

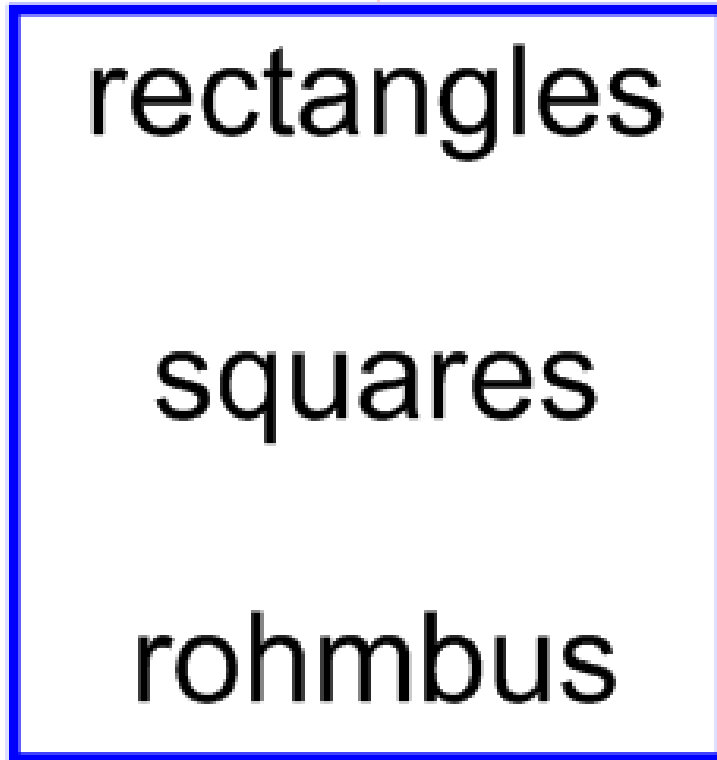
CHAPTER 6

QUADRILATERALS

quadrilaterals

parallelograms

trapezoids





LESSON 6.1
ANGLES OF
POLYGONS

1. POLYGON:

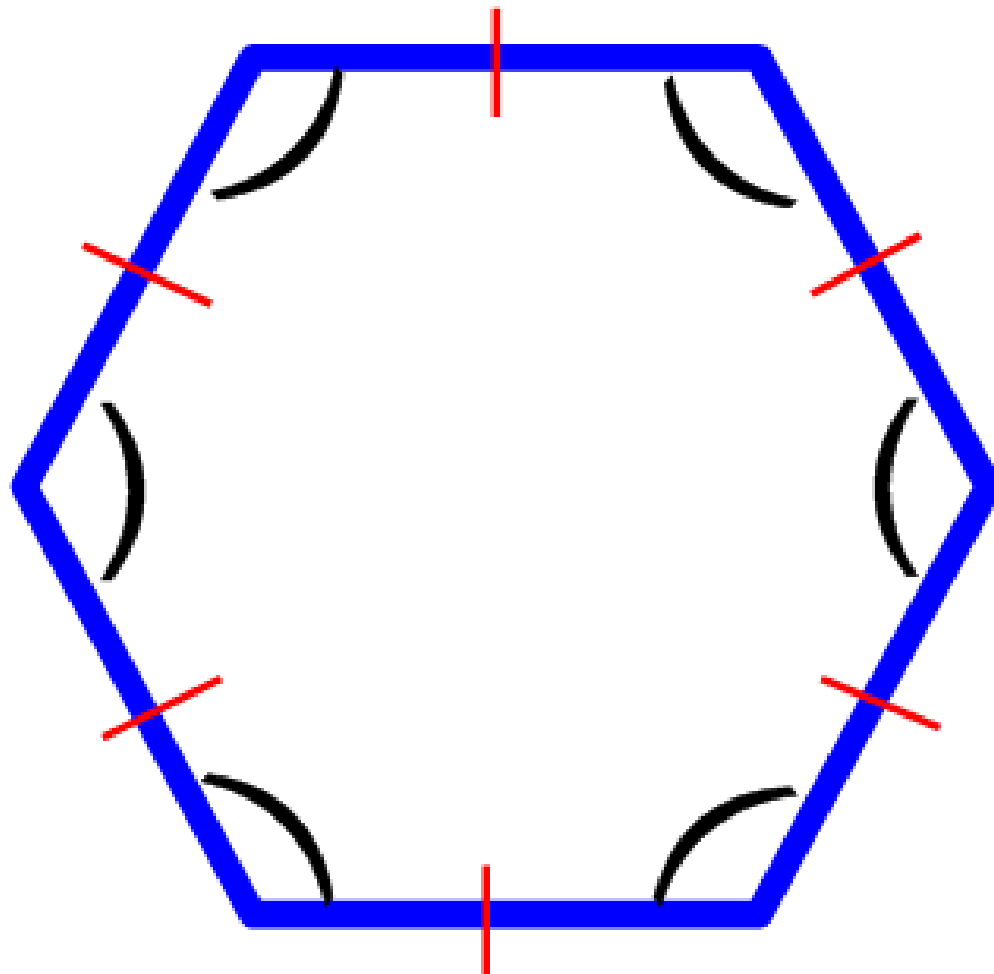
A many sided figure.

(must have 3 or more sides)



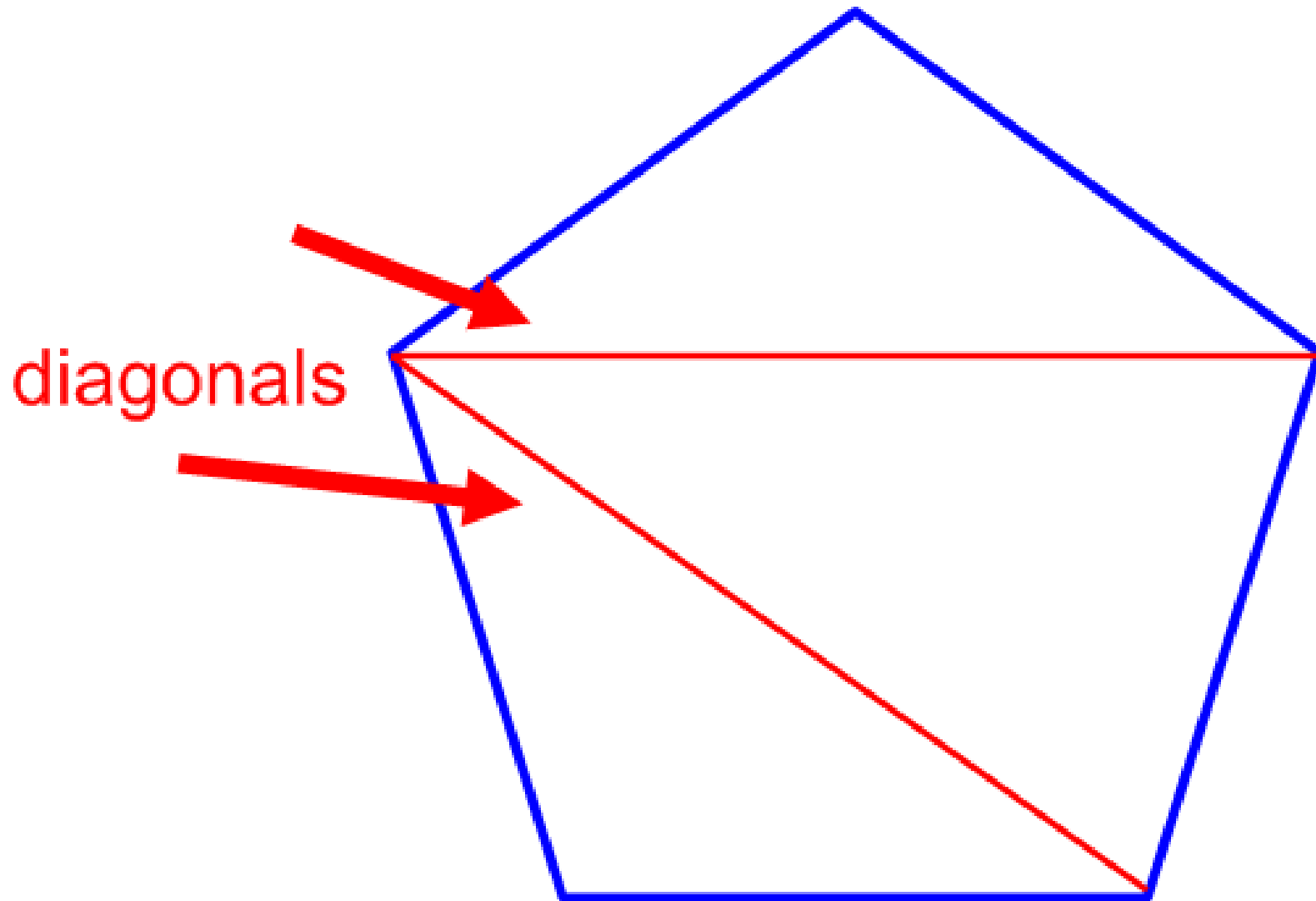
2. REGULAR POLYGON:

A polygon that is equilateral and equiangular.
(same size sides and same size angles)



3. DIAGONAL:

A segment that joins two nonconsecutive vertices.



number of sides

type of polygon

3

triangle

4

quadrilateral

5

pentagon

6

hexagon

7

heptagon

8

octagon

9

nonagon

10

decagon

11

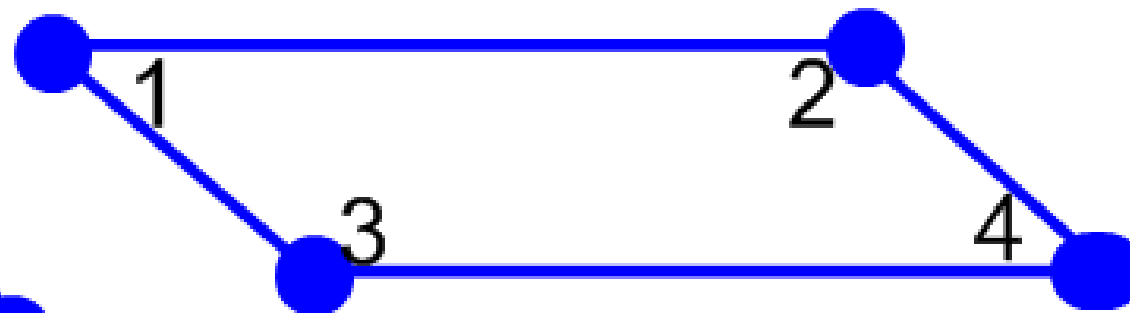
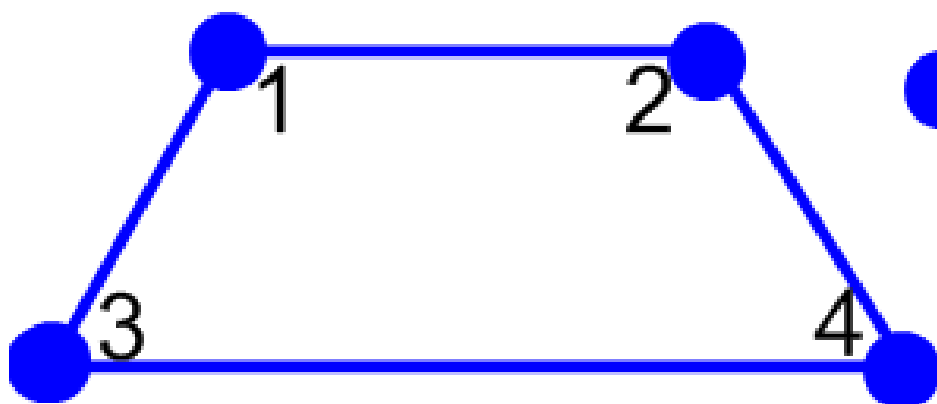
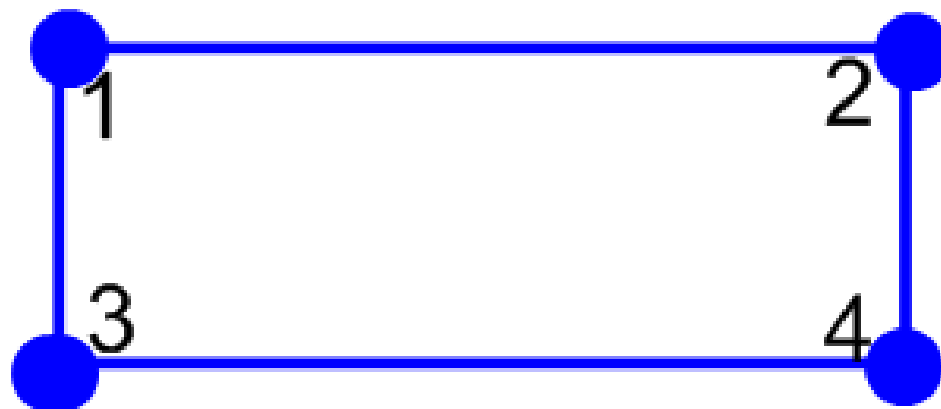
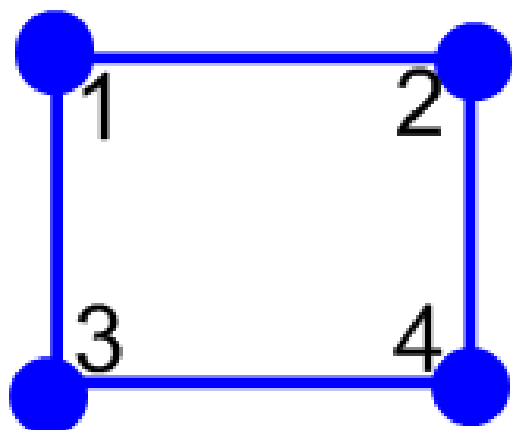
undecagon

12

dodecagon

4. Interior Angles of a Quadrilateral

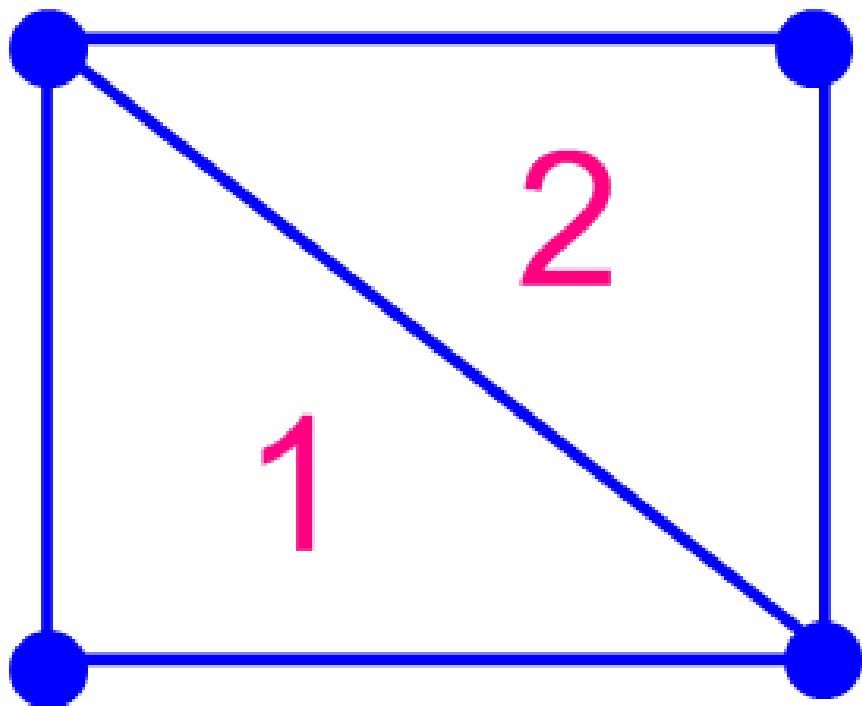
The sum of the measures of the interior angles of a quadrilateral is 360.



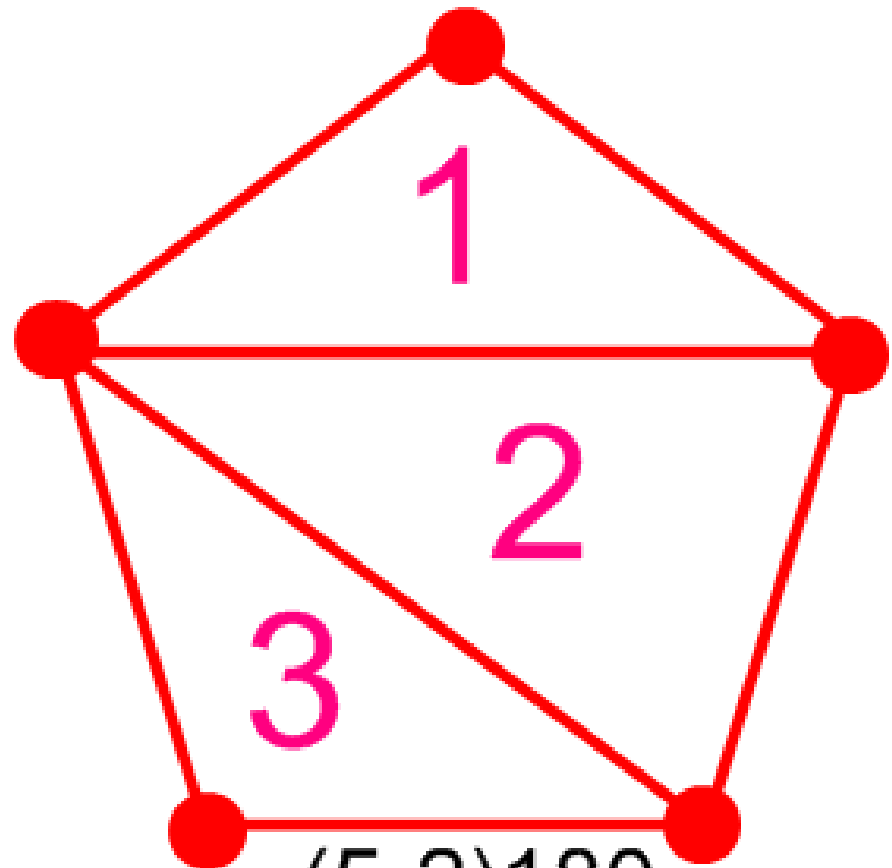
$$\angle 1 + \angle 2 + \angle 3 + \angle 4 = 360$$

5. Polygon Interior Angles Theorem

The sum of the measures of the interior angles of a polygon is $(n-2)180$. (n : # of sides)



$$\begin{aligned}(4-2)180 \\ (2)180 \\ 360\end{aligned}$$

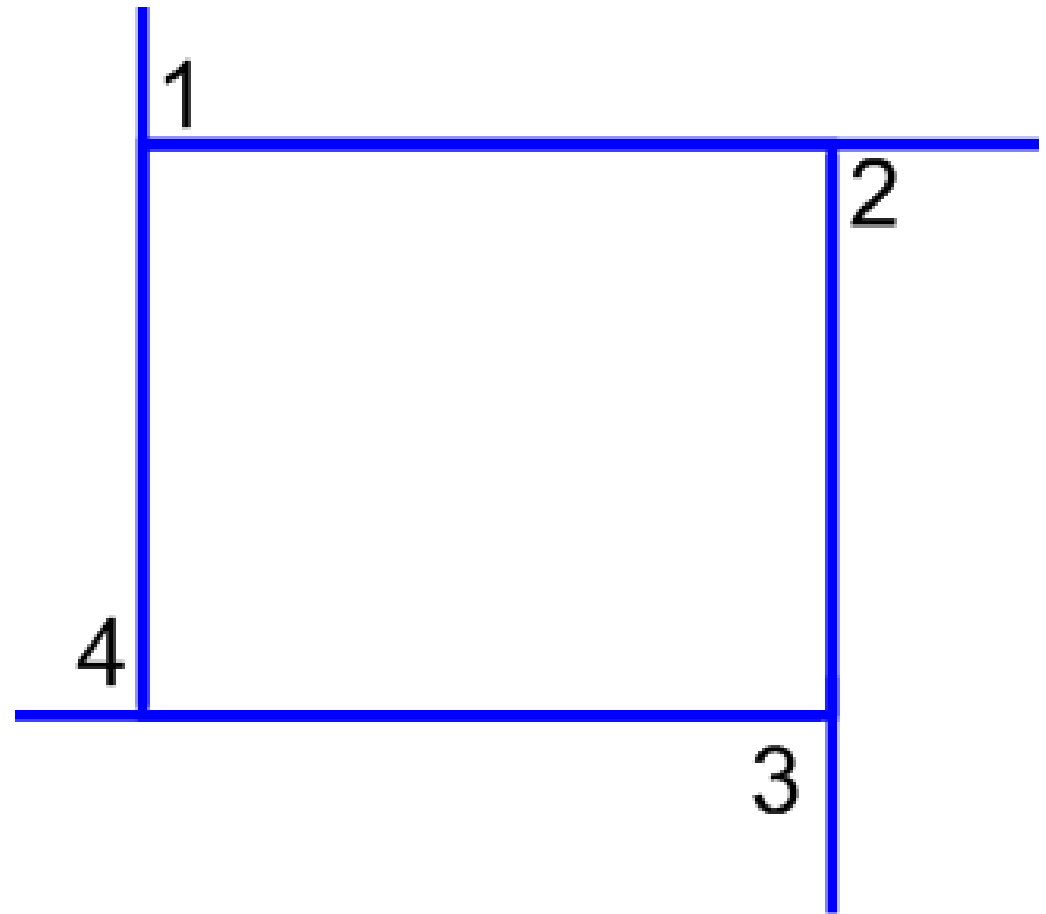
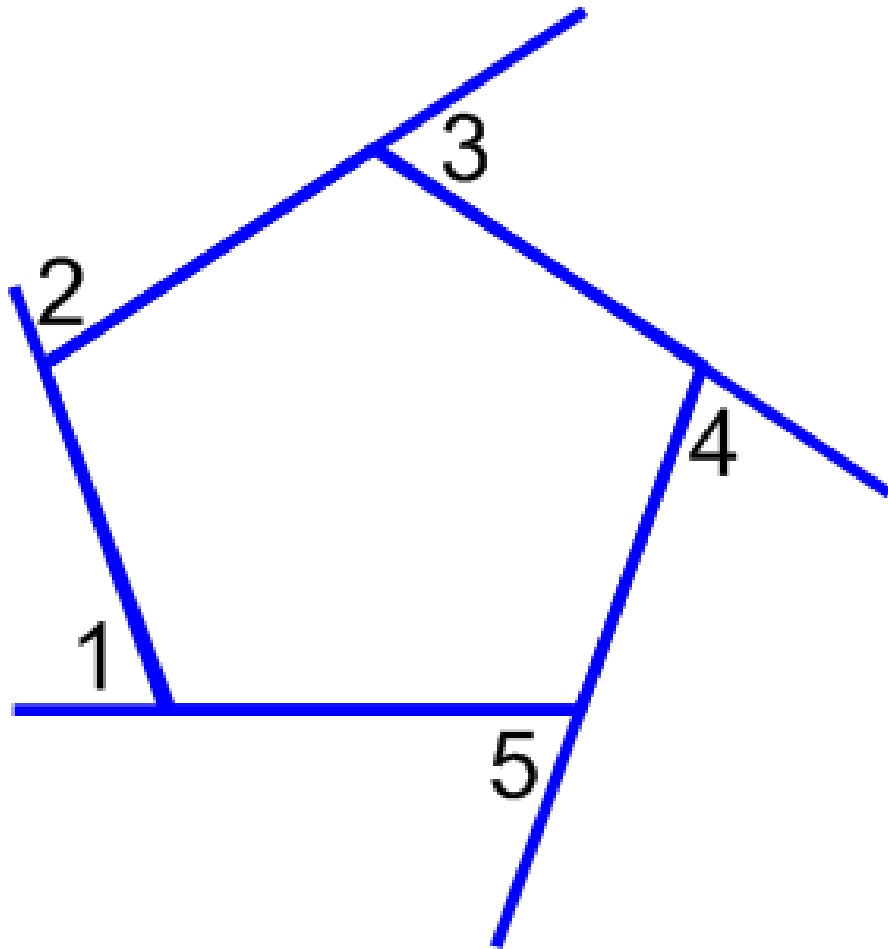


$$\begin{aligned}(5-2)180 \\ (3)180 \\ 540\end{aligned}$$

Polygon	# of sides	# of Δ	* 180	Total Degrees
triangle	3	1	*180	180
quad				
pentagon				
hexagon				
heptagon				
octagon				
nonagon				
decagon				
undecagon				
dodecagon				

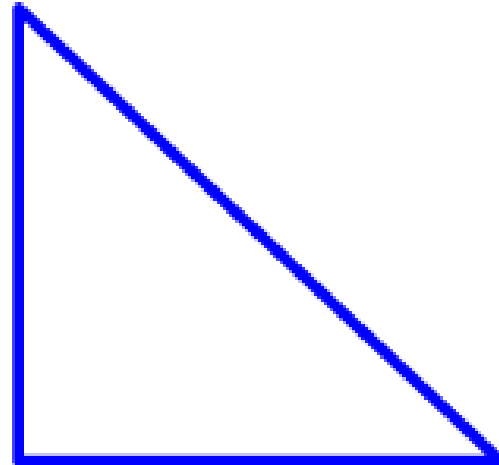
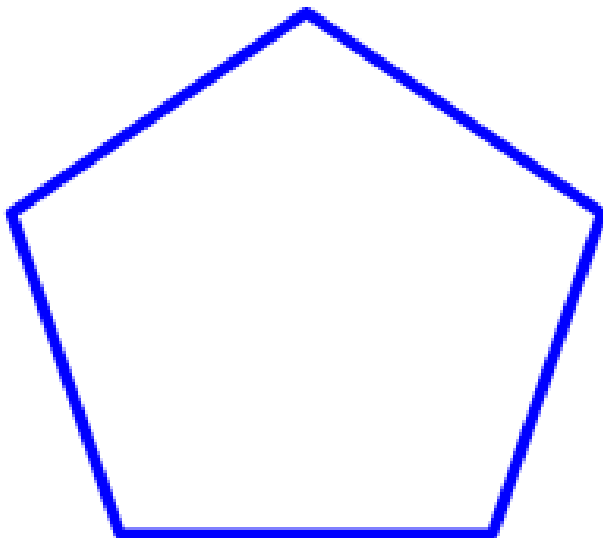
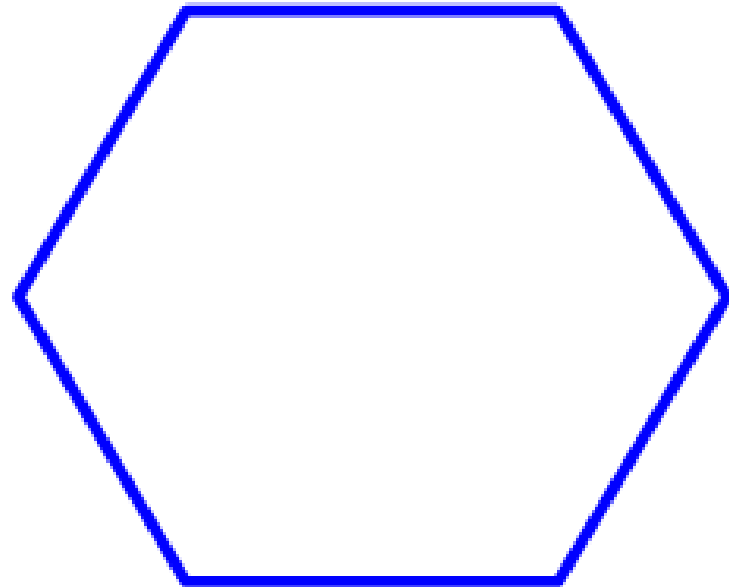
6. Polygon Exterior Angles Theorem

The sum of the measures of the exterior angles of a polygon is 360



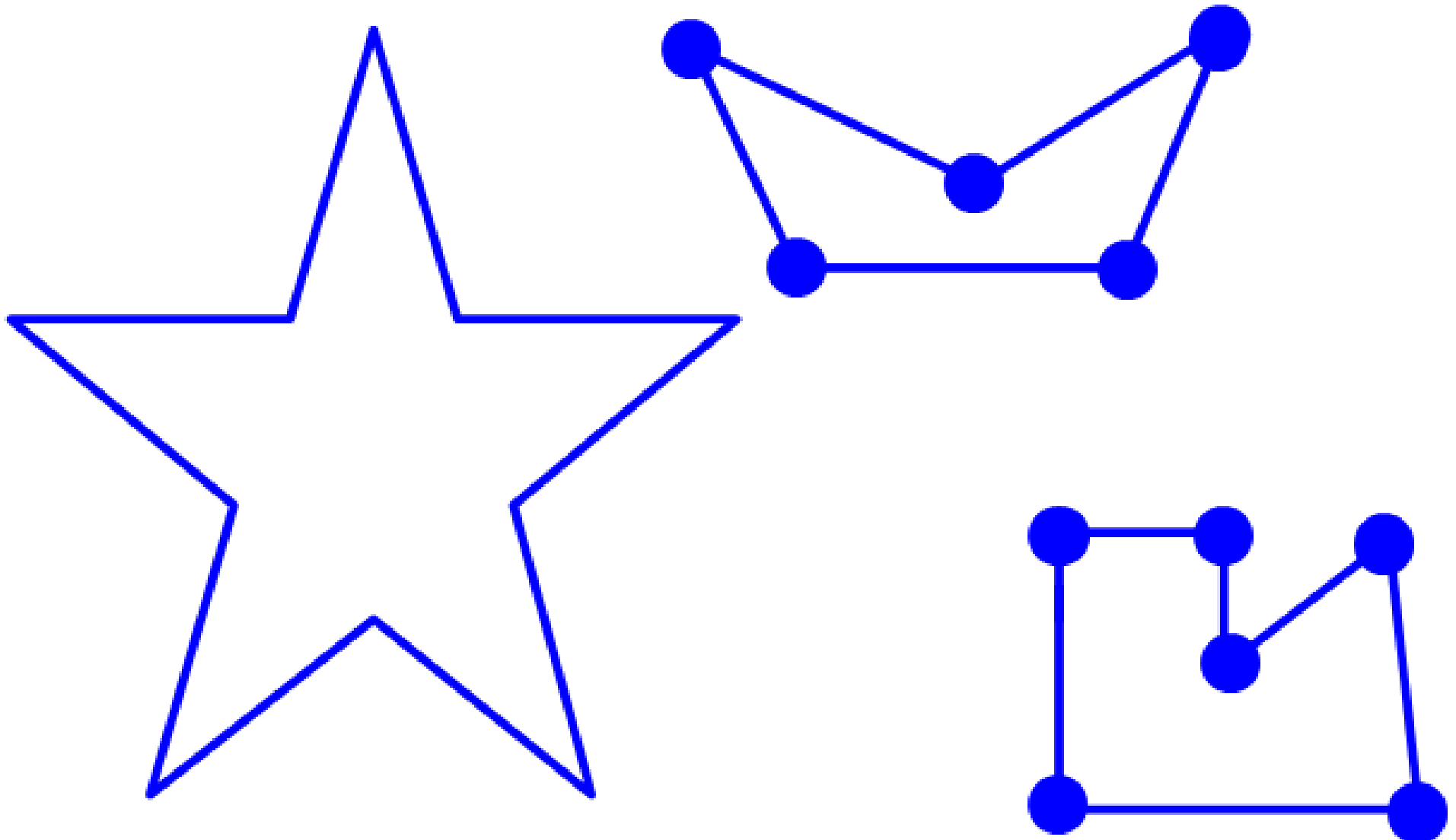
7. CONVEX:

(A rubber band will "fit" around a polygon)



8. CONCAVE:

(A rubber band will "not fit" around a polygon)



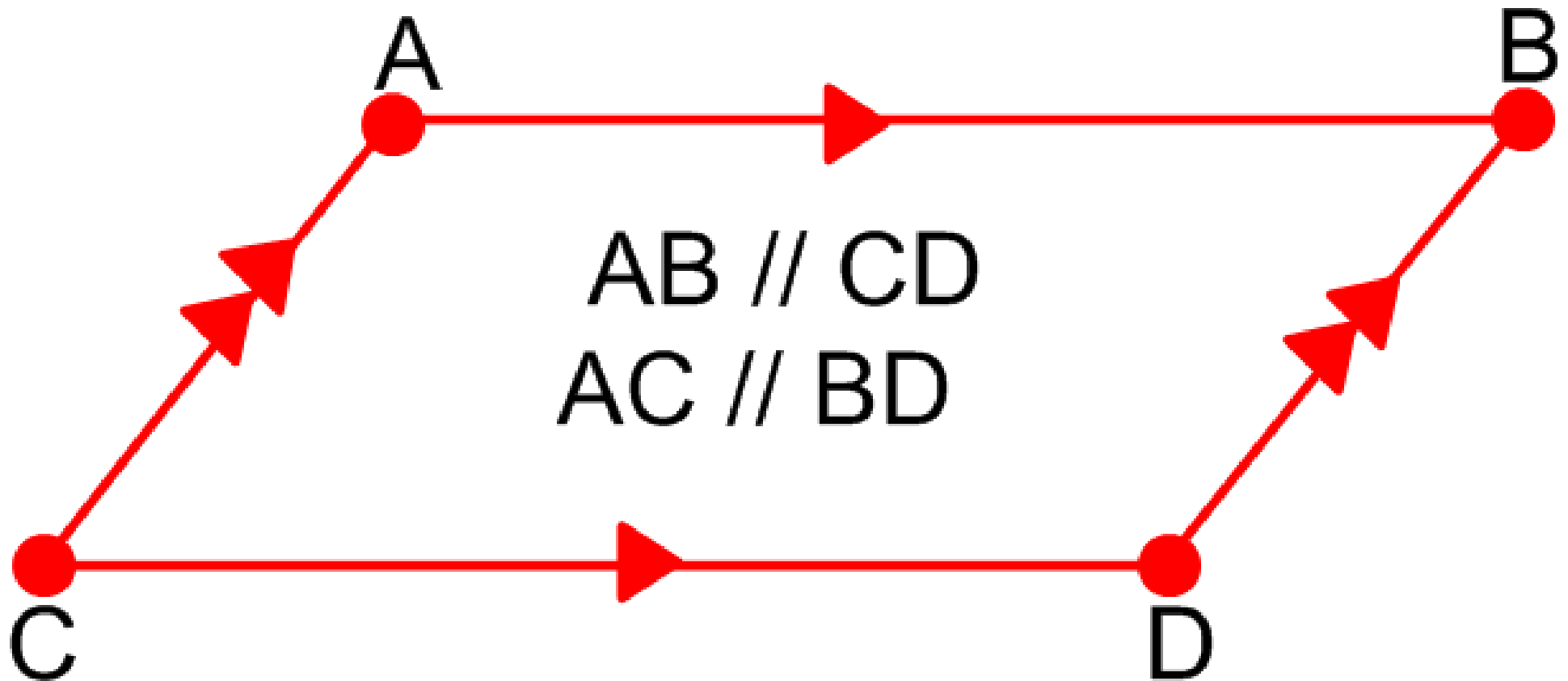
number of sides	name	sum of the interior	sum of the exterior	each interior	each exterior
3	triangle	180	360	60	120
4					
5					
6					
7					
8					
9					
10	decagon	1440	360	144	36
12					
20					

LESSON 6.2

PARALLELOGRAMS

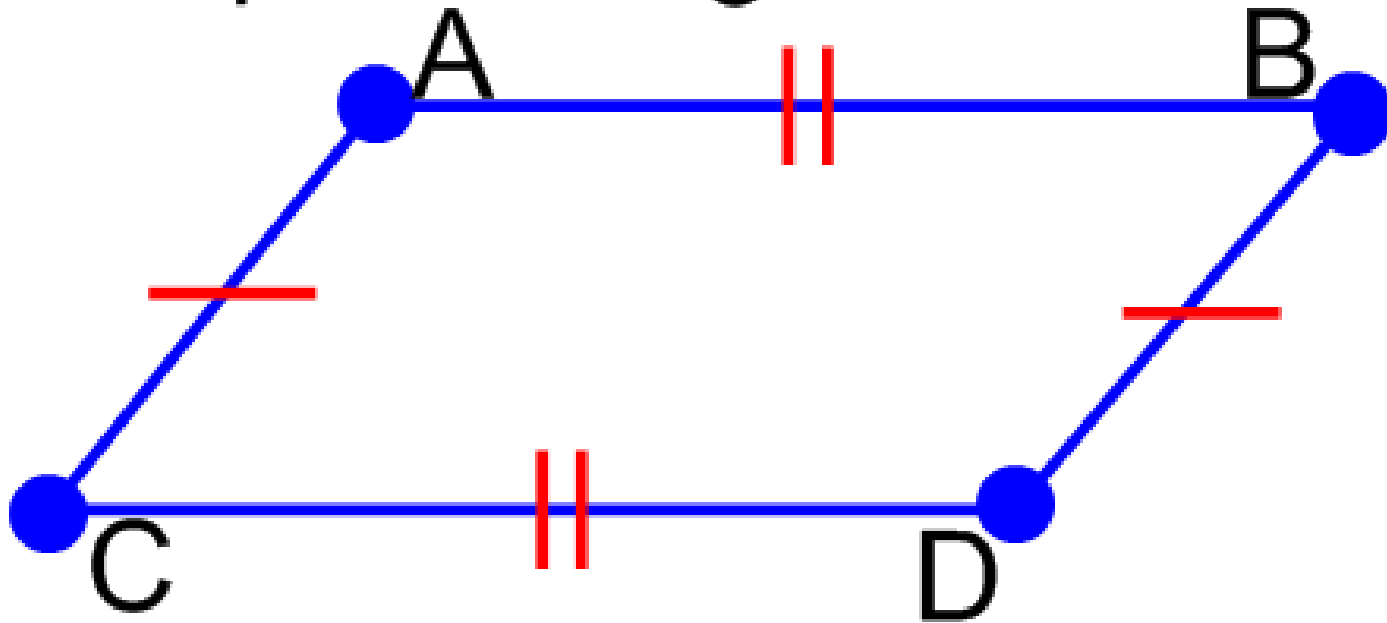
1. PARALLELOGRAM:

A quadrilateral with both pairs of opposite sides parallel.



THEOREMS:

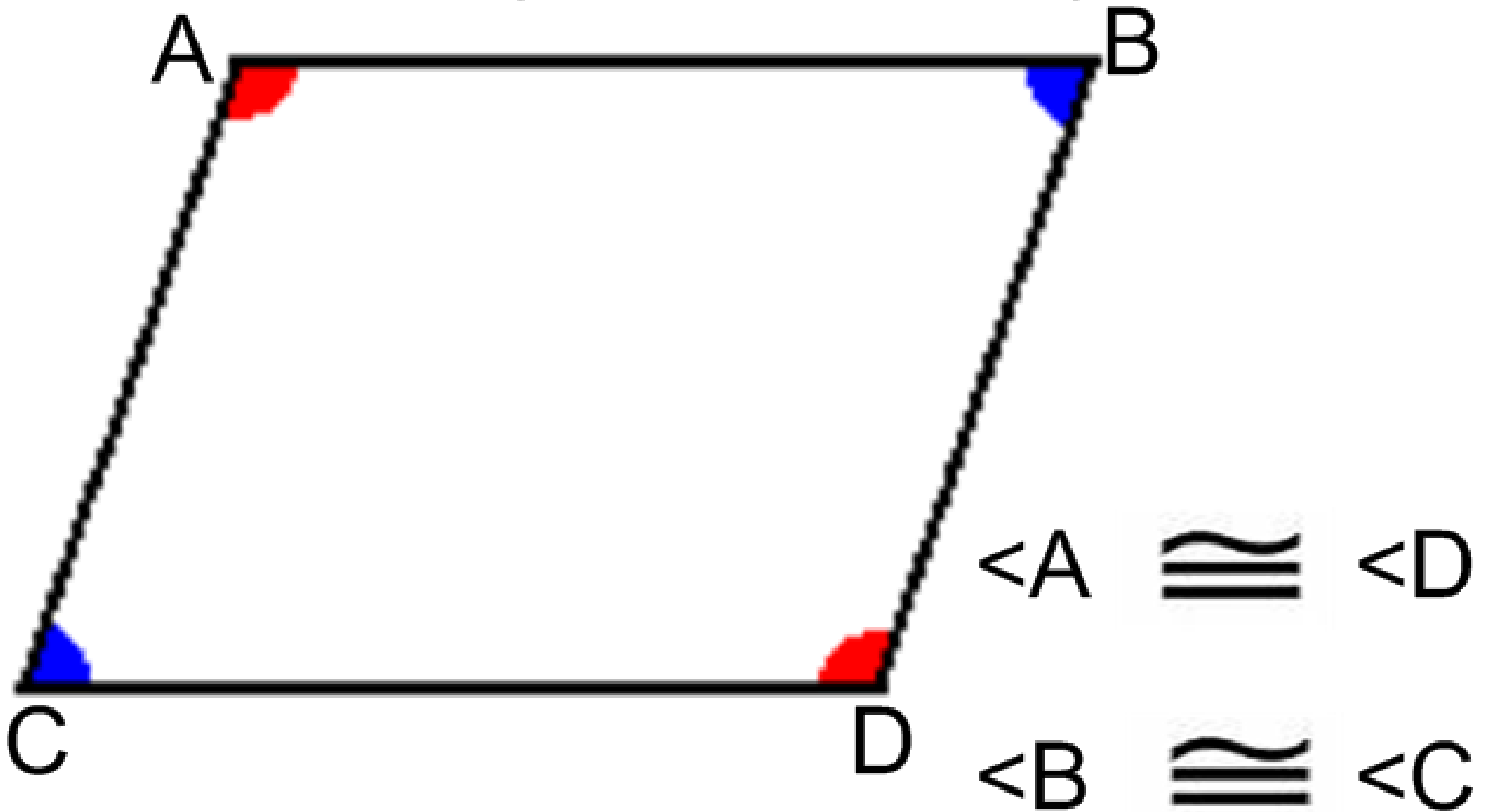
1. Opposite sides of a parallelogram are congruent



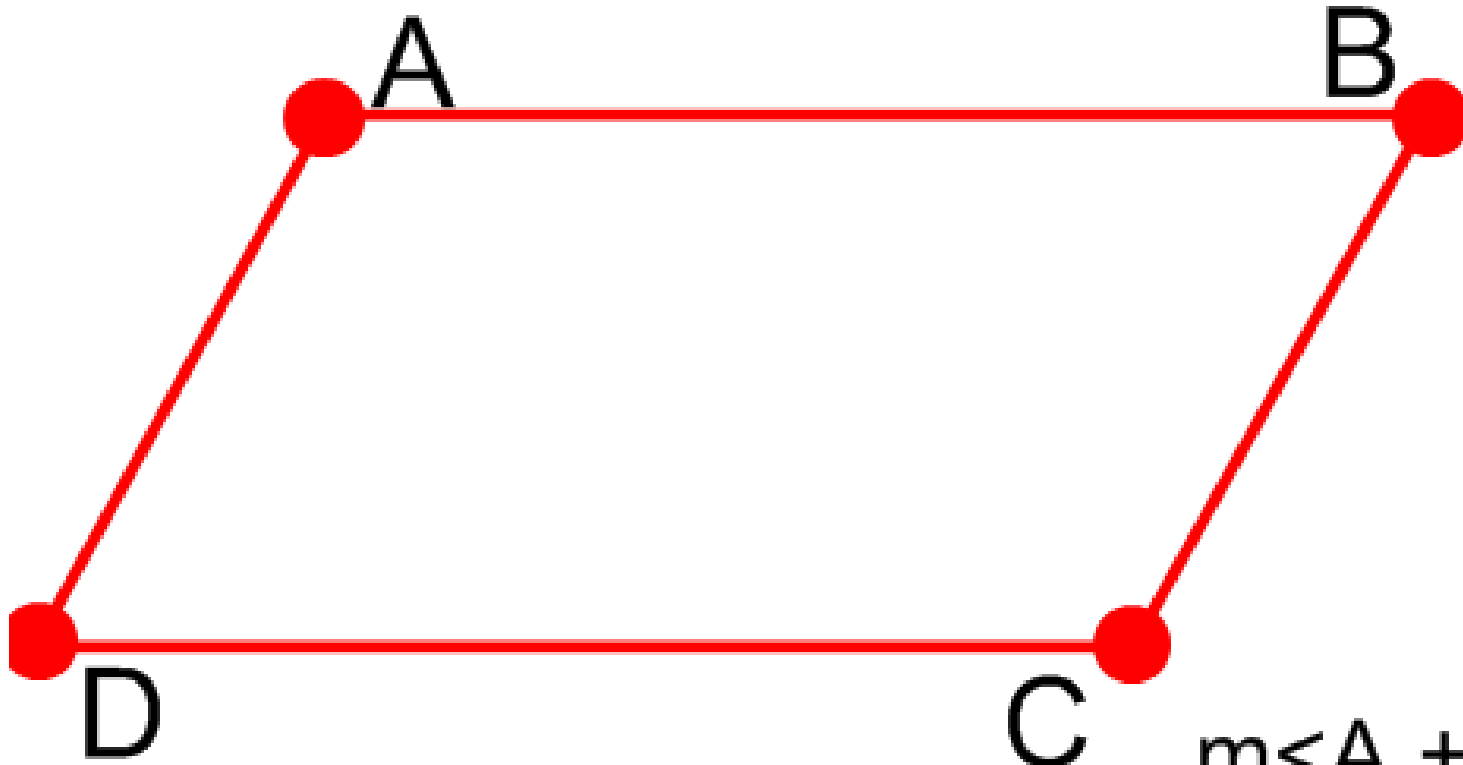
$$AB \cong CD$$

$$AC \cong BD$$

2. Opposite angles in a parallelogram are congruent.



3. Consecutive angles in a parallelogram are supplementary.



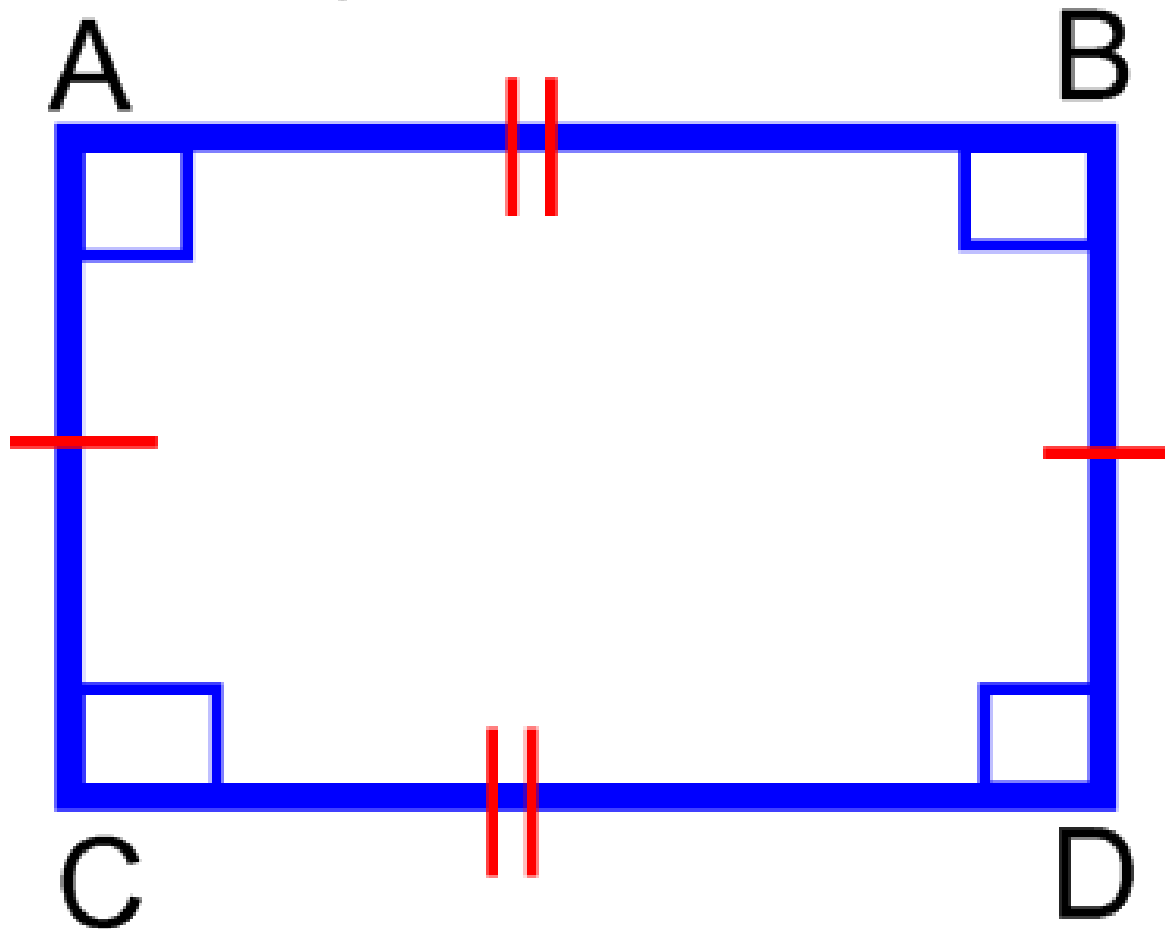
$$m\angle A + m\angle B = 180$$

$$m\angle B + m\angle C = 180$$

$$m\angle C + m\angle D = 180$$

$$m\angle D + m\angle A = 180$$

4. If a parallelogram has one right angle, it has four right angles.



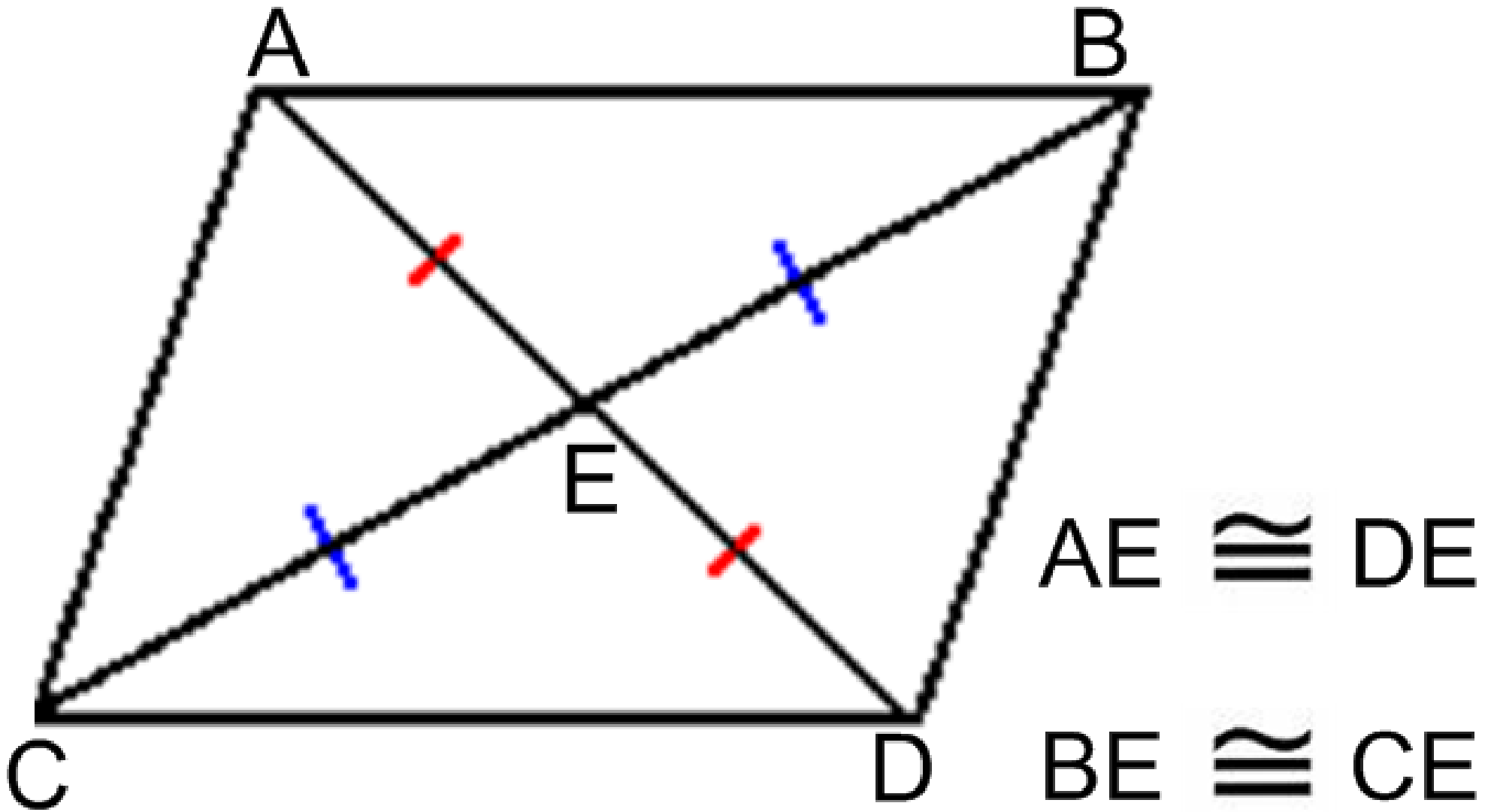
$$m\angle A = 90$$

$$m\angle B = 90$$

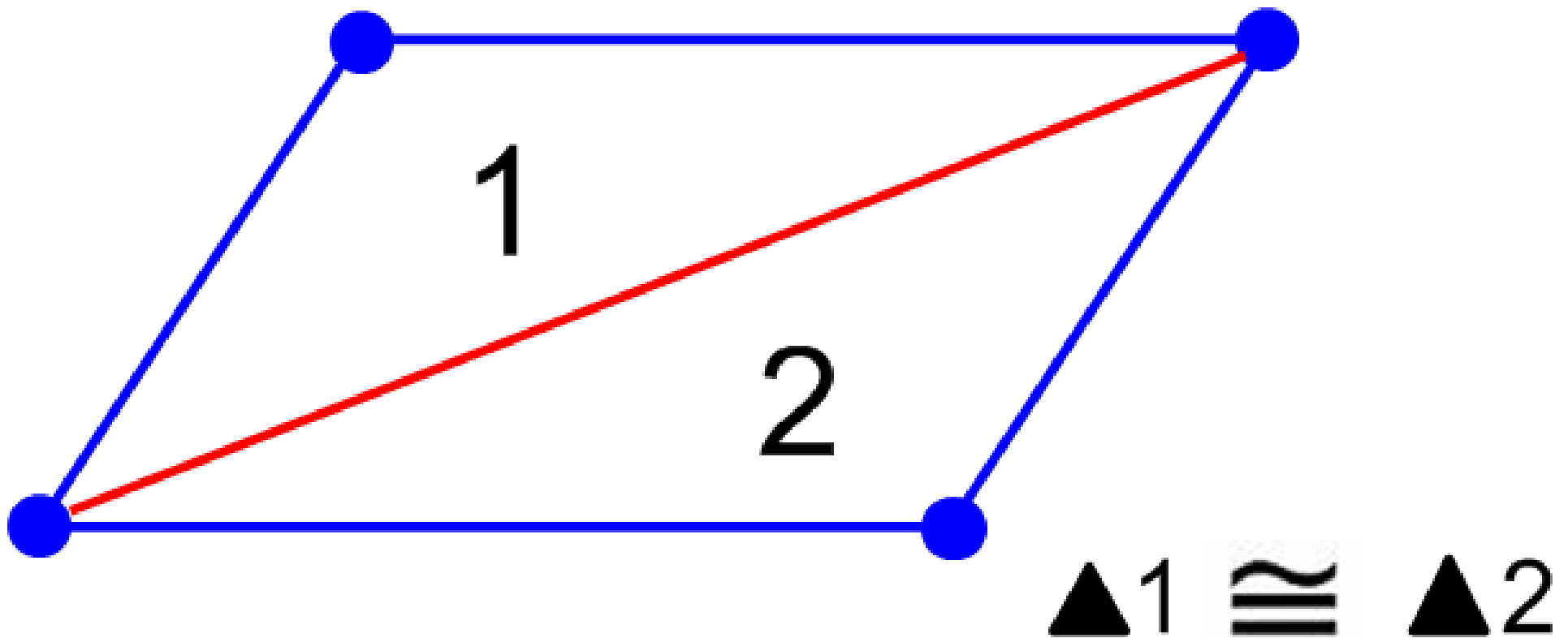
$$m\angle C = 90$$

$$m\angle D = 90$$

5. The diagonals of a parallelogram bisect each other



6. Each diagonal of a parallelogram separates the parallelogram into two congruent triangles.

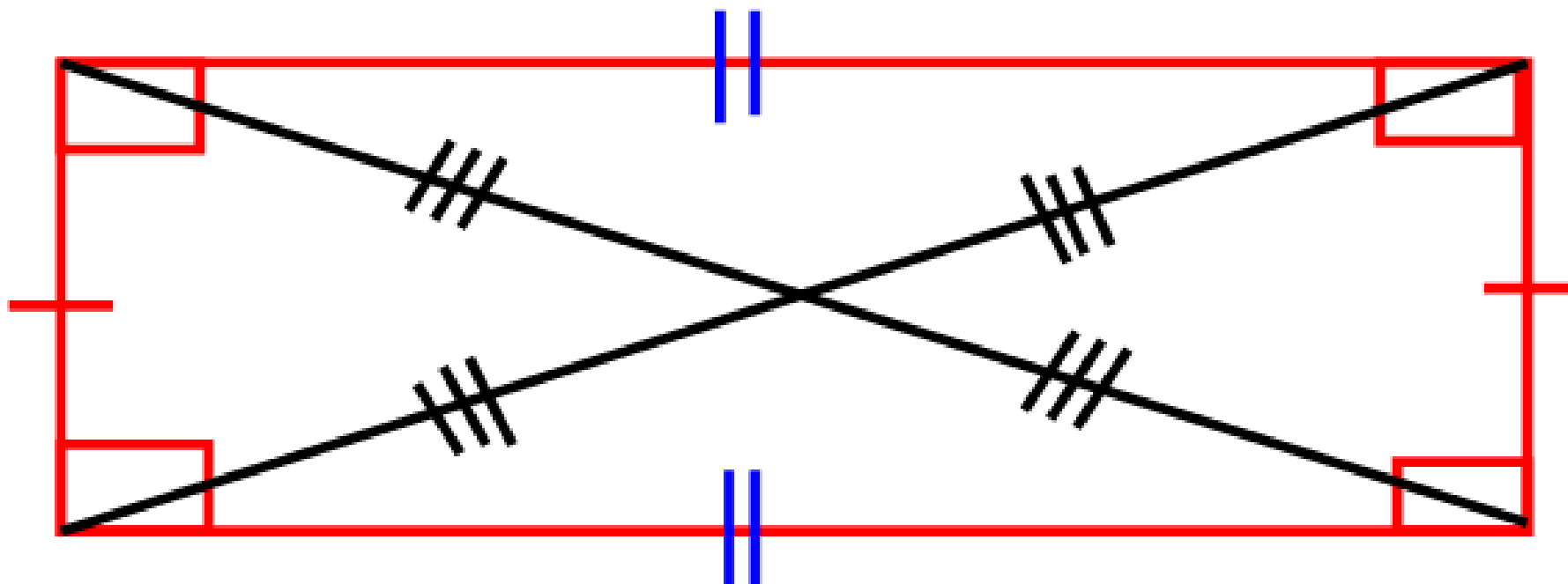


LESSON 6.4

RECTANGLES

1. RECTANGLE:

A rectangle is a quadrilateral with four right angles.



PROPERTIES OF RECTANGLES

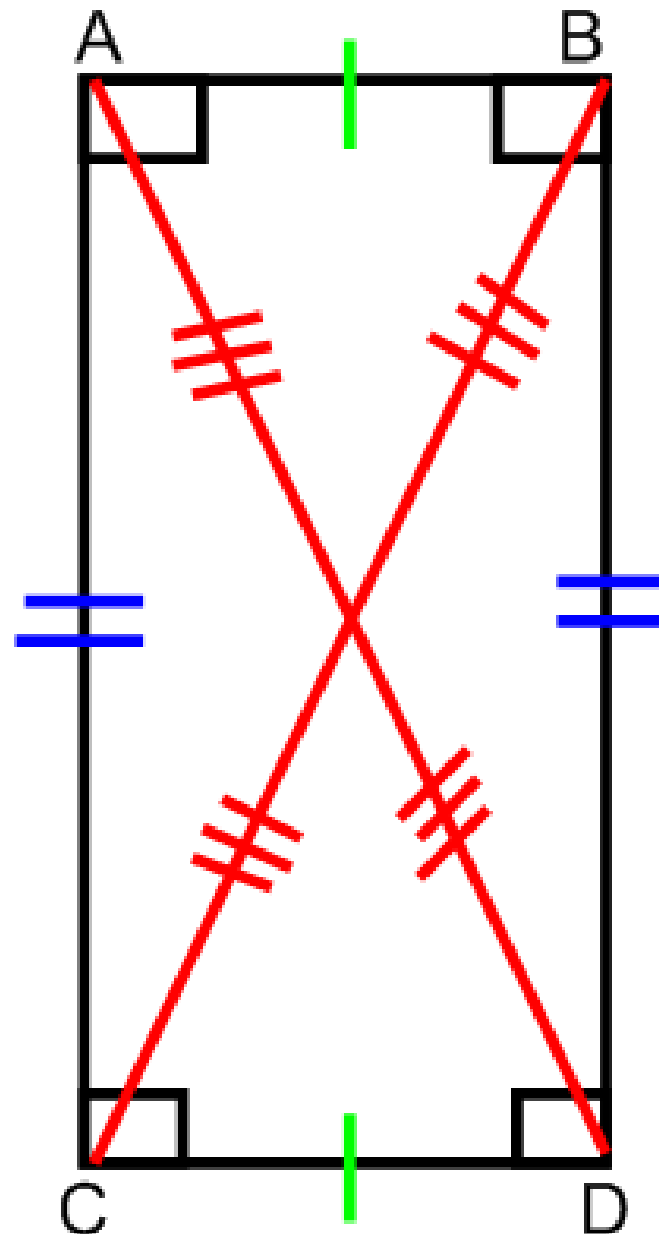
1. opposite sides are congruent and parallel

2. opposite angles are congruent

3. consecutive angles are supplementary

4. diagonals are congruent and bisect each other

5. all four angles are right angles

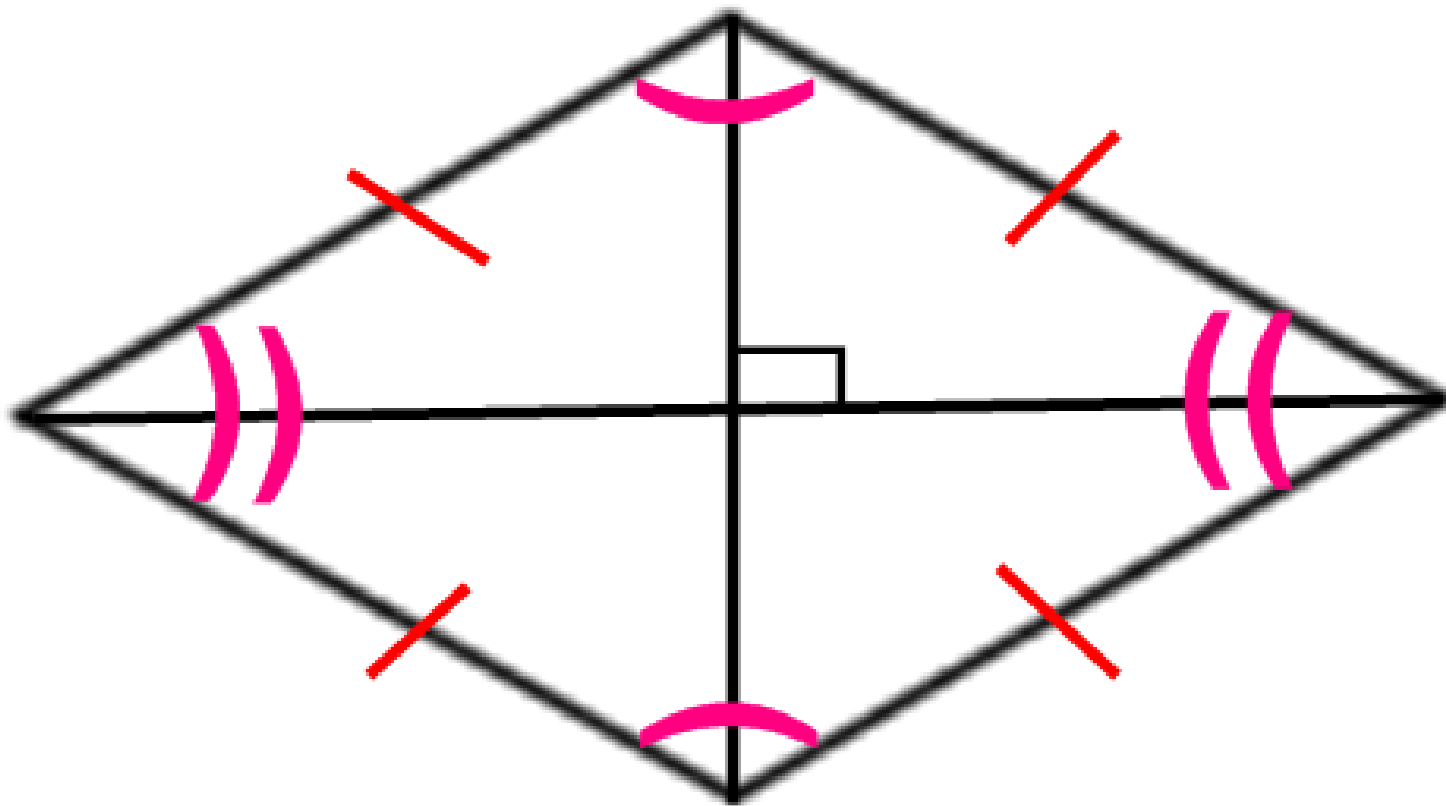




LESSON 6.5
RHOMBI AND
SQUARES

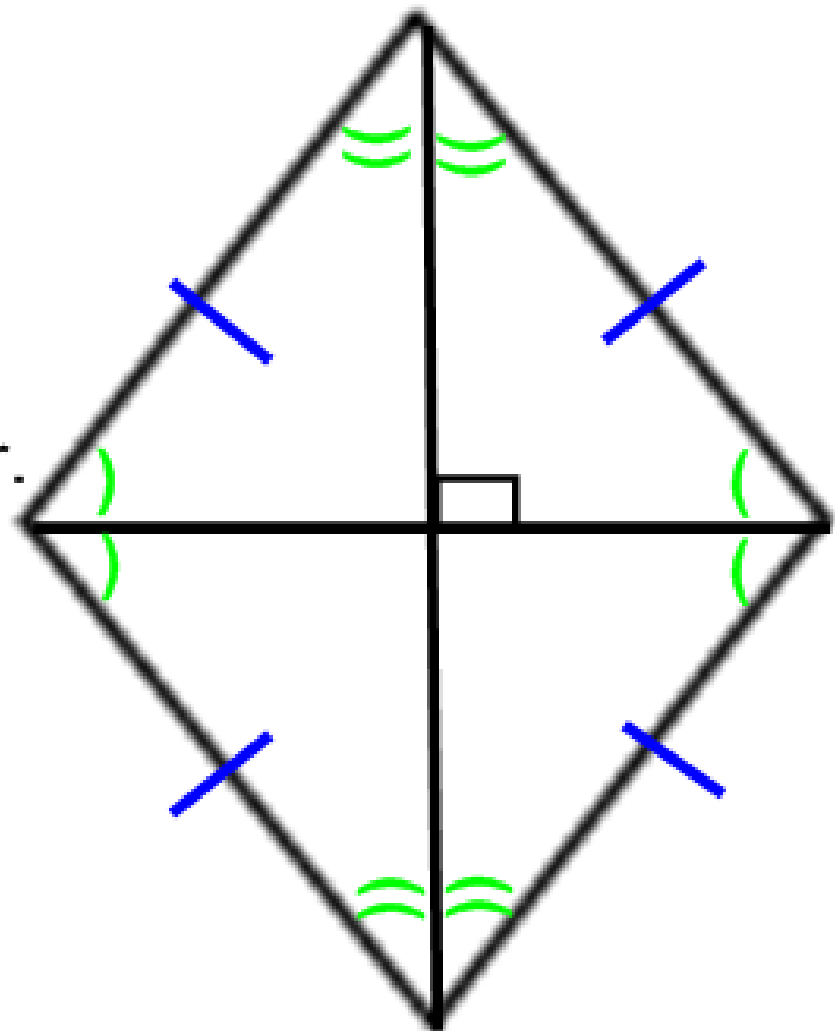
1. RHOMBUS:

A quadrilateral with all four sides congruent.



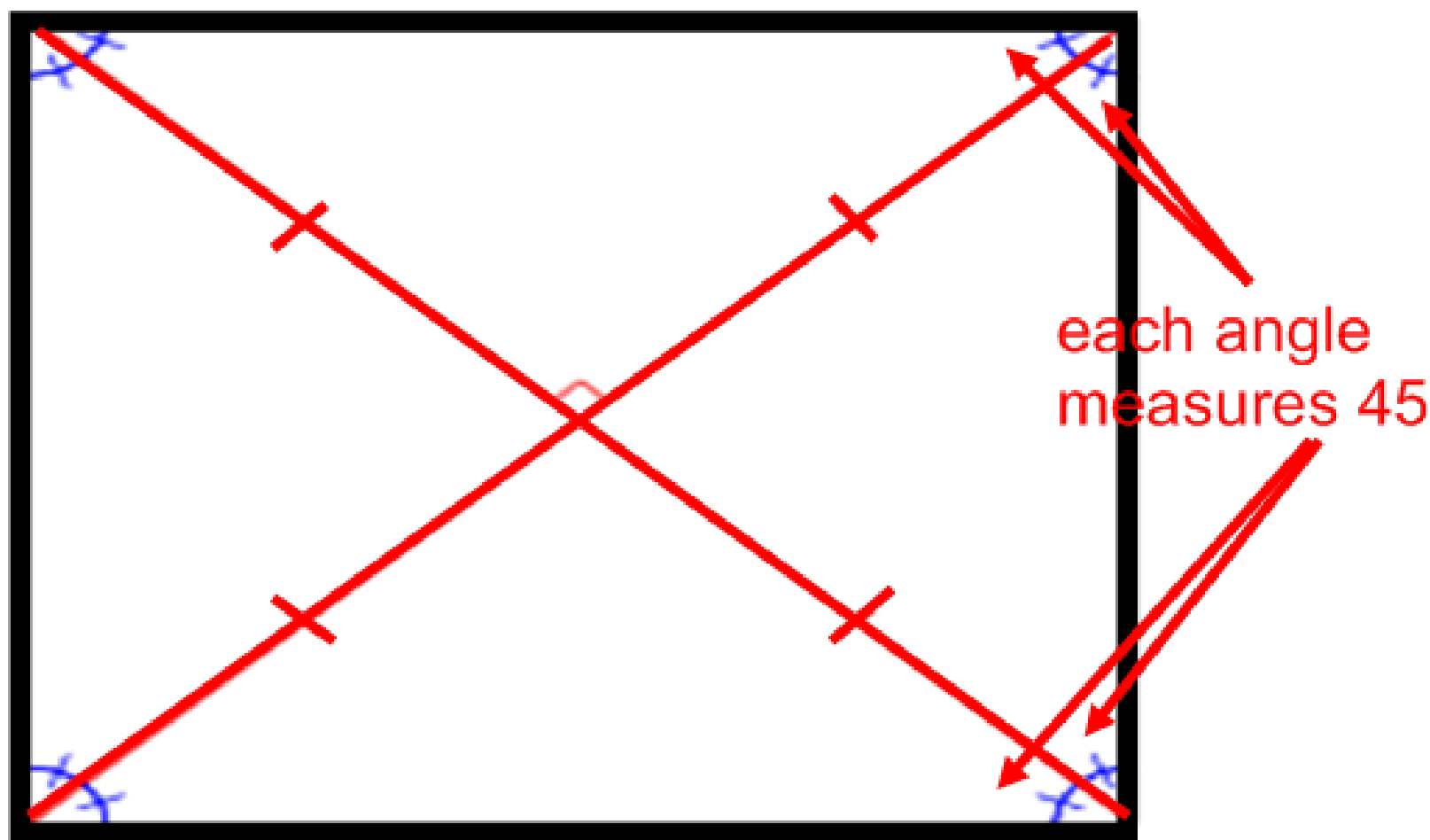
PROPERTIES OF RHOMBI

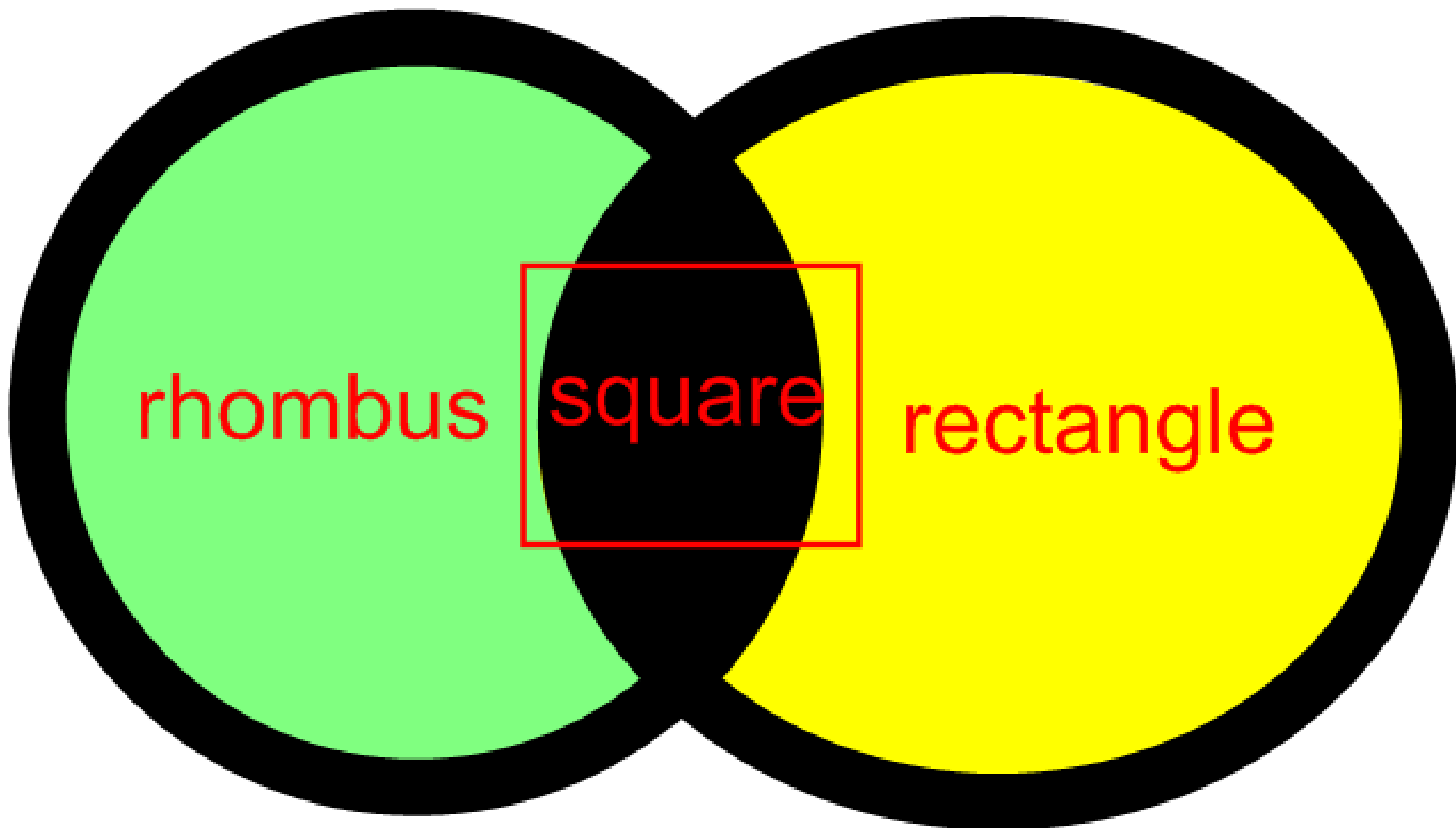
1. A rhombus has all the properties of a parallelogram. (5 theorems)
2. All sides are congruent.
3. Diagonals are perpendicular.
4. Diagonals bisect the angles of the rhombus.



2. SQUARE:

A quadrilateral with all four sides congruent and all four angles right.

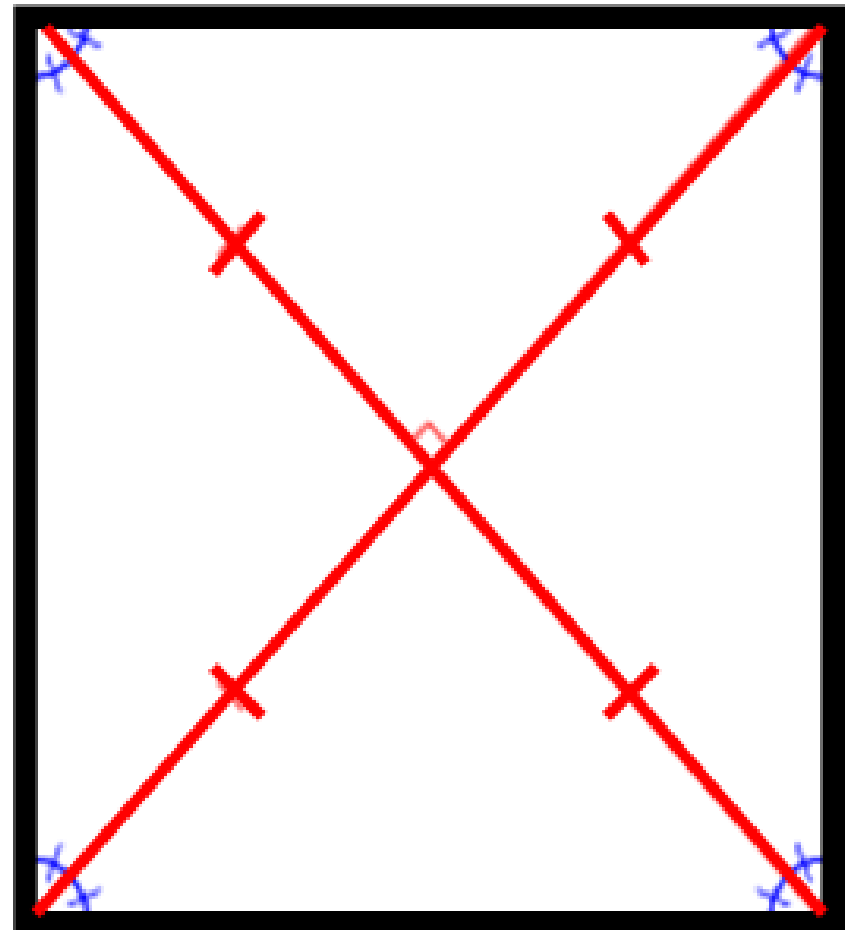




If a quadrilateral is both a rhombus and a rectangle, then it is a square.

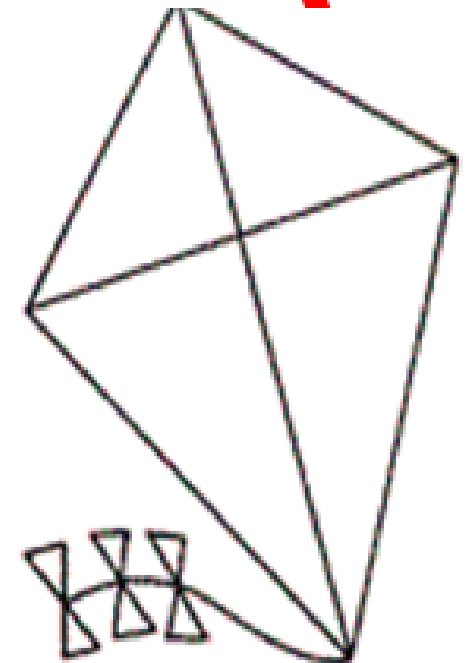
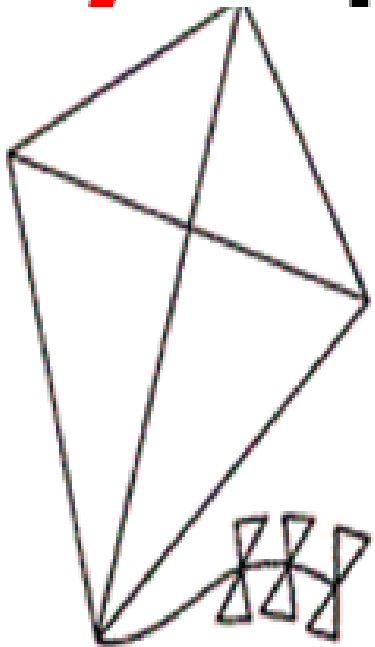
PROPERTIES OF SQUARES

1. A square has all the properties of a parallelogram.
2. A square has all the properties of a rectangle.
3. A square has all the properties of a rhombus.



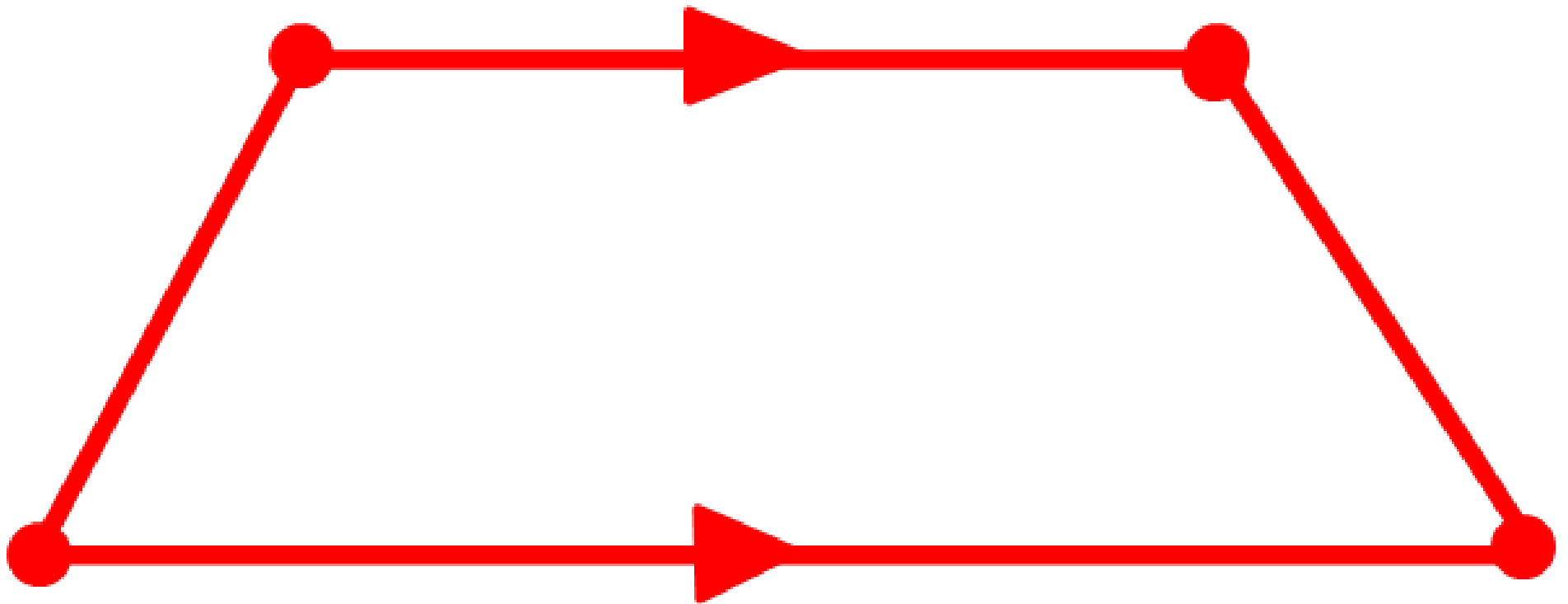


LESSON 6.6 TRAPEZOIDS AND KITES



1. TRAPEZOID:

A quadrilateral with exactly one pair of parallel sides.

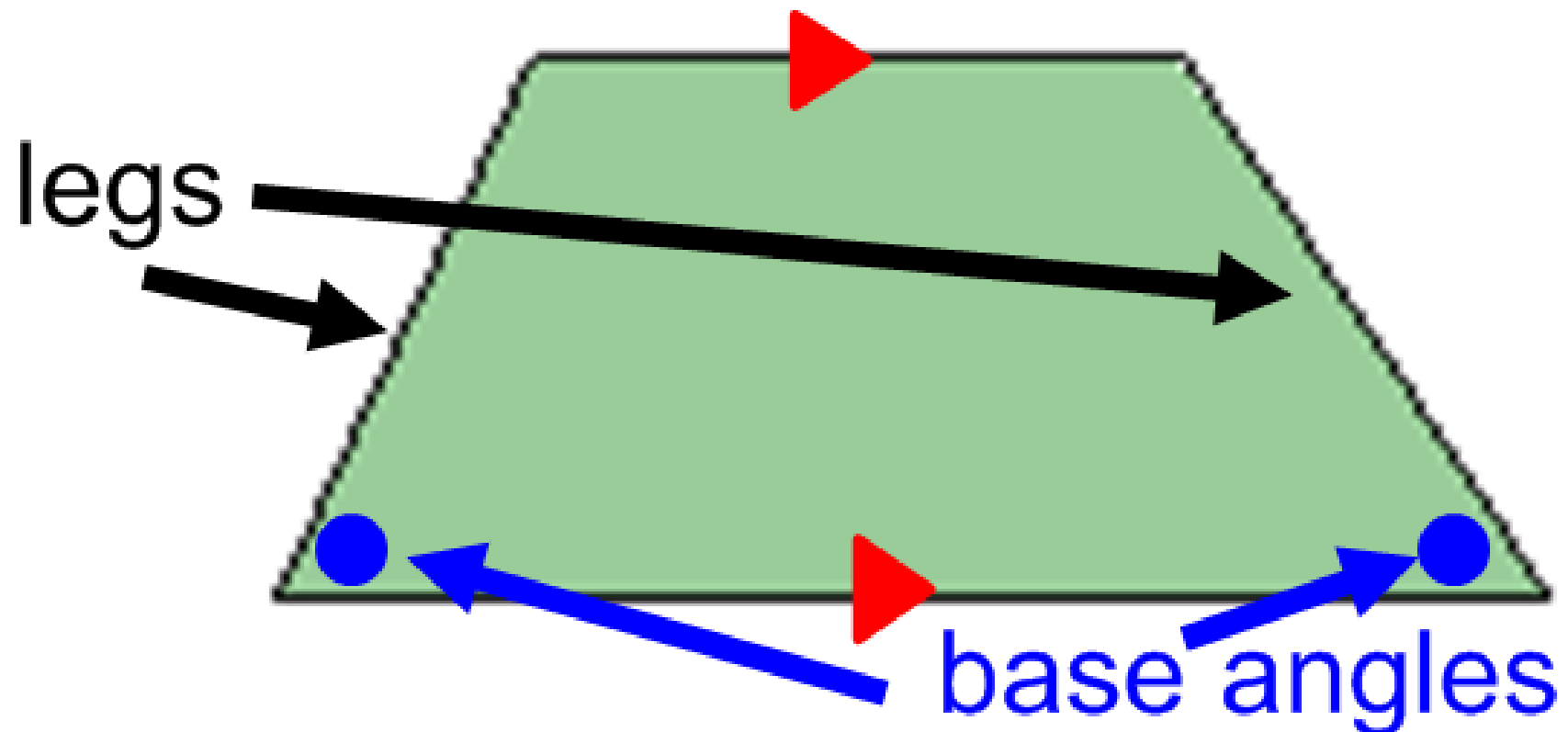


2. BASE ANGLES:

Formed by one base and the legs.

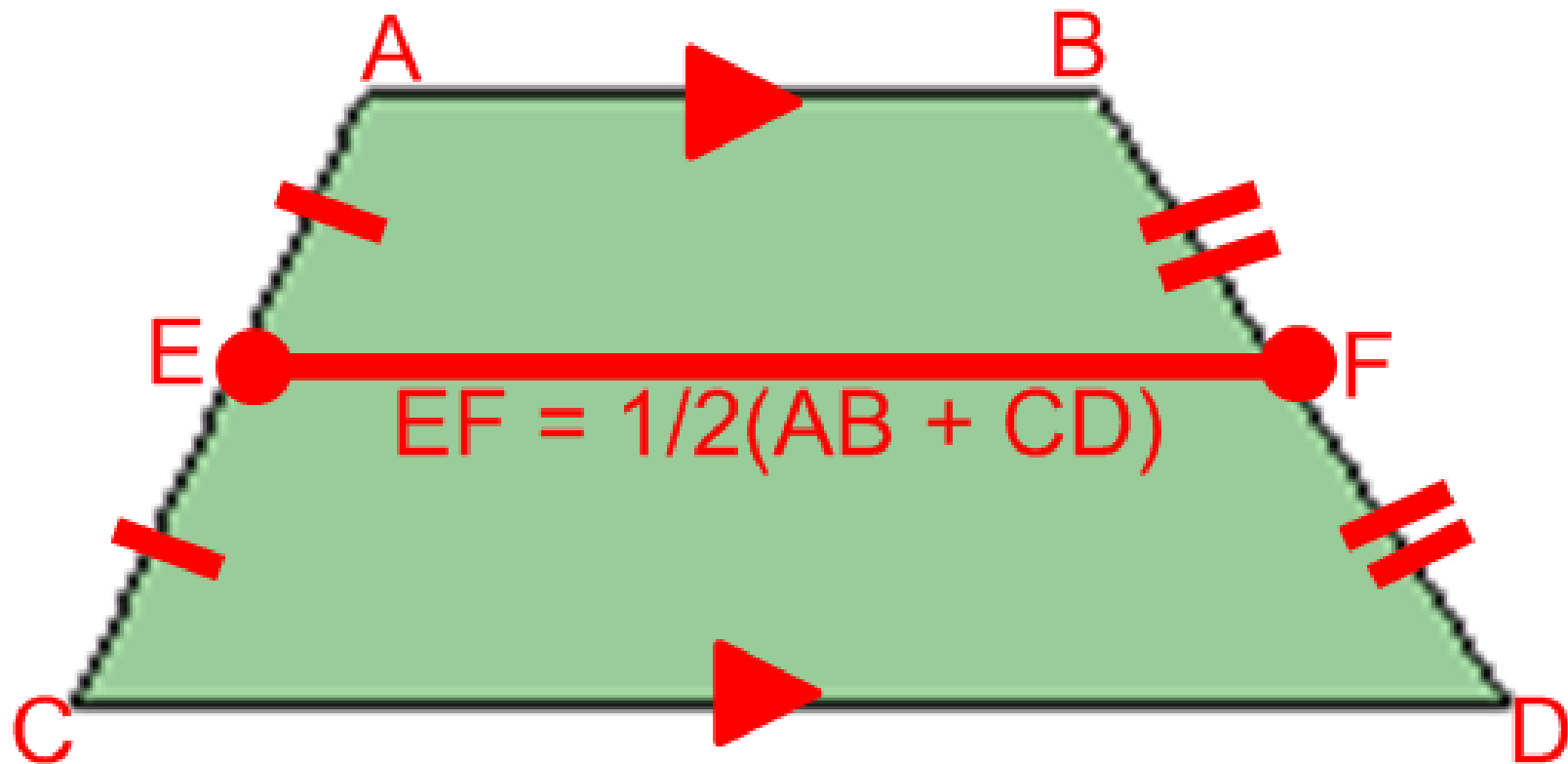
3. LEGS:

The nonparallel sides.



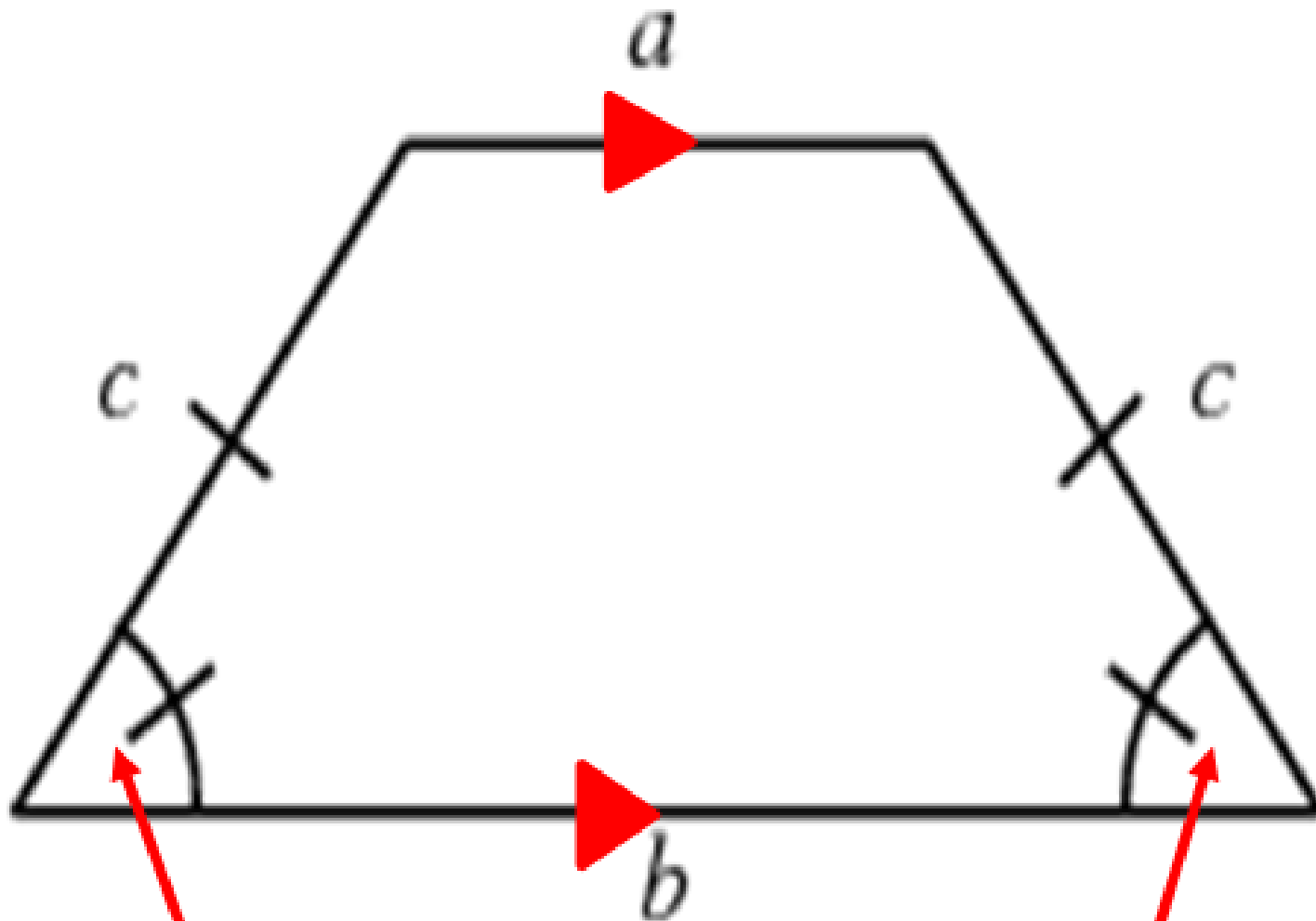
4. MEDIAN:

The segment that joins the midpoints of the legs of a trapezoid



5. ISOSCELES TRAPEZOID:

A trapezoid in which the legs are congruent.



(base angles would also be congruent)

6. KITE:

A quadrilateral that has two pairs of consecutive congruent sides, but opposite sides are not congruent.

