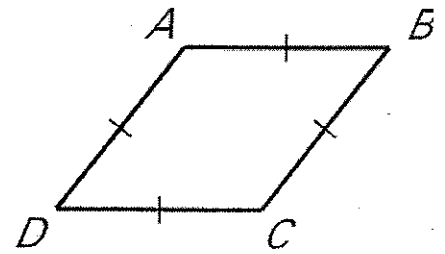


8.4 Properties of Rhombi Day 1

A Rhombus is a parallelogram with four congruent sides.

Because it is a parallelogram we know:

1. Opposite sides are parallel
2. Opposite sides are \cong
3. Opposite angles are \cong
4. Consecutive angles are supp.
5. the diagonals bisect each other



Because it is a **SPECIAL** parallelogram it has several additional properties.

6. the diagonals are perpendicular
7. the diagonals bisect opp. \angle s.

PRACTICE

1. Draw rhombus PQRS with the diagonals intersecting at point T.

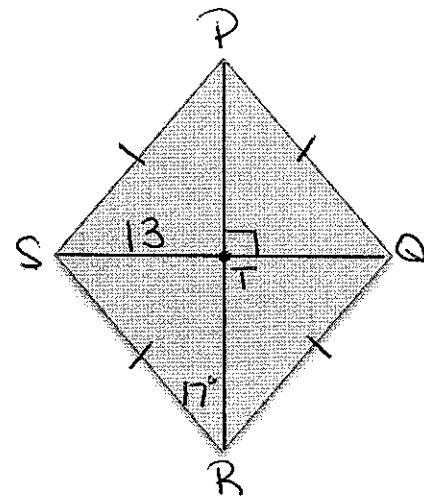
a) If $ST = 13$ find SQ . $SQ = 26$

b) If $m\angle PRS = 17^\circ$ find $m\angle QRS$. $\angle QRS = 34^\circ$

c) Find $m\angle STR$. $\angle STR = 90^\circ$

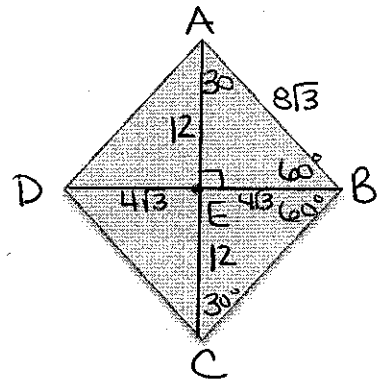
d) If $SP = 4x - 3$ and $PQ = 18 + x$ find x . $x = 7$

$4x - 3 = 18 + x$
 $3x = 21$
 $x = 7$



2. Draw rhombus ABCD with the diagonals intersecting at point E. If $\angle ABC = 120^\circ$ and $EC = 12$ find the following.

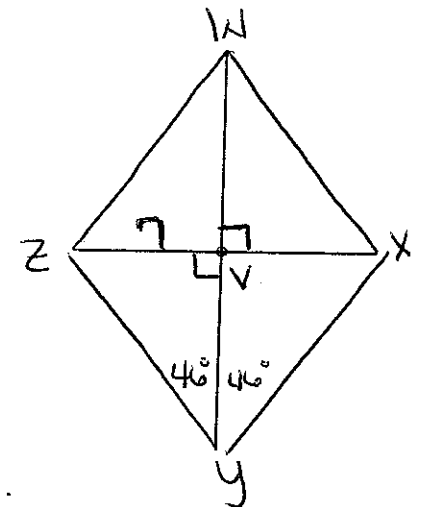
- a) $m\angle BCE = 30^\circ$ b) $m\angle BEC = 90^\circ$
- c) $AD = 8\sqrt{3}$ d) $DE = 4\sqrt{3}$
- e) $BD = 8\sqrt{3}$ f) What kind of triangle is ABD?
 Equilateral
 Equiangular
 regular poly



$S\sqrt{3} = \text{long}$ $2S = h$
 $S\sqrt{3} = 12$ $2(4\sqrt{3}) = h$
 $S = 4\sqrt{3}$ $8\sqrt{3} = h$

3. Draw rhombus WXYZ with the diagonals intersecting at point V. If $\angle WYZ = 46^\circ$ and $VZ = 7$ find the following.

- a) $VY = 6.8$ $\tan 46^\circ = \frac{7}{VY}$
 $VY = \frac{7}{\tan 46}$
 $* VY = 6.7598...$
- b) $ZY = 9.7$ $\sin 46 = \frac{7}{ZY}$
 $ZY = \frac{7}{\sin 46}$
 $* ZY = 9.7311...$
- c) perimeter of WXYZ 38.8 $* \text{Perim} = 4(9.7) = 38.8$



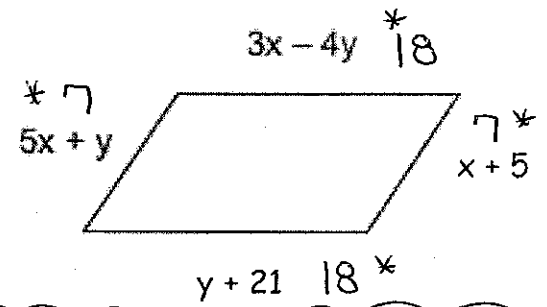
4. The figure to the right is a parallelogram. Is it a rhombus? Why or why not?

$$3x - 4y = y + 21 \rightarrow 3x - 5y = 21$$

$$5x + y = x + 5 \rightarrow 4x + y = 5$$

$$\begin{array}{r} 3x - 5y = 21 \\ + 20x + 5y = 25 \\ \hline 23x = 46 \\ x = 2 \end{array}$$

$$\begin{array}{r} 3(2) - 5y = 21 \\ 6 - 5y = 21 \\ -5y = 15 \\ y = -3 \end{array}$$



No it is not a rhombus...
 all 4 sides are not \cong