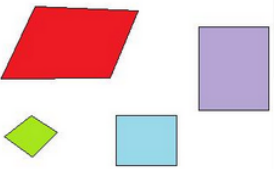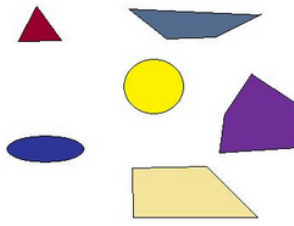15.

$m\angle A = 70$ $m\angle B = 39$

Name_____Period_____

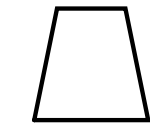| PARALLELOGRAMS	NOT PARALLELOGRAMS

Unit 9 Day 3

Parallelograms
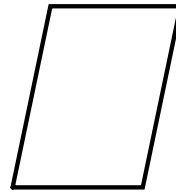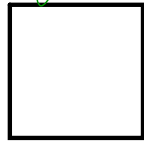
I can_Use characteristics of Parallelograms to Solve!

What is a Quadrilateral? — 4-sides
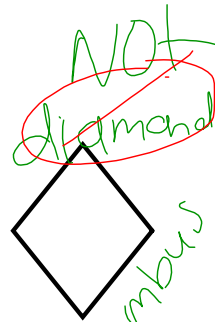
Can you identify the following?

Square
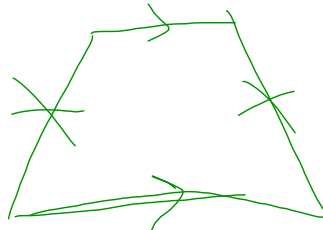
Rectangle

trapezoid

Parallelogram

NOT diamond

Rhombus

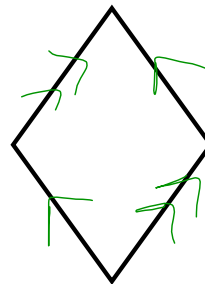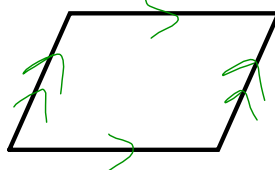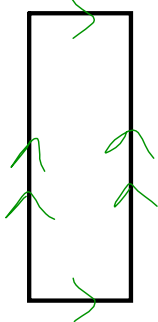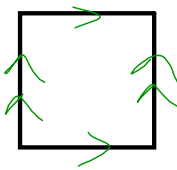**All of the above are parallelograms except one. Which one and why?**

trapezoid:

one Pair ||

What makes a quadrilateral a Parallelogram?

2 pairs of parallel s

A polygon with 4 sides.
~~The sum of the angles in a quadrilateral = 360.~~

If a quadrilateral is a parallelogram then its

opposite sides are parallel.

If a quadrilateral is a parallelogram then its
opposite sides are congruent.

If lines are ‖ then all the angle relations will hold true.

What is the angle relationship between
∠A and ∠B $= 180°$

∠B and ∠C $= 180°$

∠C and ∠D $= 180°$

∠A and ∠D $= 180°$

So if $m∠A = 100°$, what are the measures of the other angles?

3

If a quadrilateral is a parallelogram then its consecutive angles are supplementary. = 180

Same Side

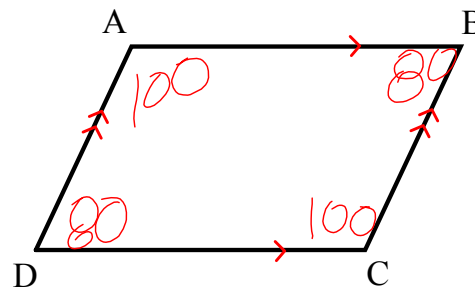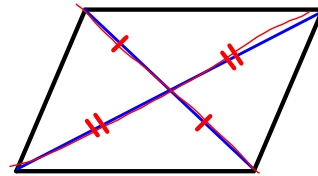A   B

D   C

If a quadrilateral is a parallelogram then its

opposite angles are congruent

$\angle A = \angle C$

$\angle D = \angle B$

If a quadrilateral is a parallelogram then its diagonals bisect each other.
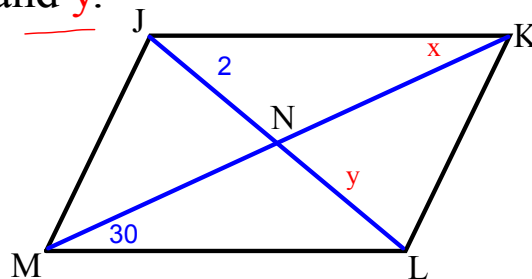
2 equal parts

Given ▱ JKLM: Find x and y.

J   K

2   x

N

30   y

M   L

$y = 2$
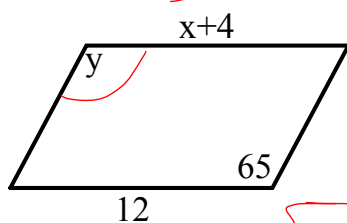
$x = 30°$

5 properties of a parallelogram

1. Sides are parallel

2. Diagonals Bisect each other. & congruent

3. Consecutive angles = 180 "Same side"

4. All angles add up to 360°

5. Opposite angles are congruent

Find x and y in the following ▱.

x+4

y

65

12

$x + 4 = 12$

$x = 8$
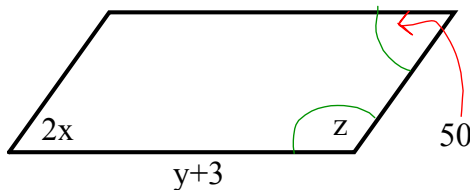
$y = 65°$

Find x and y in the following ▱
What about z?

$2x = 50$

$x = 25°$

$y + 3 = 18$

$y = 15$

$z = 180 - 50 = 130°$

18

2x

z   50

y+3

Given ▱ABCD.

1. If $m\angle ABC = 2x + 5$ and $m\angle BCD = 4x + 7$

$6X + 12 = 180$
$\quad\quad -12 \quad\quad -12$
$6X = 168 \quad X = 28$

2. $AE = 5x + 2$ and $EC = 7x - 6$

$5X + 2 = 7X - 6$
$-5X + 6 = -5X + 6$
$8 = 2X \rightarrow X = 4$

A ..... B
E
D C
$5x+2$
$7x-6$

3. If $m\angle ABC = 8x - 16$ and $m\angle ADC = 4x + 20$

$8X + 16 = 4X + 20$
$-4X + 16 = -4X + 16$
$4X = 36 \longrightarrow X = 9$

Solve.

20
$4x+8$ $6x+2$
20

$4X + 8 = 6X + 2$
$-4X - 2 = -4X - 2$
$6 = 2X \quad X = 3$

The perimeter of parallelogram ABCD is 96 cm. AB is 10 cm less than BC. What is the length of the smaller sides?
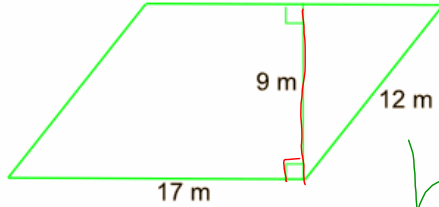
A $x-10$ B   P = 96 cm
X
D $x-10$ C
x

$4X - 20 = 96$
$\quad\quad +20 \quad\quad +20$
$4X = 116 \longrightarrow X = 29$

What do you remember about the area of a parallelogram? $A = bh$
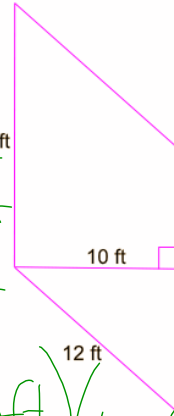
Calculate the area of this parallelogram:

9 m

12 m

17 m

$base = 17m$

$h = 9m$

$A = (17m)(9m) = 153m^2$

Calculate the area of this parallelogram:

15 ft

10 ft

12 ft

$b = 15ft$

$h = 10f$

$A = (15ft)(10ft) = 150ft^2$