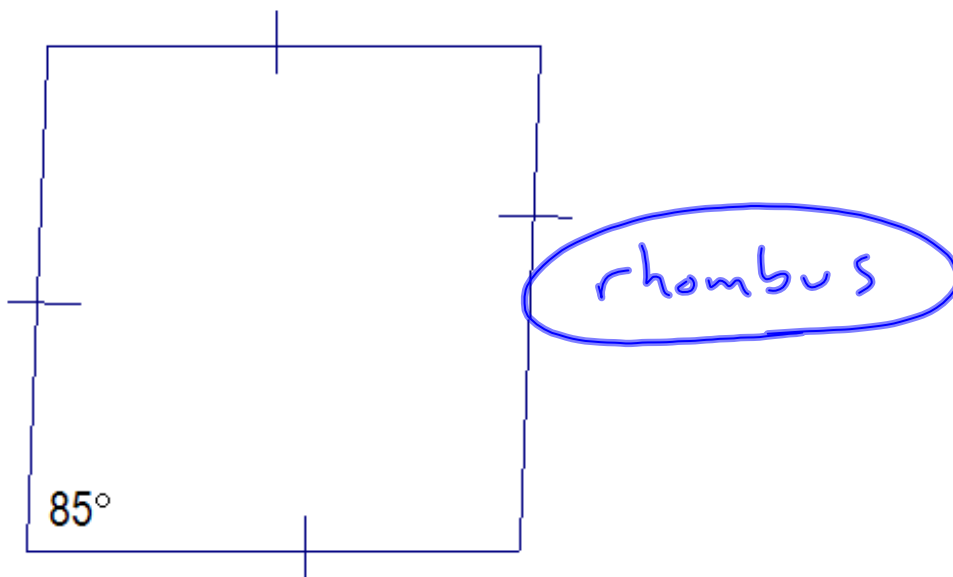   a. $\overline{AB} \cong \overline{CD}$

            always

     b. $\overline{AB} \cong \overline{BC}$

            sometimes

Ex 3   Classify the special quadrilateral. Explain your reasoning.

$85°$

rhombus

Ex. 4   Is a square a rectangle? Is a rectangle a square?

Yes   No
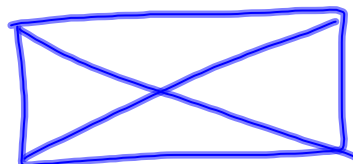
Is a rhombus a square? Is a square a rhombus?
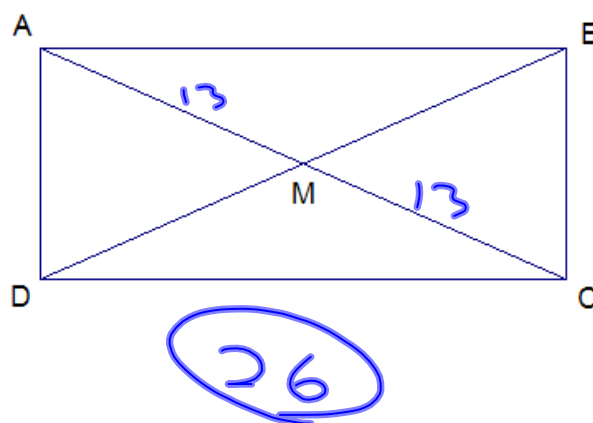
No   Yes

Properties of Diagonals

Diagonals of a Rhombus   Diagonals of a Rectangle

$\perp$

bisect ∠'s

$\cong$

Ex. 5   Quadrilateral *ABCD* is a rectangle and *MC* = 13.
         Find *BD*.

13

M   13

26

Ex 6   The diagonals of the rhombus *LMNP* intersect
        at *Q*. Given that *LM* = 5 and $m\angle QLM = 30°$, find
        the indicated measures.

$m\angle LMQ =$ $60°$

$m\angle LQM =$ $90°$

$MN =$ 5