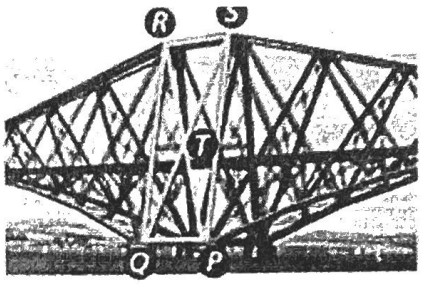
5.3 HW Properties of Special Quadrilaterals Key

1. **Vocabulary** What is another name for an *equilateral quadrilateral*? an *equiangular quadrilateral*? a *regular quadrilateral*?

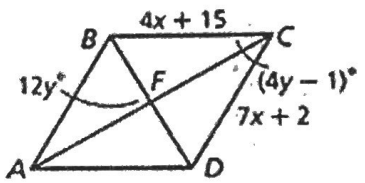
rhombus; rectangle; square

Engineering The braces of the bridge support lie along the diagonals of rectangle $PQRS$. $RS = 160$ ft, and $QS = 380$ ft. Find each length.



2. TQ 190 ft
3. PQ 160 ft
4. ST 190 ft
5. PR 380 ft

$ABCD$ is a rhombus. Find each measure.



6. AB $32\frac{1}{3}$
7. $m\angle ABC$ 122°

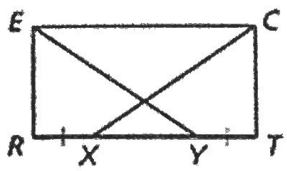
8. **Multi-Step** The vertices of square $JKLM$ are $J(-3, -5)$, $K(-4, 1)$, $L(2, 2)$, and $M(3, -4)$. Show that the diagonals of square $JKLM$ are congruent perpendicular bisectors of each other.

$\overline{JL} = \sqrt{74}$
$\overline{KM} = \sqrt{74}$

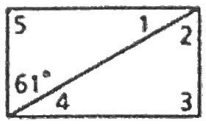
slope of $\overline{JL} = \frac{7}{5}$
$\overline{KM} = -\frac{5}{7}$
> opposite reciprocals means ⊥.

midpoint of $\overline{JL} = (-\frac{1}{2}, -\frac{3}{2})$
midpoint of $\overline{KM} = (-\frac{1}{2}, -\frac{3}{2})$

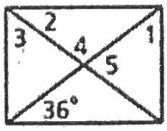
9. Given: $RECT$ is a rectangle. $\overline{RX} \cong \overline{TY}$
Prove: $\triangle REY \cong \triangle TCX$



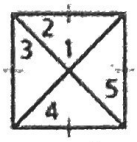
Find the measures of the numbered angles in each rectangle.

18. 

$m\angle 1 = 29°$
$\angle 2 = 61°$
$\angle 3 = 90°$
$\angle 4 = 29°$
$\angle 5 = 90°$

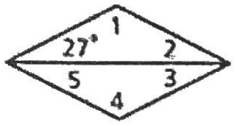
19. 

$m\angle 1 = 54°$
$\angle 2 = 36°$
$\angle 3 = 54°$
$\angle 4 = 108°$
$\angle 5 = 72°$

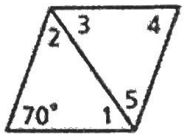
20. 

$m\angle 1 = 90°$
$\angle 2 = 45°$
$\angle 3 = 45°$
$\angle 4 = 45°$
$\angle 5 = 45°$

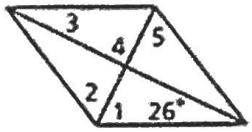
Find the measures of the numbered angles in each rhombus.

21. 

$m\angle 1 = 126°$
$\angle 2 = 27°$
$\angle 3 = 27°$
$\angle 4 = 126°$
$\angle 5 = 27°$

22. 

$m\angle 1 = 55°$
$\angle 2 = 55°$
$\angle 3 = 55°$
$\angle 4 = 70°$
$\angle 5 = 55°$

23. 

$m\angle 1 = 64°$
$\angle 2 = 64°$
$\angle 3 = 26°$
$\angle 4 = 90°$
$\angle 5 = 64°$

Tell whether each statement is sometimes, always, or never true.
(*Hint:* Refer to your graphic organizer for this lesson.)

24. A rectangle is a parallelogram. A
25. A rhombus is a square. S
26. A parallelogram is a rhombus. S
27. A rhombus is a rectangle. S
28. A square is a rhombus. A
29. A rectangle is a quadrilateral. A
30. A square is a rectangle. A
31. A rectangle is a square. S