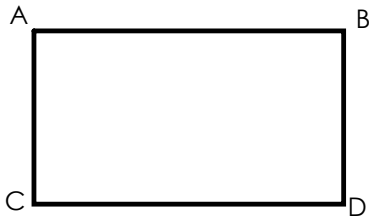
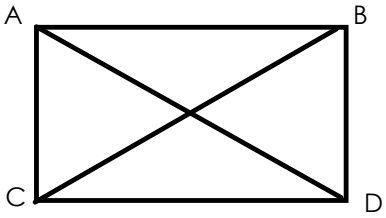
5.3 Squares and Rectangles

Objective: Students will learn to love squares and rectangles for who they really are.

A Rectangle is a parallelogram. But it's special. Like your mom.

A rectangle has TWO special properties





1. _____

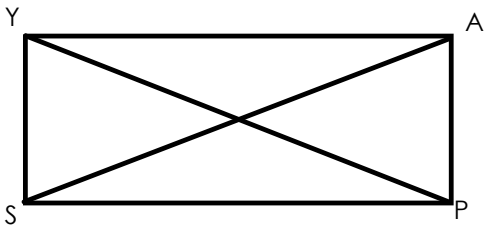
_____

2. _____

_____

Given: In parallelogram YAPS, $\overline{YP} \cong \overline{AS}$

Prove that YAPS is a rectangle.



Proof

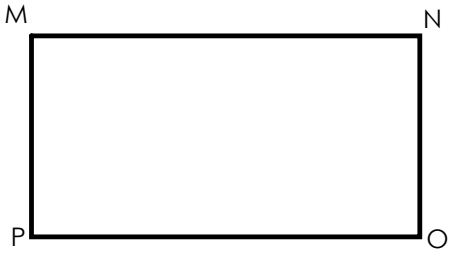
Parallelogram YAPS is a rectangle because

_____

_____

Given: In parallelogram MNOP, $\overline{MN} \perp \overline{NO}$

Prove: That MNOP is a rectangle.



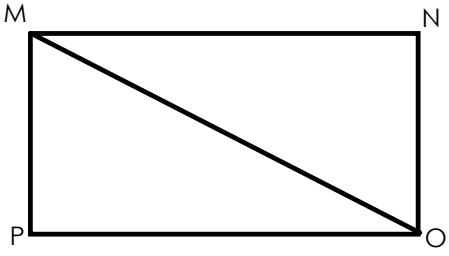
Proof

Parallelogram MNOP is a rectangle because

_____

_____

MNOP is a rectangle. If ∠POM = 42, find the measure of ∠PMO.



Properties of a Square

A parallelogram is square if it has the properties of a rhombus and a rectangle

Rhombus Properties

1._____

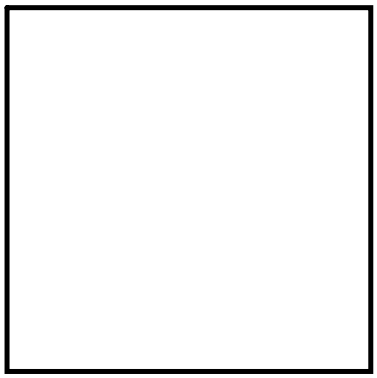
2._____

3._____

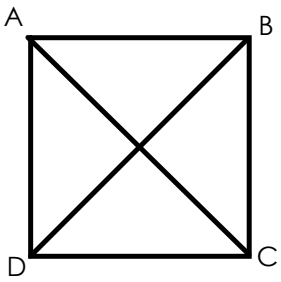
Rectangle Properties

1._____

2._____



Given: In parallelogram ABCD, all sides are congruent and AC ≅ DB.
Prove that ABCD is a Square



Proof

Parallelogram WXYZ is a square because

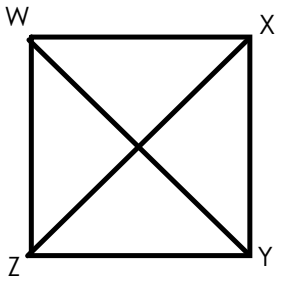
1._____

_____

2._____

_____

Given: In parallelogram WXYZ, WY ⊥ XZ and WY ≅ XZ.
Prove that WXYZ is a square.



Proof

Parallelogram WXYZ is a square because

1._____

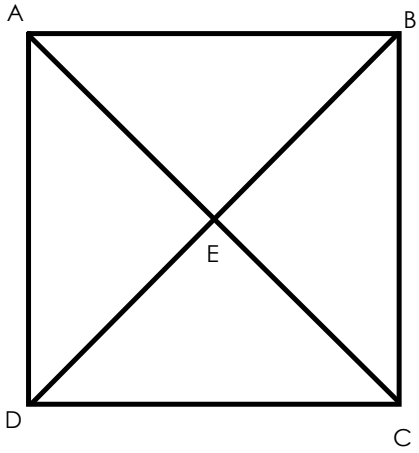
_____

2._____

_____

Parallelogram ABCD is a square. Fill in the missing angles and state the properties you used to solve find the angle measures.

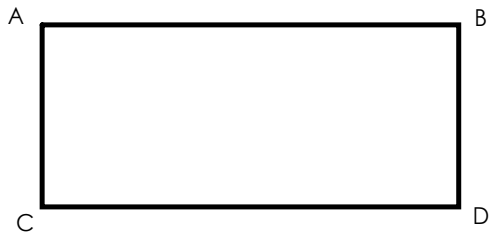
Angle	Measure	Reason
∠DAB		
∠DAC		
∠AED		



Independent Practice

For each question state the property that helped you solve the problem

Find the measure of the given angles

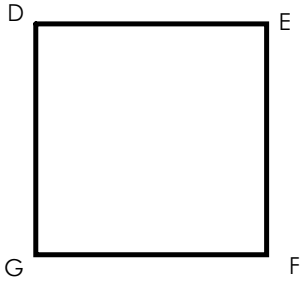


∠A = _____

∠C = _____

Property:_____

In square DEFG, EF = 13. What is the length of each side of the square?

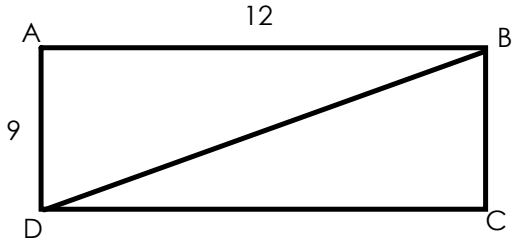


DE = _____ FG = _____

EF = _____ GD = _____

Property:_____

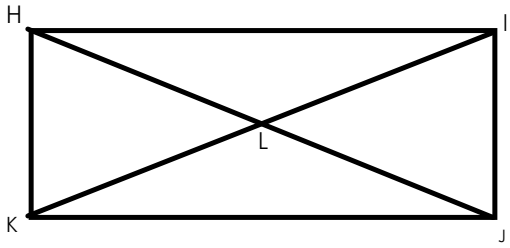
Find the length of DB.



(hint: use the Pythagorean theorem)

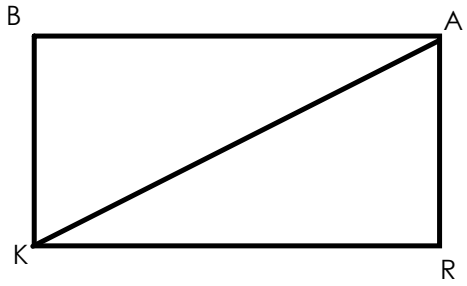
DB = _____

Parallelogram HIJK is a rectangle and KI = 12. Find the missing lengths for each diagonal.



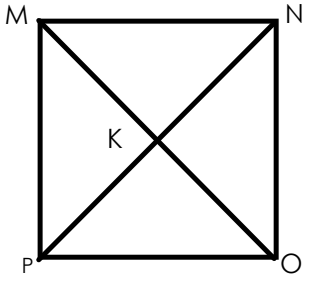
HJ = _____ Property:_____

BARK is a rectangle. If ∠BKA = 59, find the measure of ∠BAK.



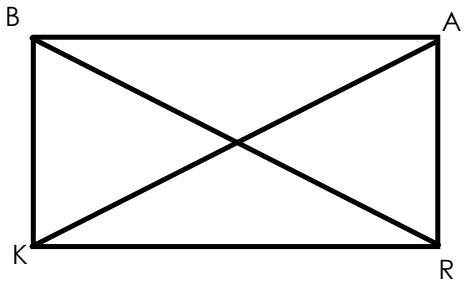
∠BAK = _____

MNOP is a square. Find the measure of the missing angle



∠MKP= _____ Property:_____

Given: In parallelogram BARK, $\overline{BR} \cong \overline{AK}$.
Prove that MNOP is a rectangle.



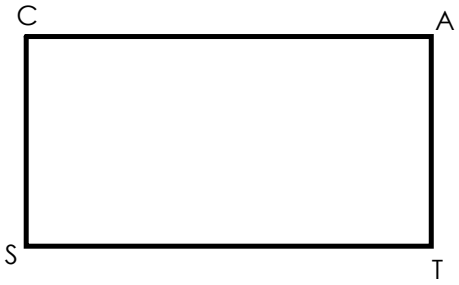
Proof

Parallelogram BARK is a rectangle because

_____

_____

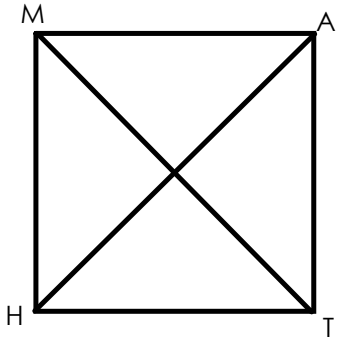
Given: In parallelogram CATS, $\overline{CS} \perp \overline{ST}$
Prove that CATS is a rectangle.



Proof

Given: $\overline{MT} = \overline{AH}$, $\overline{MT} \perp \overline{AH}$

Prove: MATH is a square



In quadrilateral *ABCD*, the diagonals bisect its angles. If the diagonals are *not* congruent, quadrilateral *ABCD* must be a

1) square
2) rectangle
3) rhombus
4) trapezoid

A student in Mr. Siegel's class says the answer is 1. Do you agree with this student? Explain your reason.