Geometry Worksheet (social)

www.yilmaths.net

RHOMBUS

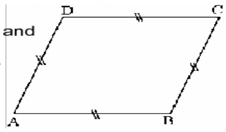
A parallelogram whose all sides have the same length is called **"rhombus"**.

Properties of Rhombus

1. In a rhombus, the opposite sides are parallel.

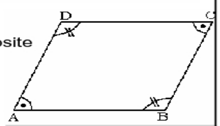
$|AB| = |BC| = |CD| = |DA|$

$[AB] // [DC]$ and $[AD] // [BC]$.

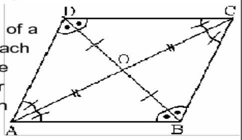


2. In a rhombus, the measure of the opposite angles are equal.

$m(\angle A) = m(\angle C)$
$m(\angle B) = m(\angle D)$



3. The diagonals of a rhombus bisect each other and they are the angle bisector of the angle which they belong.



$[AC] \perp [BD]$

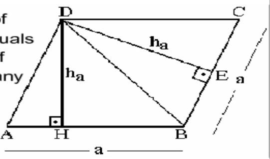
$|OA| = |OC|$, $|OD| = |OB|$,

$m(\angle BAC) = m(\angle ACD)$

$m(\angle BDC) = m(\angle DBA)$

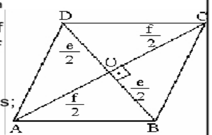
Area of Rhombus

1. The area of a rhombus equals the product of the length of any base and the length of the its altitude.



$A(ABCD) = a \cdot h_a$

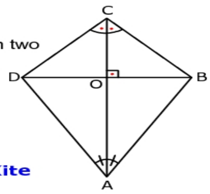
2. If the diagonals of rhombus is $|AC| = f$ and $|BD| = e$, then the area of rhombus is;



$A(ABCD) = \frac{e \cdot f}{2}$

KITE

A quadrilateral with two pairs of congruent adjacent sides is called kite.



Properties of Kite

1. The diagonals of kite are perpendicular. For example, in the kite above,

$[AC] \perp [BD]$.

2. In a kite ABCD, the longer diagonal [AC] bisects $\angle A$ and $\angle C$. For example, in the kite above, $\angle DCO = \angle BCO$ and $\angle DAO = \angle BAO$.

3. In a kite ABCD, the longer diagonal [AC] bisects the shorter diagonal [DB]. For example, in the kite above, $|OD| = |OB|$.

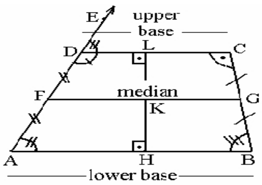
Area of Kite

The diagonals of kite are perpendicular. Hence the area of kite is

$$\frac{|AC| \cdot |BD|}{2} = \frac{e \cdot f}{2}$$

TRAPEZOID:

A quadrilateral that has at least one pair of opposite sides parallel is called a **trapezoid**.



Properties of Trapezoid

1. In a trapezoid, $|AB| = a$ $|DC| = c$, and $[AB] // [DC]$.

2. In a trapezoid, the sum of the measures of interior angles, which are at the endpoints of any one of two nonparallel sides equals 180^0.

$m(\angle A) + m(\angle D) = 180^0$

$m(\angle B) + m(\angle C) = 180^0$.

3. The segment that connects the midpoints of the non parallel sides of a trapezoid is called "the median of the trapezoid". The median of a trapezoid is parallel to each base and its length is half the sum of the lengths of the bases.

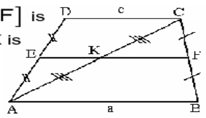
a) $|AF| = |FD|$, $|BG| = |GC|$ and $|KL| = |KH|$

b) $[AB] // [DC] // [FG]$

c) $|FG| = \frac{|AB| + |DC|}{2} = \frac{a + c}{2}$

4. The median divides the height into two equal parts, $|LK| = |KH| = \frac{|LH|}{2}$

5. In a trapezoid, $[EF]$ is median and point K is midpoint of diagonal $|AC|$,



then; $|AK| = |KC| = \frac{|AC|}{2}$,

$|EK| = \frac{c}{2}$ and $|KF| = \frac{a}{2}$.

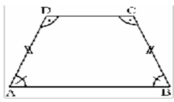
Types of Trapezoid

Isosceles Trapezoid:

If the non parallel sides namely the legs, of a trapezoid are congruent, it is called an "isosceles trapezoid".

Properties of isosceles Trapezoid

1. Base angles of an isosceles trapezoid are congruent.



$m(\angle A) = m(\angle B)$ and $m(\angle C) = m(\angle D)$

2. ABCD is an isosceles trapezoid, If $[DH] \perp [AB]$ and $[CE] \perp [AB]$ then

$|AH| = |EB| = \frac{|AB| - |DC|}{2}$