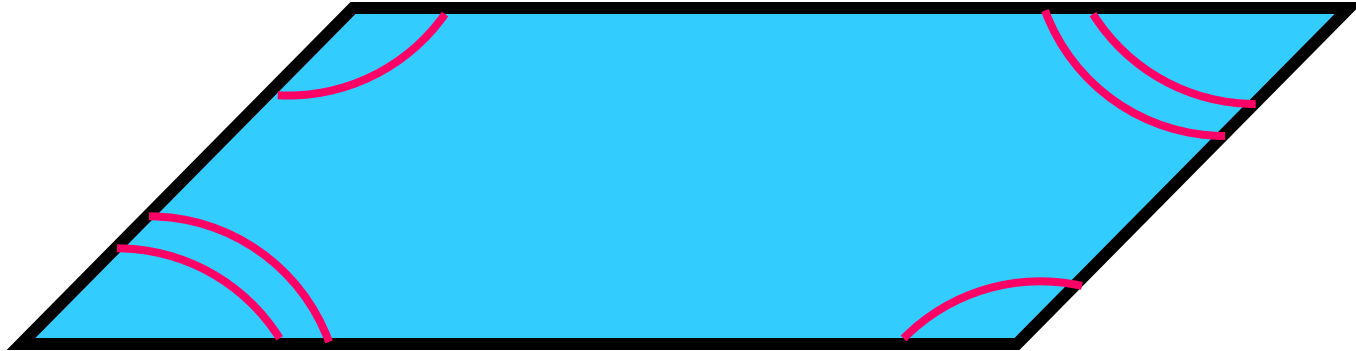


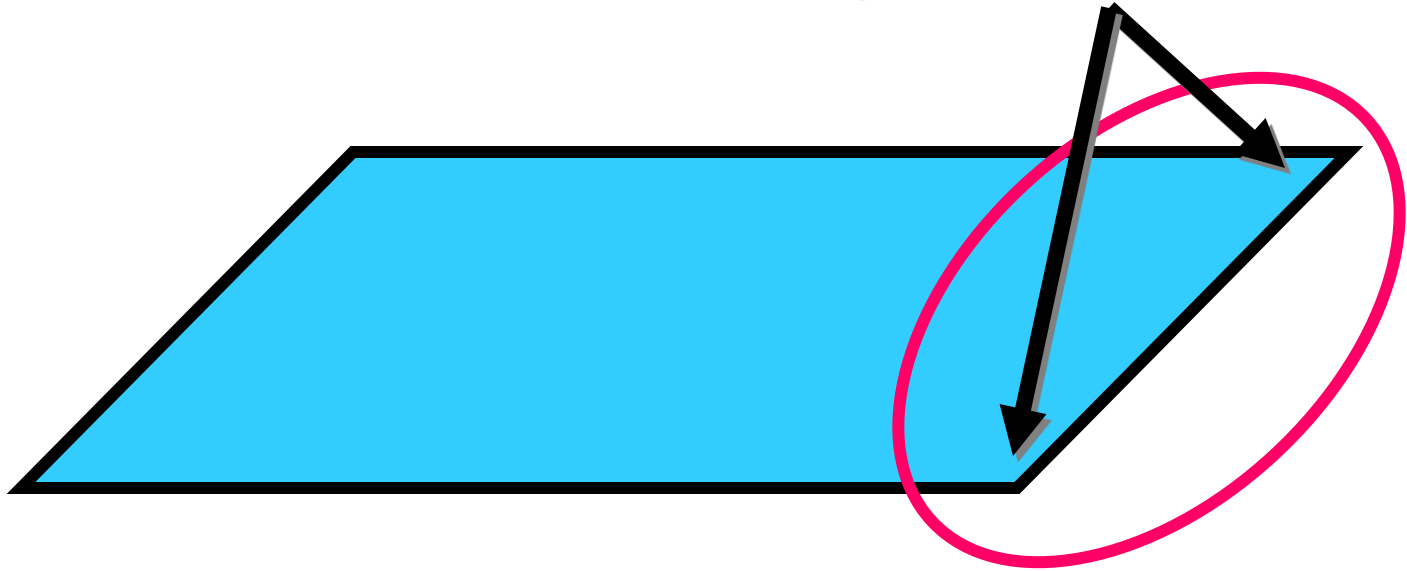
# **PROPERTIES OF PARALLELOGRAMS**

# Parallelograms

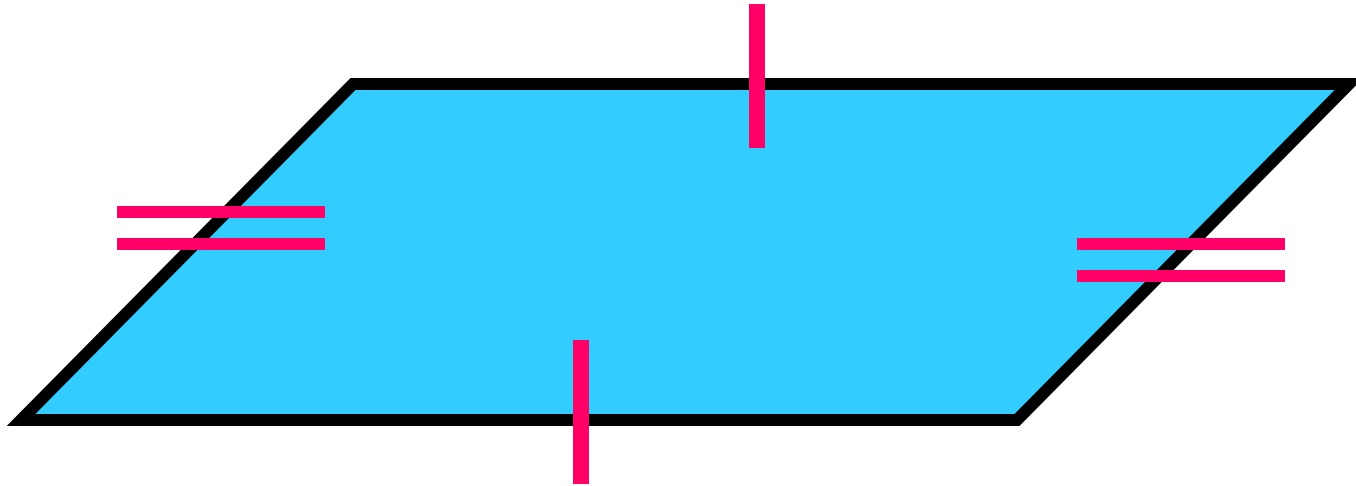


**Opposite angles are congruent**

ADD UP TO 180

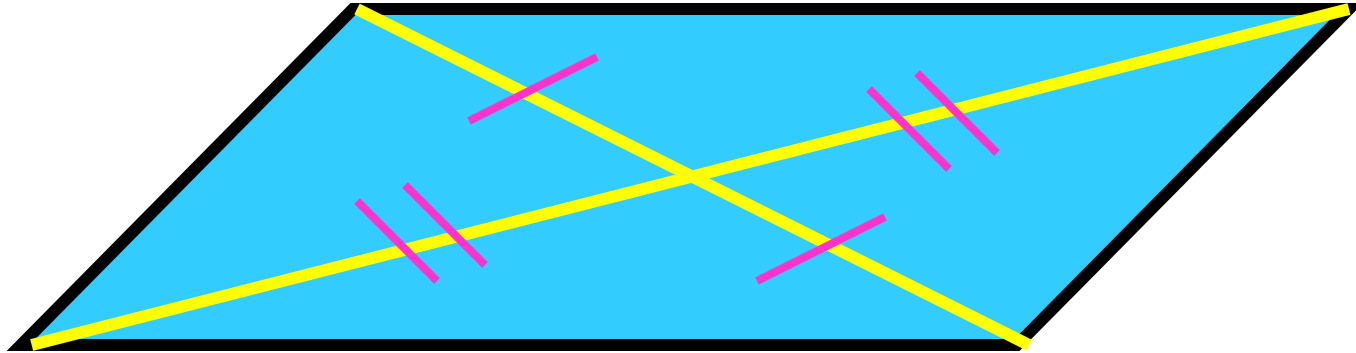


**Consecutive angles are supplementary.**



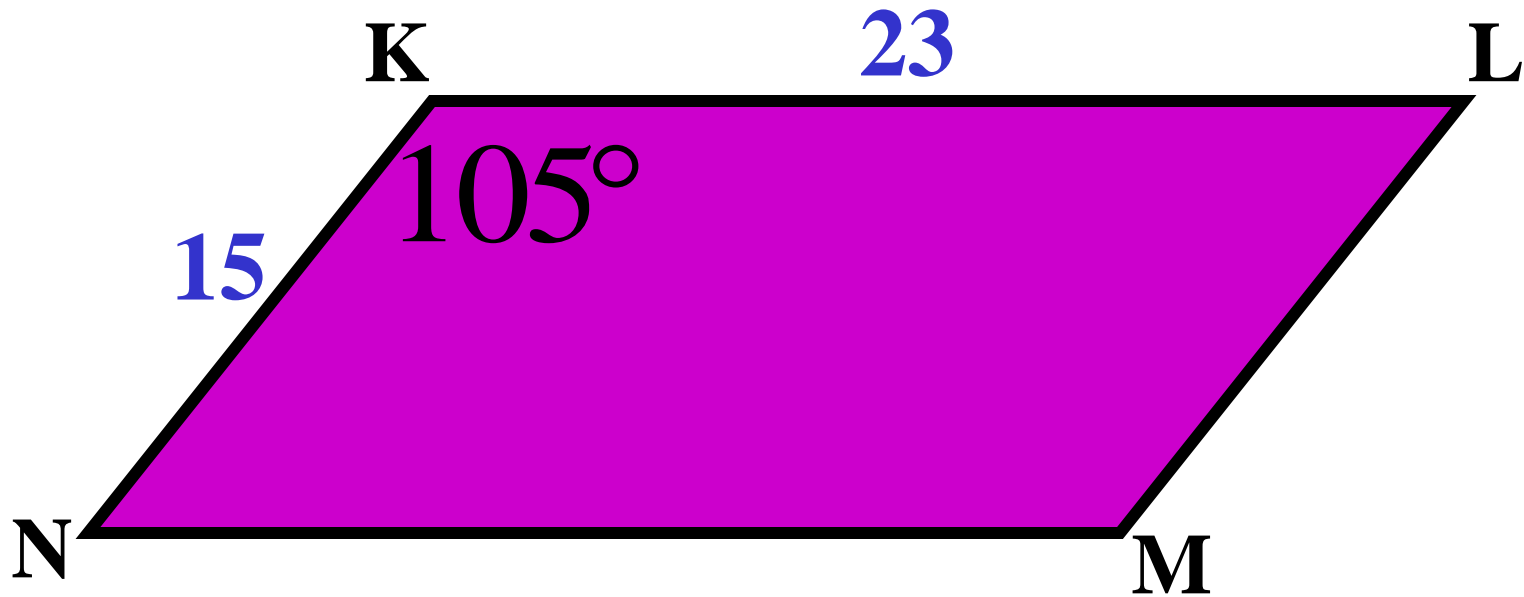
**Opposite sides are congruent**

**Diagonals bisect each other.**



**This cuts the diagonals  
into two equal parts.**

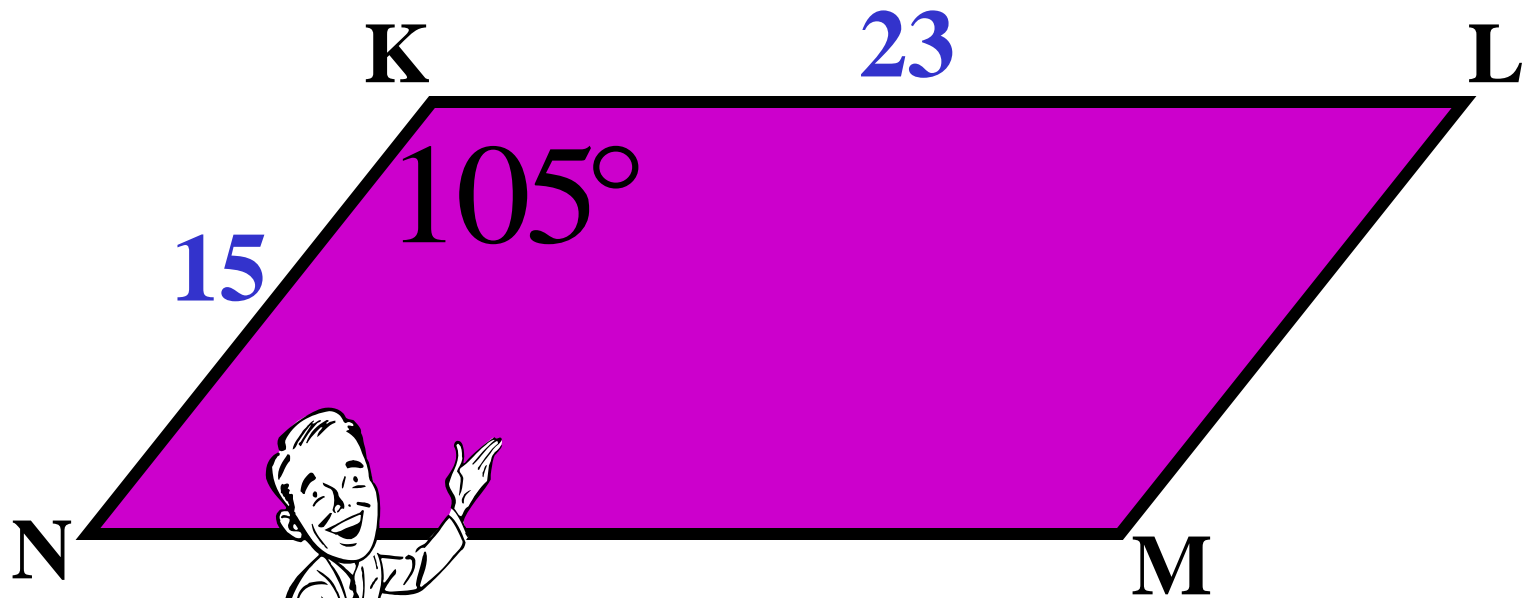
1. Find LM and MN.



LM = 15 and MN = 23

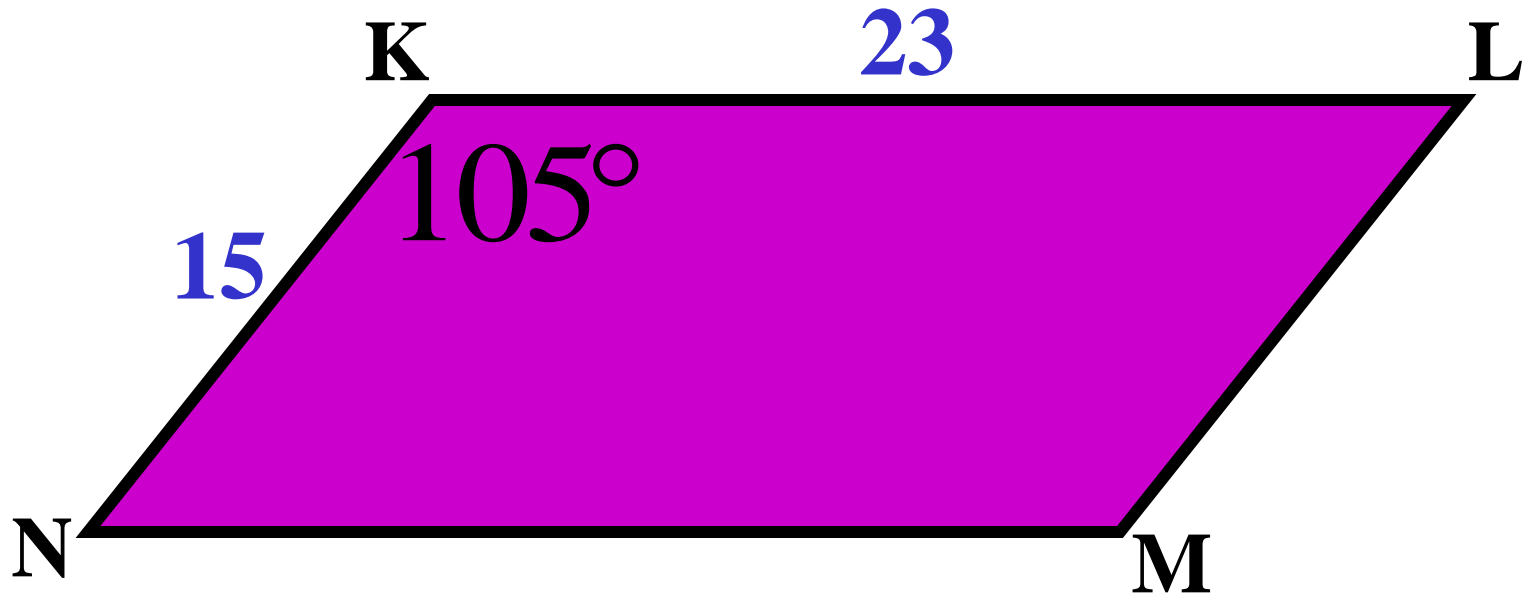


2. Find  $\angle M$



$$\angle M = 105^\circ$$

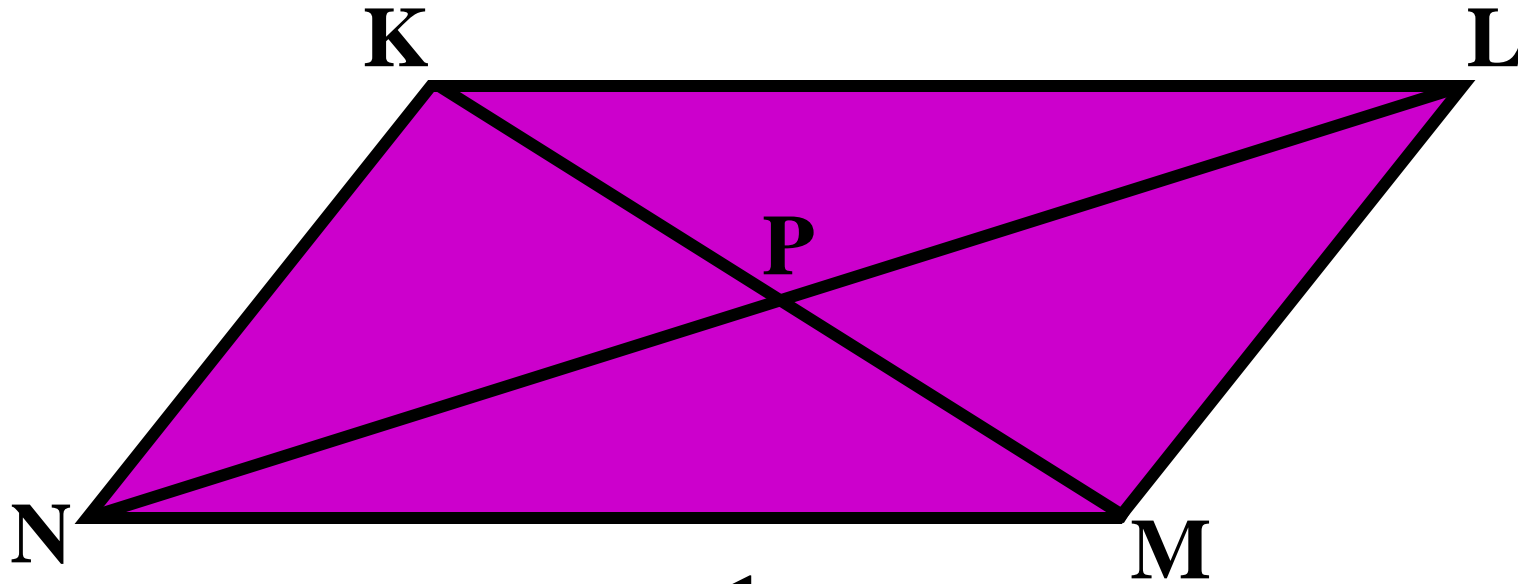
3. Find  $\angle L$



$$\angle L = 180 - 105 = 75^\circ$$

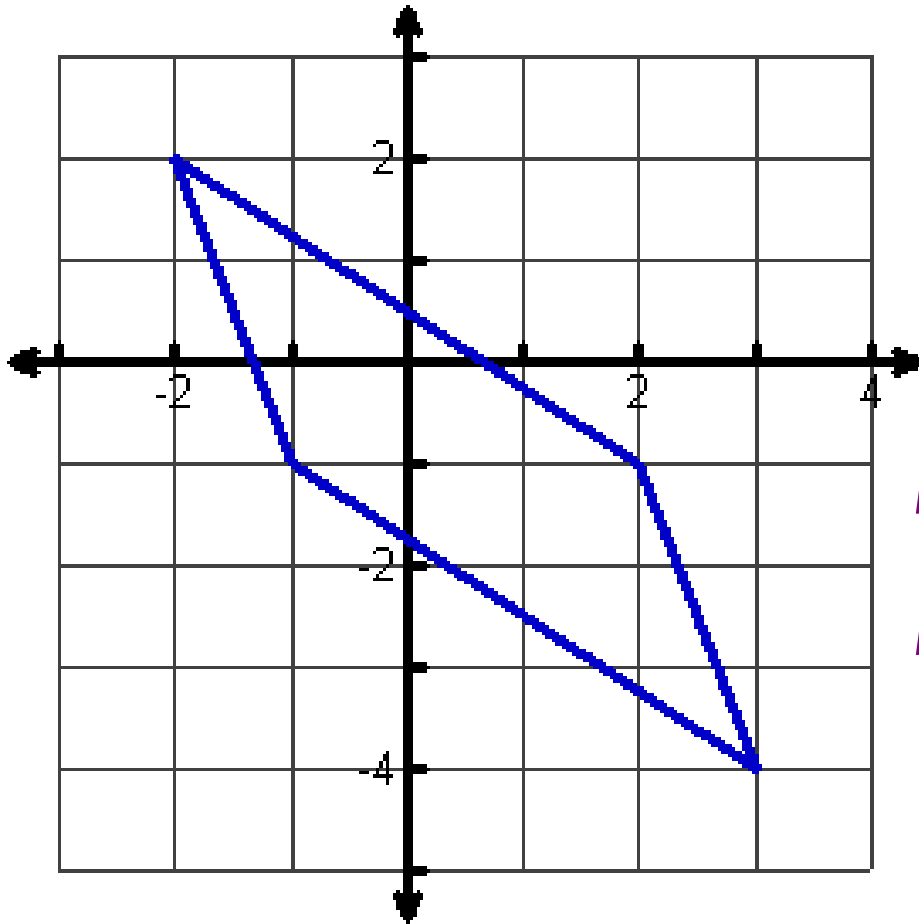


4. Find  $KP$  if  $KM = 32$ .



$$KM = \frac{1}{2} (32) = 16$$

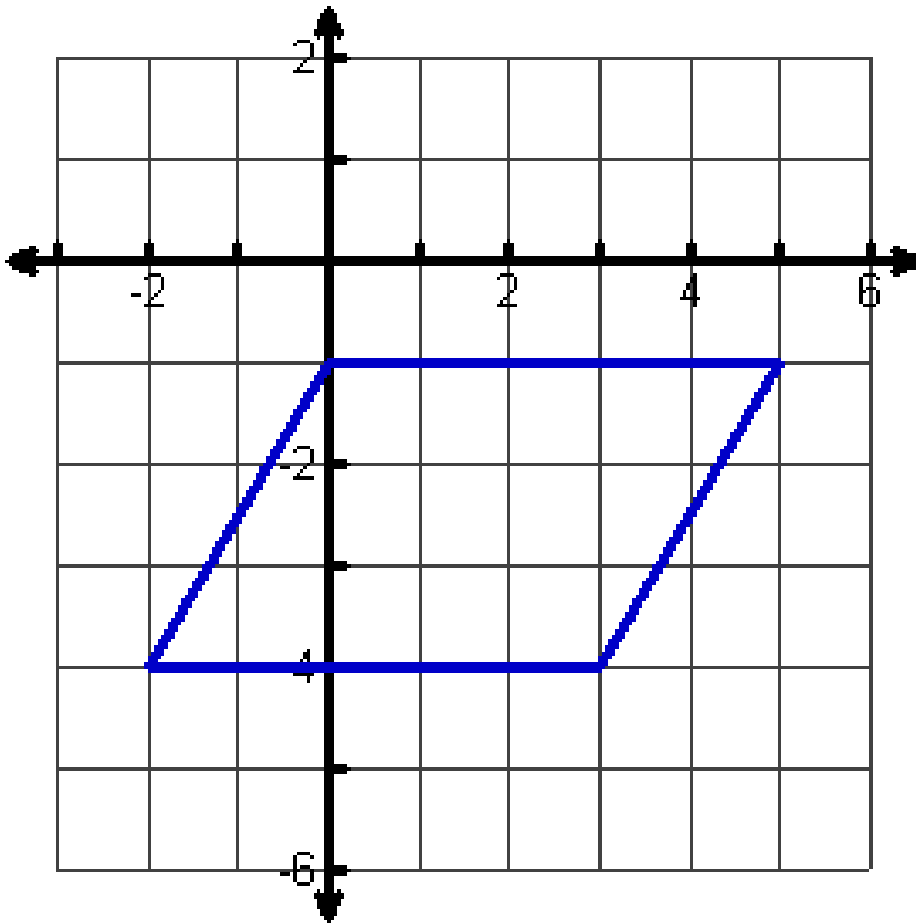
# Find the perimeter.



$$P = \sqrt{10} + \sqrt{10} + 5 + 5$$

$$P = 16.32$$

Find the area.



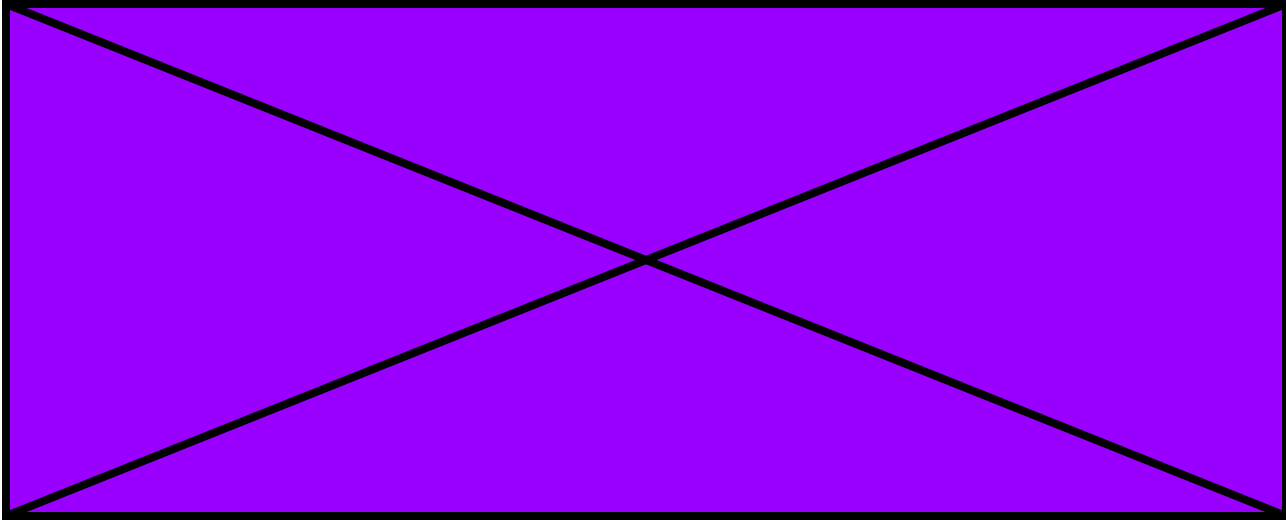
$$A = (5)(3)$$

$$A = 15$$

# Rectangle

**A parallelogram with 4 right angles**

# RECTANGLE



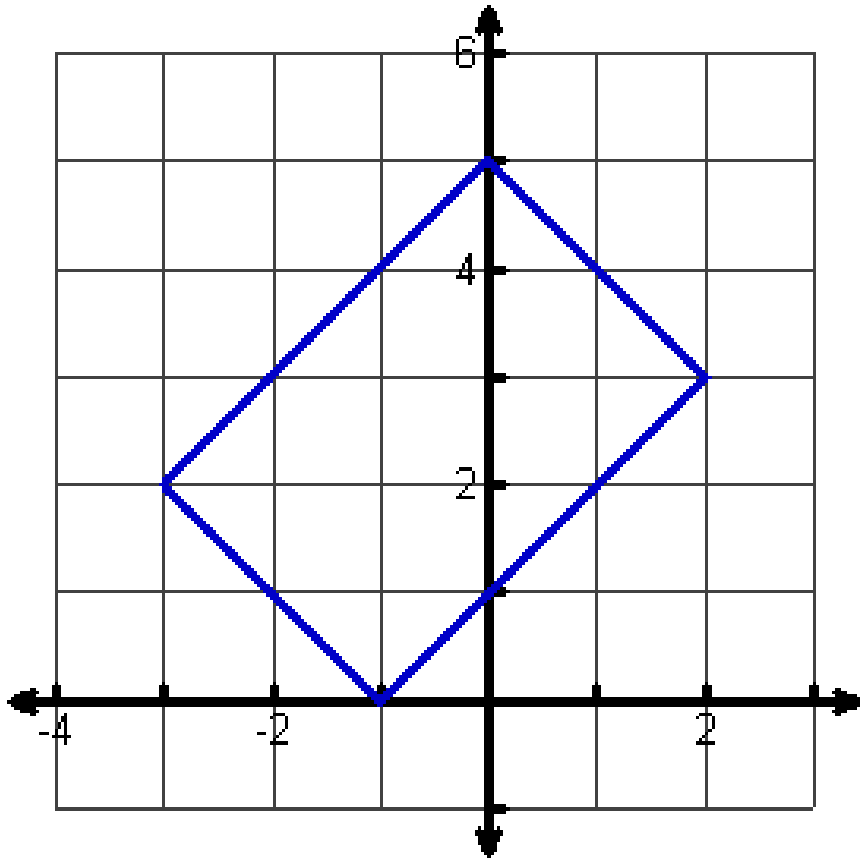
Diagonals are Congruent

**PQRS is a rectangle**



$$x = 50^\circ$$

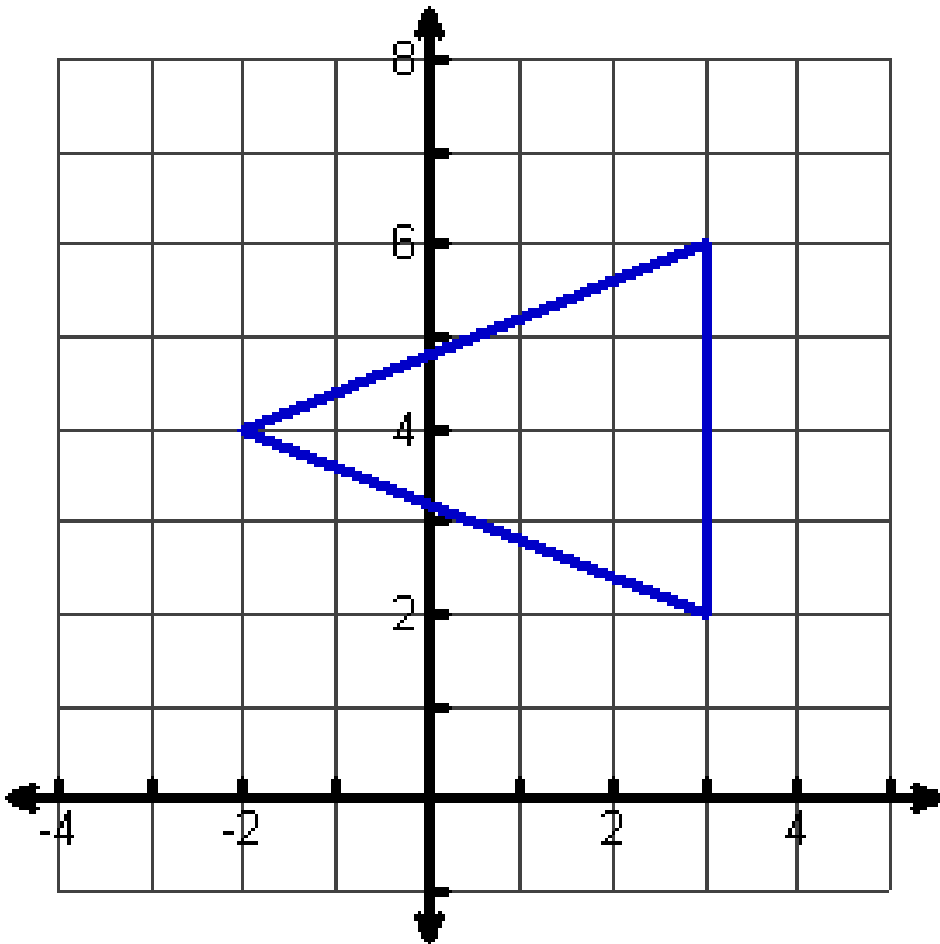
Find the perimeter.



$$P = \sqrt{8} + \sqrt{8} + \sqrt{18} + \sqrt{18}$$

$$P = 14.14$$

Find the area.



$$A = \frac{1}{2}(4)(5)$$

$$A = 10$$



# Rhombus

**A parallelogram with 4 congruent sides**



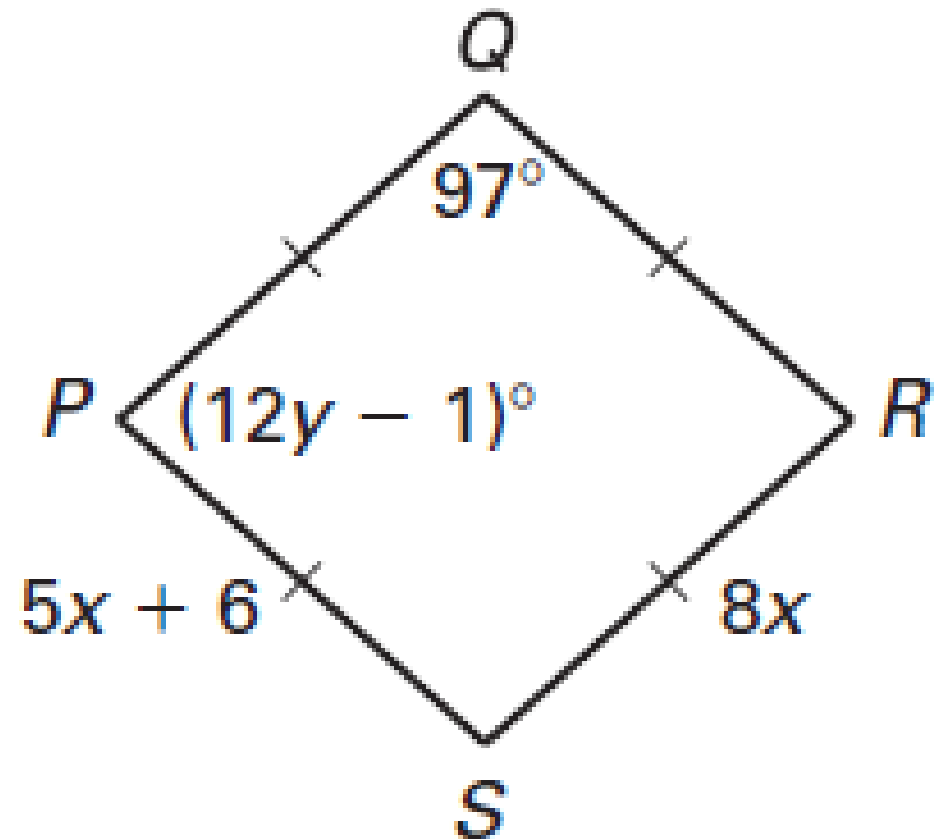
# Some Special Properties of Rhombus

- ▶ All the properties of a parallelogram
- ▶ Diagonals are perpendicular
- ▶ 4 congruent sides



Solve for  $x$  in this rhombus.

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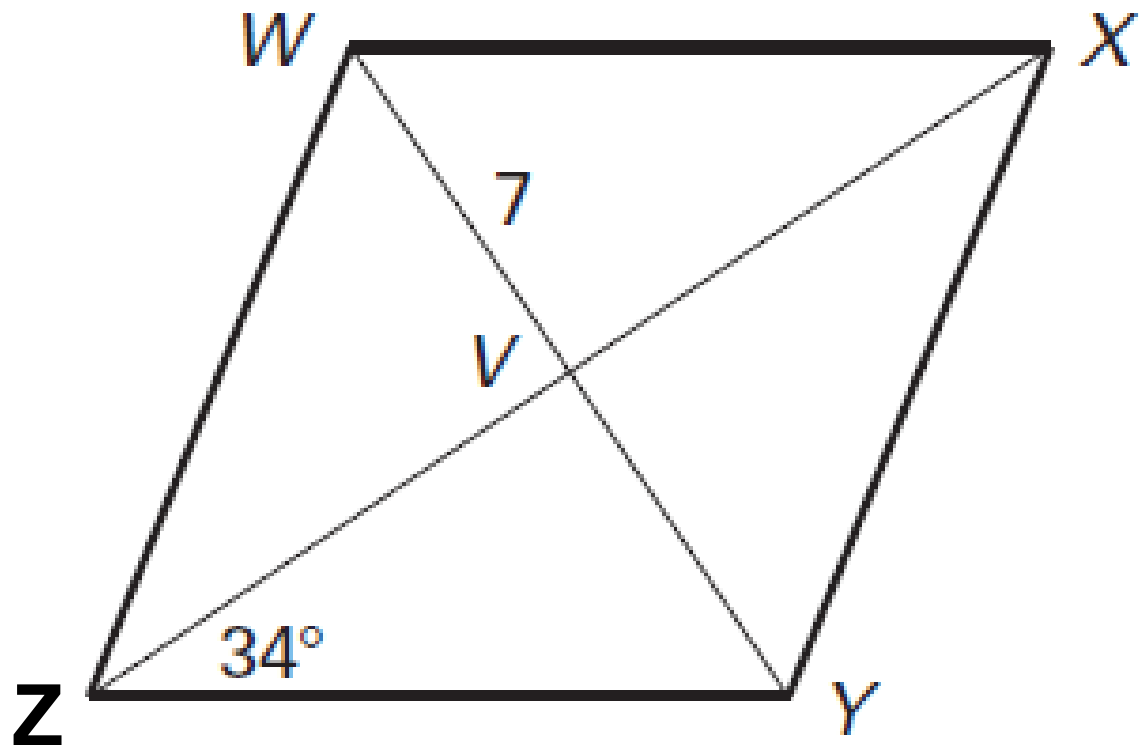


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Rhombus.

1.  $VY =$

2.  $m\angle ZVY$



# Square

**A parallelogram with 4  
congruent sides & 4  
right angles**



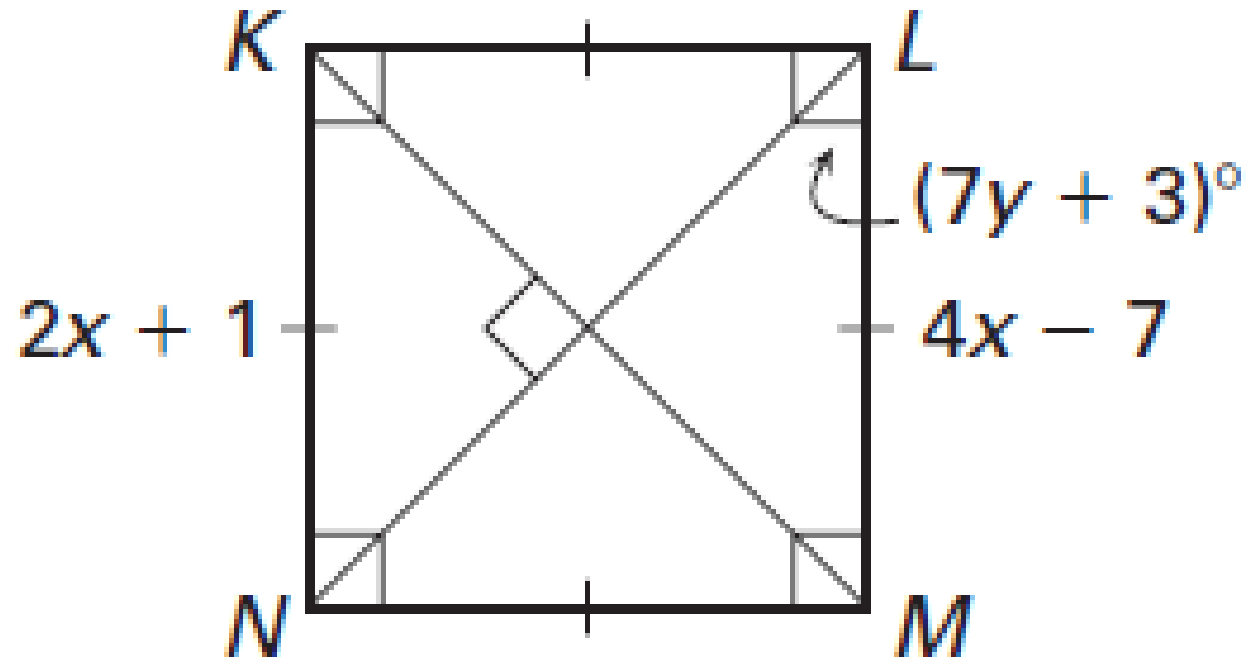
# Some Special Properties of Square

- ▶ All the properties of a parallelogram, rectangle, & rhombus



Solve for  $x$  and  $y$  in this square.

---



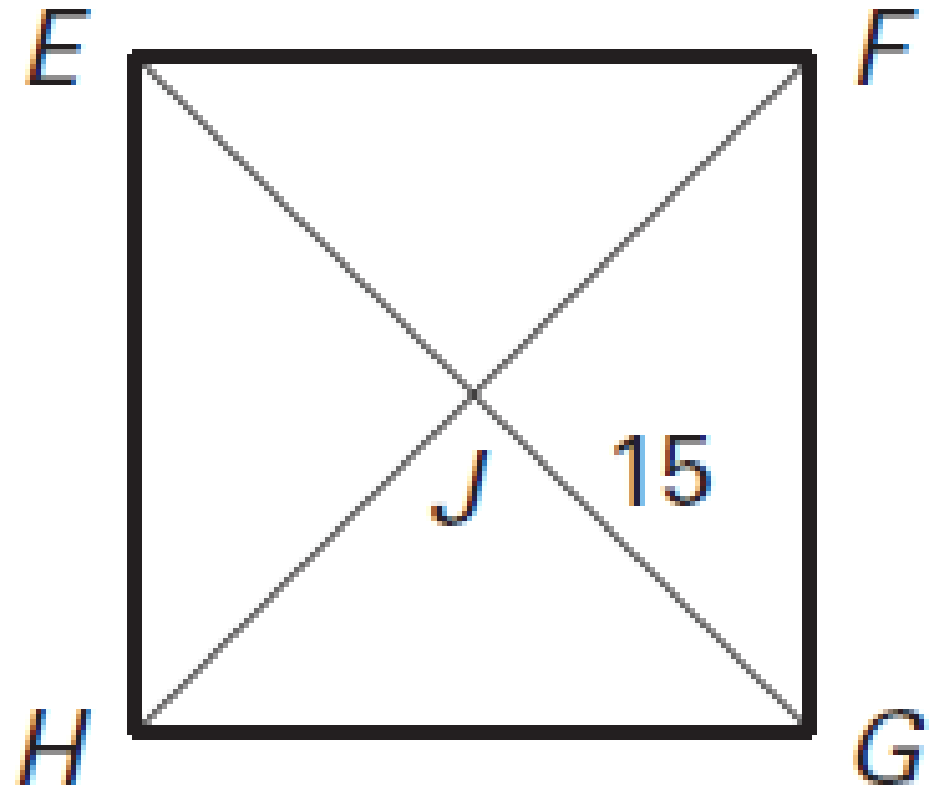
Square

1.  $EJ =$

2.  $HF =$

4.  $m\angle EJF$

5.  $m\angle HGF$





# **K i t e**

**A quadrilateral with 2  
pairs of consecutive  
congruent sides, but  
opposites sides are  
NOT parallel**

# Some Special Properties of Kite

- ▶ **Diagonals are perpendicular**



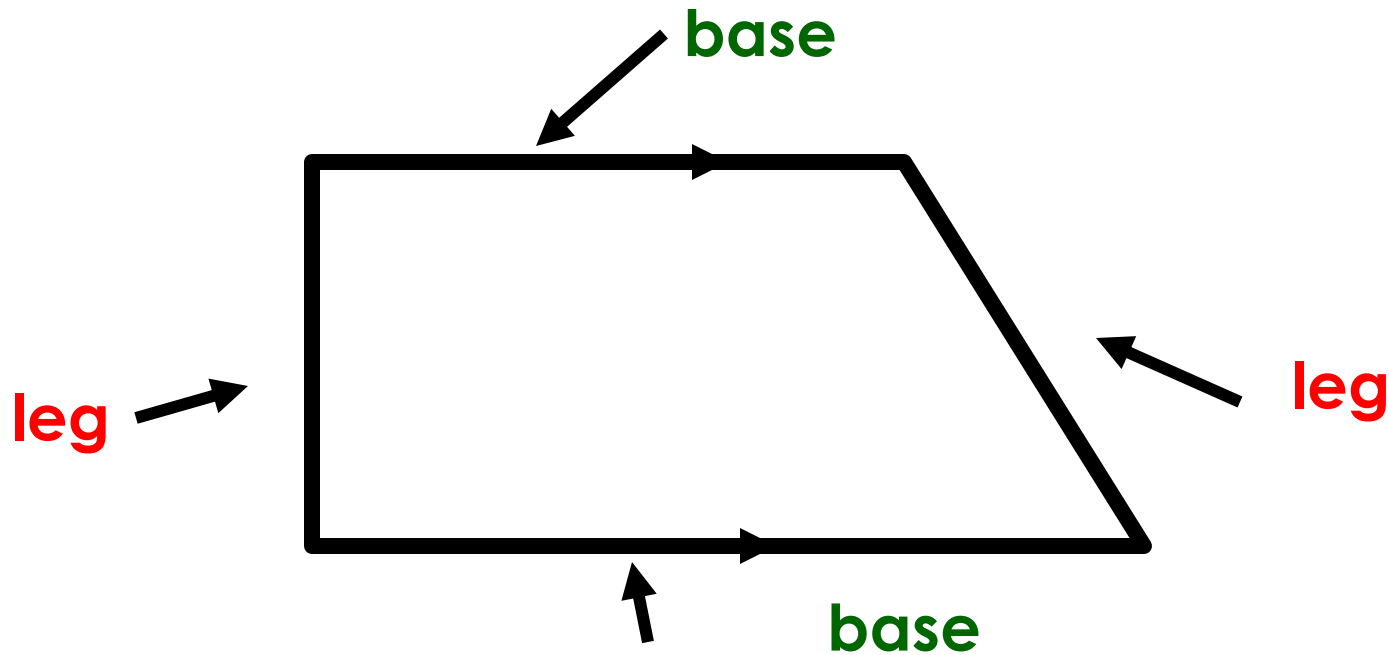
# Trapezoid

**A quadrilateral with 1  
pair of parallel sides  
called bases**



# Trapezoids

Have only one pair of opposite sides that are parallel.



# Isosceles Trapezoid

**A quadrilateral with 1 pair of parallel sides called bases and non-parallel sides are congruent (legs)**

# Some Special Properties of Isosceles Trapezoid

- ▶ **Diagonals are congruent**

