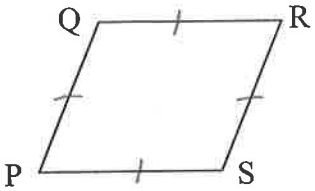
Honors Geometry
Section 6.4 Notes
Properties of Rhombuses, Rectangles and Squares

Name: Key

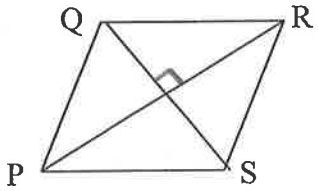
****All of these shapes are special types of parallelograms and therefore have the same properties as parallelograms. REFER TO YOUR CHART!!**

A **Rhombus** is a parallelogram with four congruent sides.



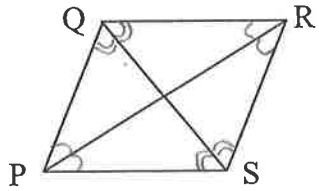
$\overline{PQ} \cong \overline{QR} \cong \overline{RS} \cong \overline{SP}$

A **Rhombus** is a parallelogram in which its diagonals are perpendicular.



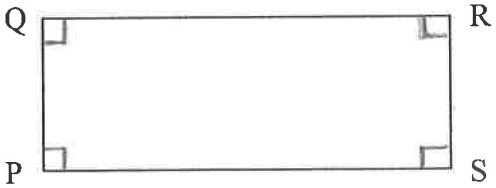
$\overline{QS} \perp \overline{PR}$

A **Rhombus** is a parallelogram in which its diagonals bisect each pair of opposite angles.



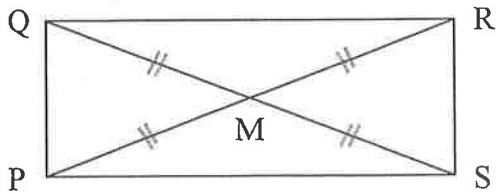
$\overline{QS}$ bisects $\angle PQR$ and $\angle PSR$
$\overline{PR}$ bisects $\angle QPS$ and $\angle QRS$

A **Rectangle** is a parallelogram with four right angles.



$\angle P, \angle Q, \angle R, \angle S$ are right angles

A **Rectangle** is a parallelogram in which its diagonals are congruent.

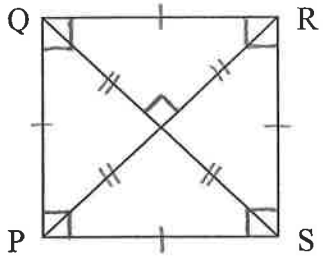


$\overline{QS} \cong \overline{PR}$

$\overline{QM} \cong \overline{MR} \cong \overline{PM} \cong \overline{MS}$

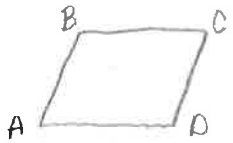
* What kind of triangles are formed ?

A **Square** has the properties of both rhombus and rectangle.



*All of these properties prove that all squares consist of 45 - 45 - 90 triangles.

Practice Problems



For any rhombus ABCD, decide whether the statement is *always*, *sometimes* or *never* true. Explain why.

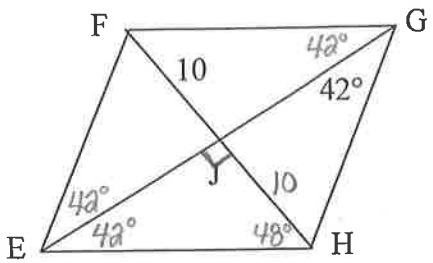
1. $\angle B \cong \angle D$	**2.** $\angle D$ is right	**3.** $\overline{AC} \cong \overline{BD}$
Always - Opposite angles are congruent.	Sometimes - Only if the rhombus is a square.	Sometimes - Only if the rhombus is a square.

For any rectangle ABCD, decided whether the statement is *always*, *sometimes* or *never* true. Explain why.

1. $\angle A \cong \angle B \cong \angle C \cong \angle D$	**2.** $\overline{AC} \perp \overline{BD}$	**3.** $\overline{AC} \cong \overline{BD}$
Always - All angles are 90°.	Sometimes - Only if rectangle is a square.	Always - Diagonals are congruent.

The diagonals of rhombus EFGH intersect at J. Given that $FJ = 10$ and $m\angle HGE = 42$, find the indicated measures.

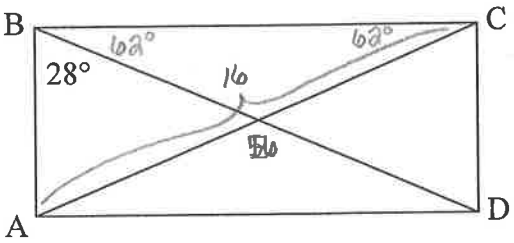
1. $m\angle FGE$ — 42°
2. FH — 20
3. $m\angle HEG$ — 42°



4. $m\angle EHJ$ — 180-90-42 — 48°
5. $m\angle FJE$ — 90°
6. $m\angle GFJ$ — 48°

The diagonals of rectangle ABCD intersect at E. Given that $AC = 16$ and $m\angle ABD = 28$, find the indicated measures.

1. $m\angle CBD$ — 90-28 — 62°
2. BD — 16
3. $m\angle BEC$ — 180-62-62 — 56°

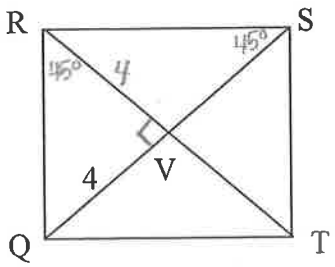


* not drawn to scale

4. AE — 8
5. $m\angle CED$ — 180-56 — 124°
6. ED — 8

The diagonals of square QRST intersect at V. Given that $QV = 4$, find the indicated measures.

1. $m\angle QRT$ — 45°
2. RT — 8
3. $m\angle SVT$ — 90°



4. VS — 4
5. $m\angle RSQ$ — 45°
6. RV — 4