Warm Up 2/28/19

1. Write the equation of a line perpendicular to 2x - y = 8 that crosses through (-3, 5).

$2x - y = 8$
$-2x \quad -2x$
$-y = -2x + 8$
$-1 \quad -1 \quad -1$
$y = 2x - 8$

$m = -\frac{1}{2}$ $(-3, 5)$
$y - 5 = -\frac{1}{2}(x + 3)$
$y - 5 = -\frac{1}{2}x - \frac{3}{2}$
$+5 \qquad +5$
$y = -\frac{1}{2}x + \frac{7}{2}$

$y = -\frac{1}{2}x + \frac{7}{2}$
$+\frac{1}{2}x \quad +\frac{1}{2}x$
$(2)\ \frac{1}{2}x + y = \frac{7}{2}\ (2)$

$x + 2y = 7$

2. A sequence is given as follows:

-2, -5, -8, -11,... $d = -3$ $a_1 = -2$

Write the rule for this sequence:

$a_n = d(n-1) + a_1$ $a_n = -3(n-1) - 2$
$-3n + 3 - 2$
$a_n = -3n + 1$

Find the value of $a_8 + a_{12}$

$a_8 = -3(8) + 1 = -23$
$a_{12} = -3(12) + 1 = -35$
$-58$

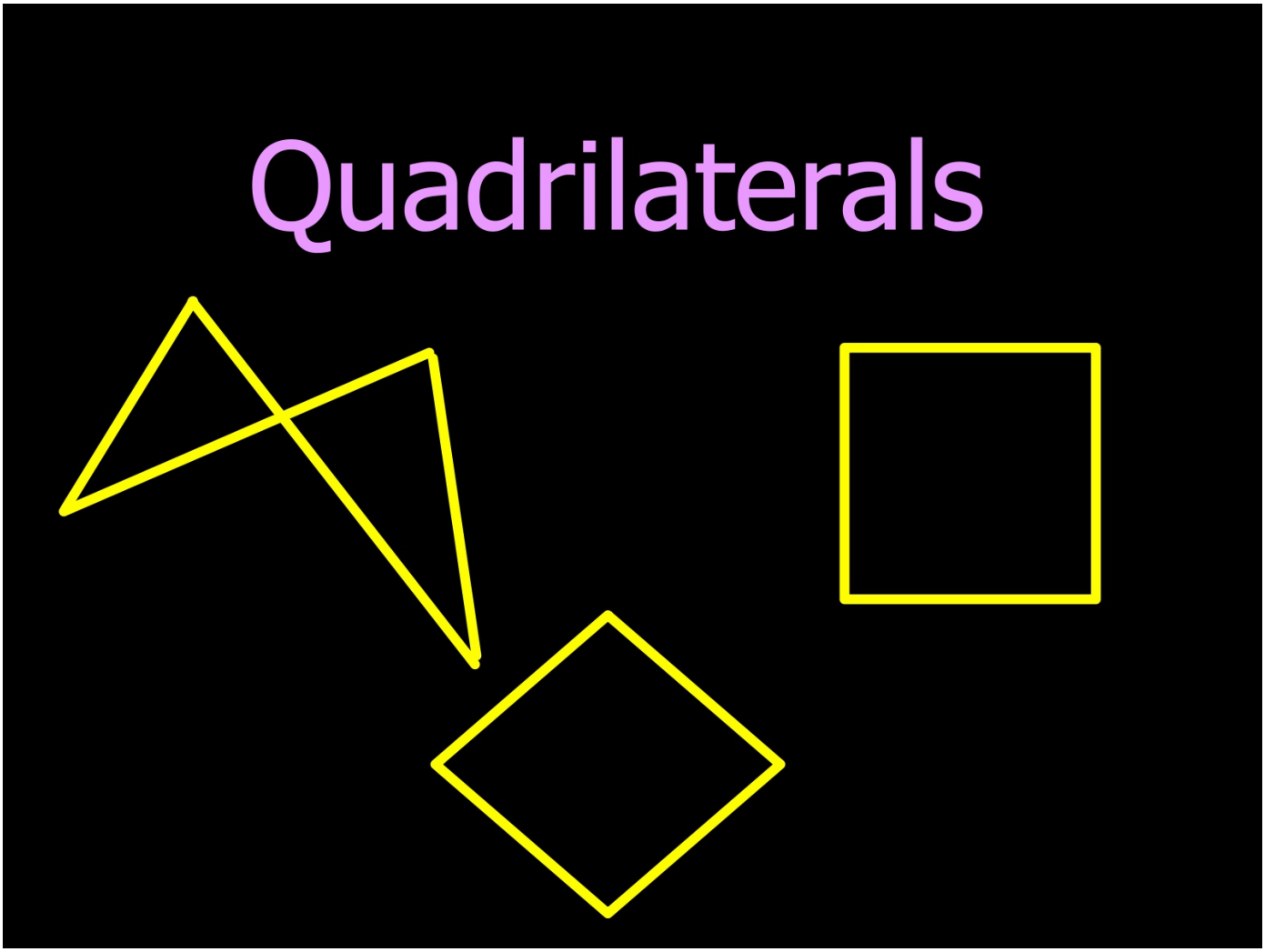
## MISSING ENDPOINT
## "Swoop Swoop" Method

1. Point L is the midpoint of MN. Find the coordinate for N if M is (-3,4) and L is (-5, 7)

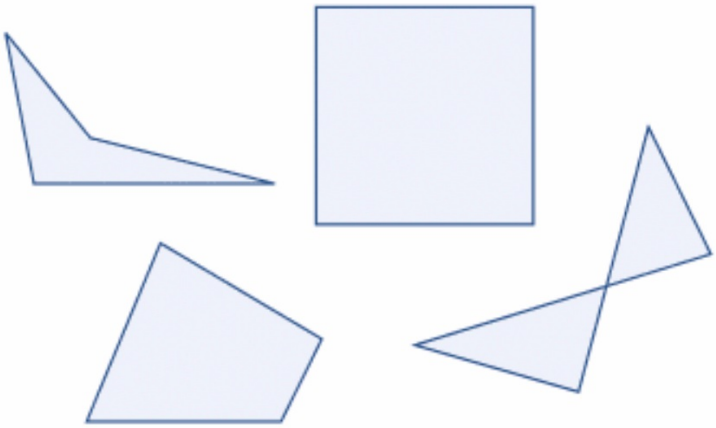
2. Point Y is the midpoint of XZ. Find the coordinate for X if Y is (7, -4) and Z is (5, -1)

3. Point B is the midpoint of AC. Find the coordinate for C if A is (1,-2) and B is (-3,4)

# Quadrilaterals



**Quadrilateral** just means "four sides" (*quad* means four, *lateral* means side).

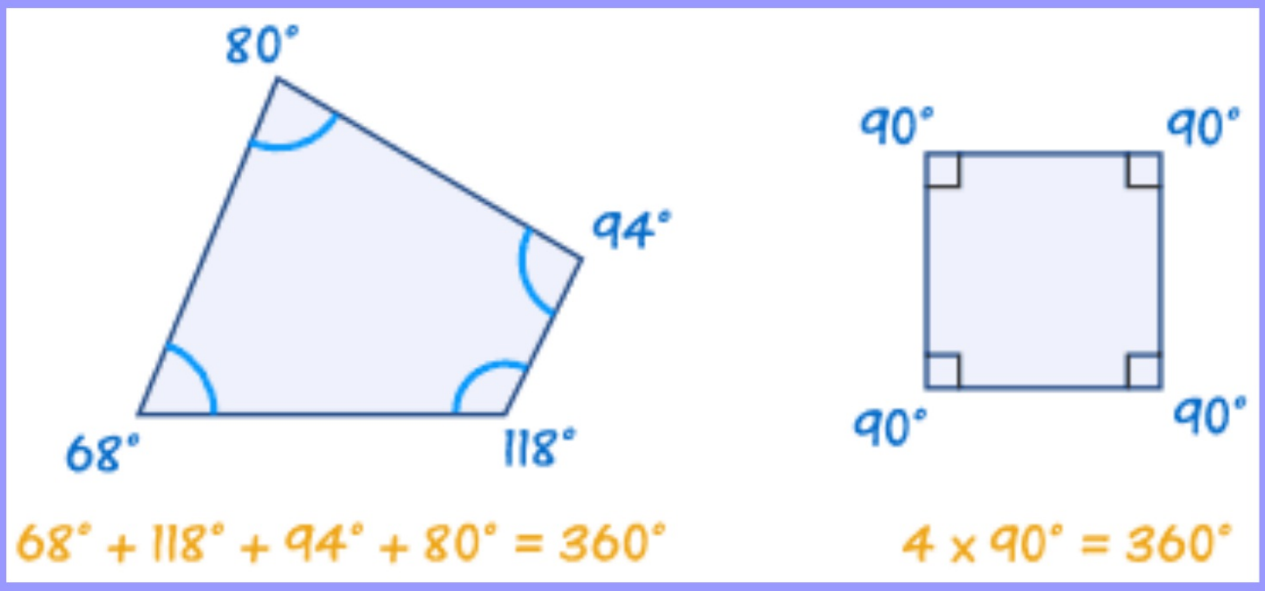


**Any four-sided shape is a Quadrilateral**.

But the sides have to be **straight**, and it has to be **2-dimensional**.

**Properties of Quadrilaterals:**

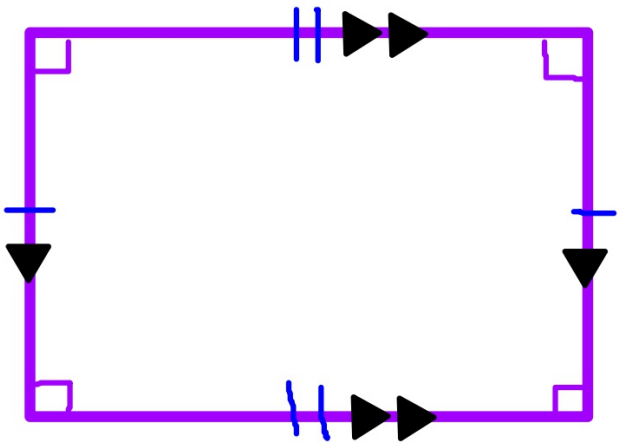
- Four sides (edges)
- Four vertices (corners)
- The interior angles add up to **360 degrees**:



# Types of Quadrilaterals

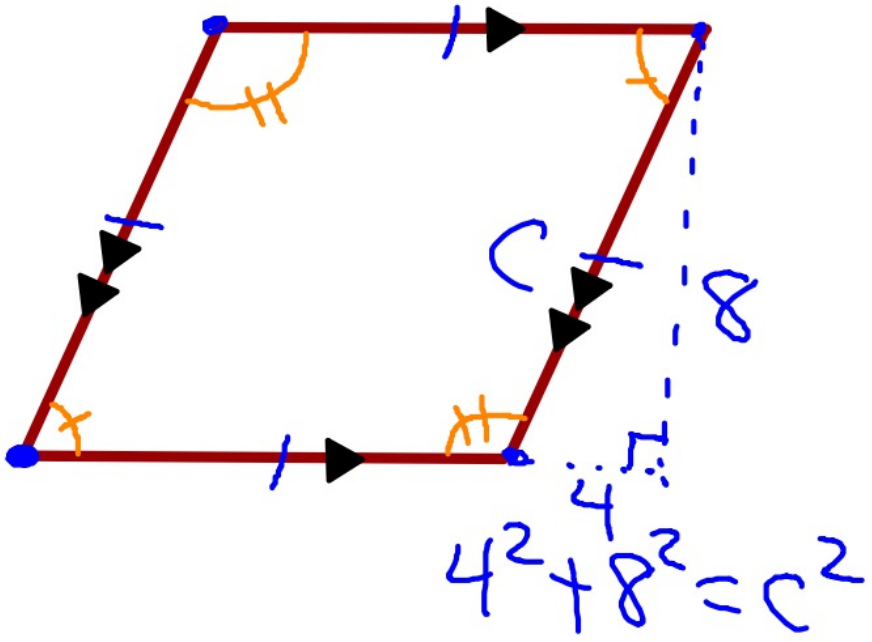
# RECTANGLES

- A rectangle is a four-sided shape where every angle is a right angle (90°).
- **Opposite sides** are parallel and of equal length.

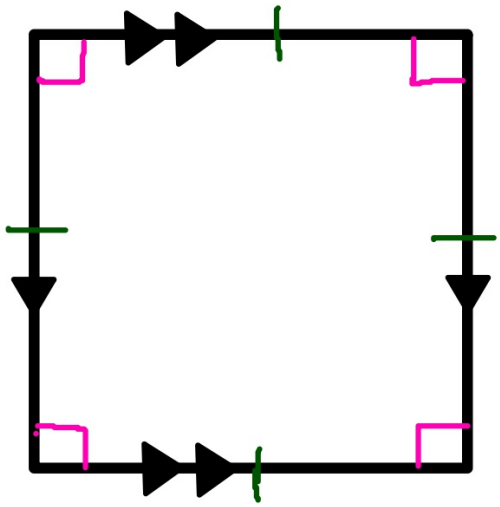


# RHOMBUS

- A rhombus is a four-sided shape where all sides have equal length.
- opposite sides are parallel *and* opposite angles are equal.



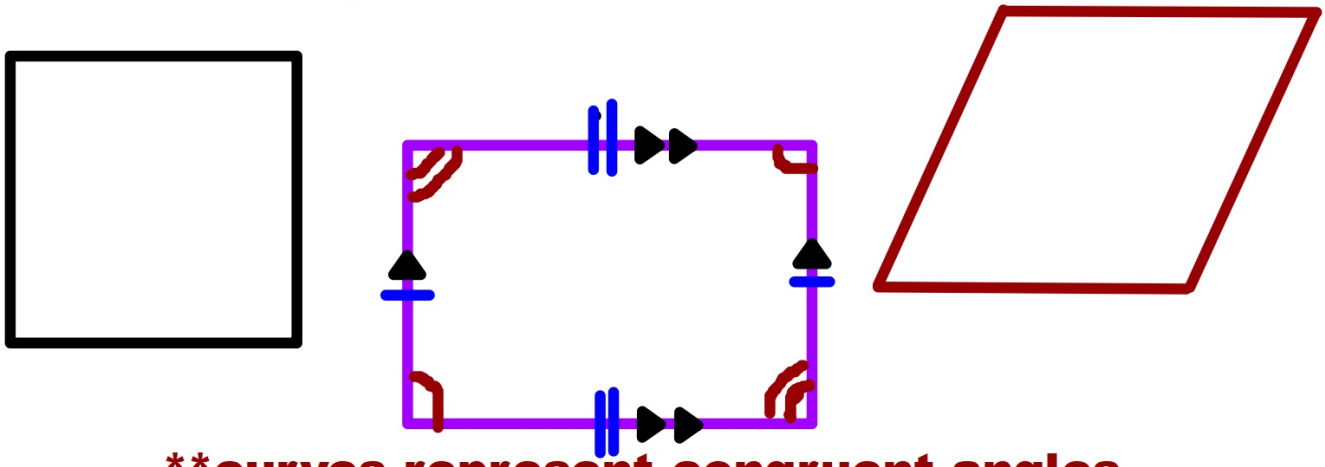
# SQUARES



- A square has equal sides and every angle is a right angle (90°)
- opposite sides are parallel.
- A square also fits the definition of a **rectangle** (all angles are 90°), and a **rhombus** (all sides are equal length).

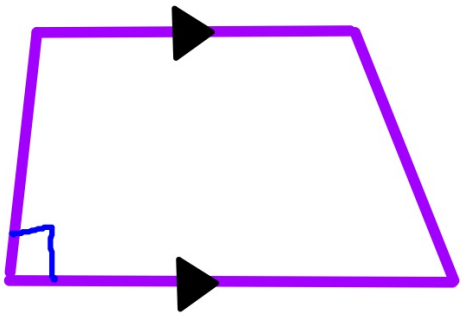
# PARALLELOGRAMS

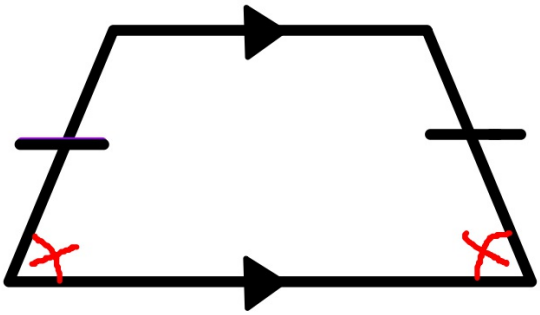
- A <u>parallelogram</u> has opposite sides parallel and equal in length. Also opposite angles are equal
- NOTE: Squares, Rectangles and Rhombuses are all Parallelograms!



**curves represent congruent angles
**arrows represent parallel sides
**lines represent equal sides

# TRAPEZOIDS

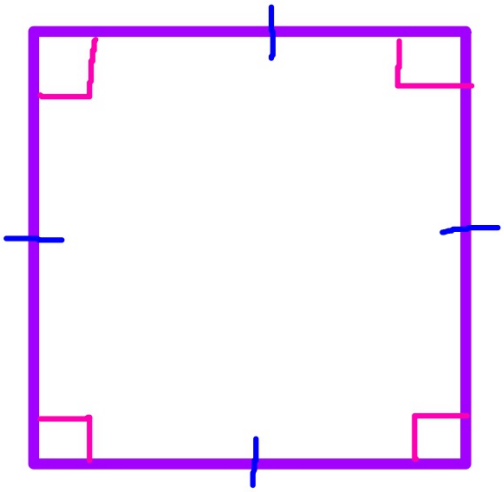




- A trapezoid has one pair of opposite sides that are parallel.
- Isosceles trapezoid: Sides that aren't parallel are equal in length and both angles coming from a parallel side are equal, as shown.

## Example #1

**Which correctly names the figure below?**



A. Rectangle

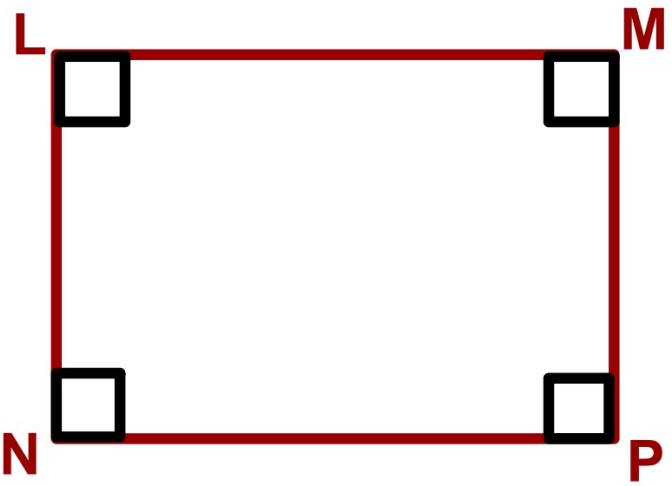
B. Parallelogram

C. Square

D. None of the above

## Example #2

**Which of the following name(s) correctly identify the figure below:**




**Given:**
**LM ∥ NP**
**LN ∥ MP**

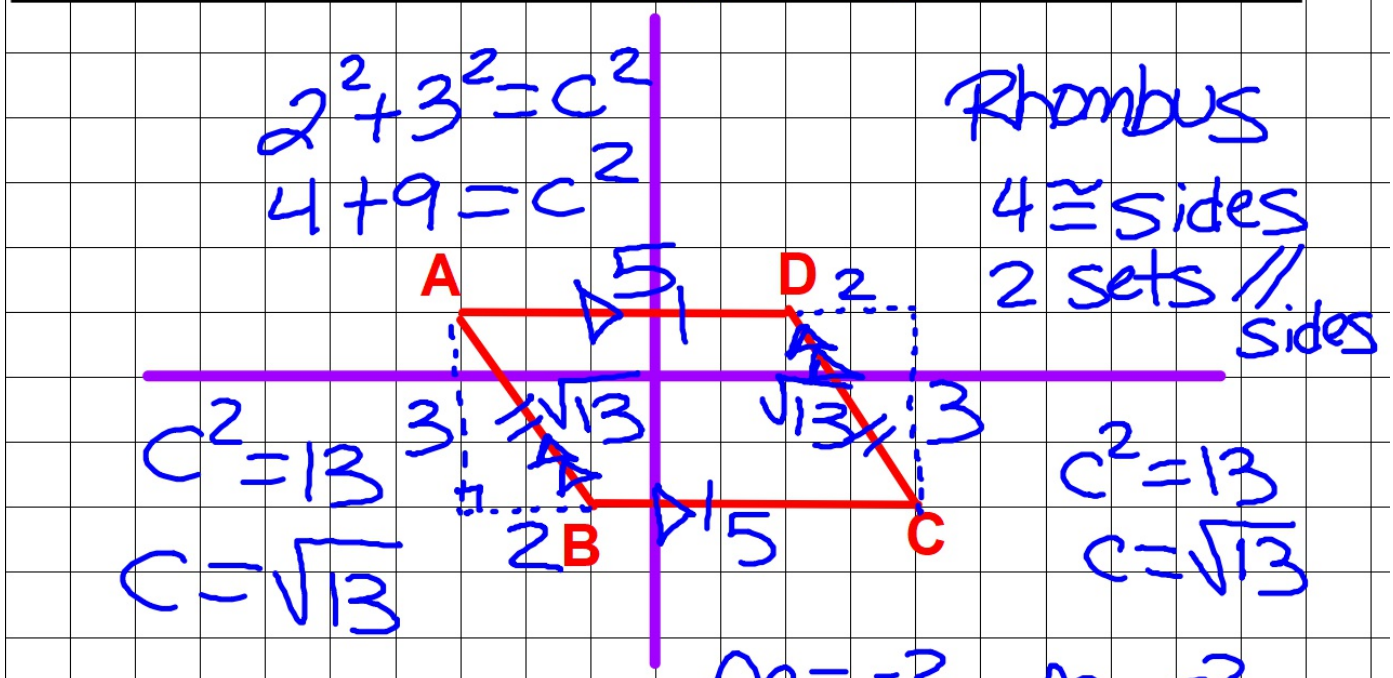
**( ∥ =parallel)**

A. Quadrilateral
B. Parallelogram
C. Rectangle
D. Square
E. Trapezoid

**Example #3**

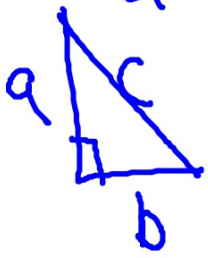
**A(-3, 1), B(-1, -2), D(2, 1), and C (4,-2) are the vertices of quadrilateral ABCD.**

**Could ABCD be a rectangle? Explain**



Right angles → ⊥ lines → Opp. recip. Slopes

Parallel Sides → same slope

Congruent (≅) Sides → distance formula

$a^2+b^2=c^2$ OR Pythorean theorem