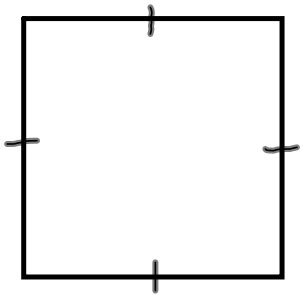
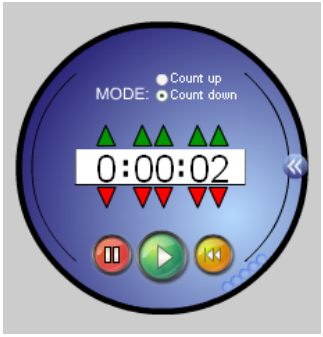
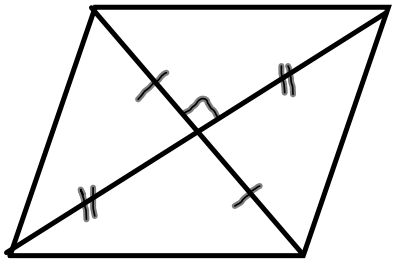
## 1/24: Warm Up

Use the information in the diagram to name the special quadrilateral.

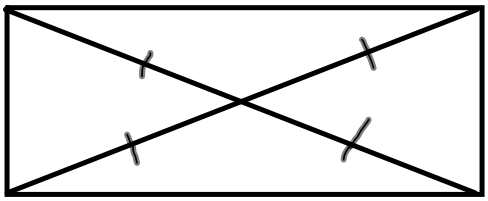
1.



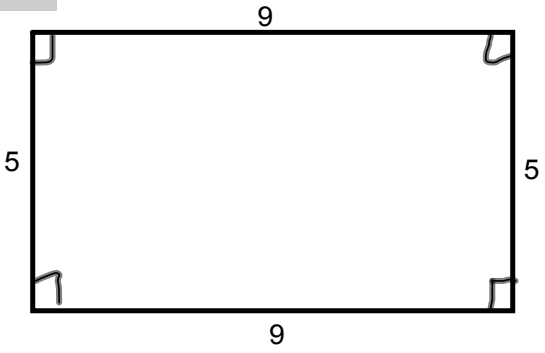


3.

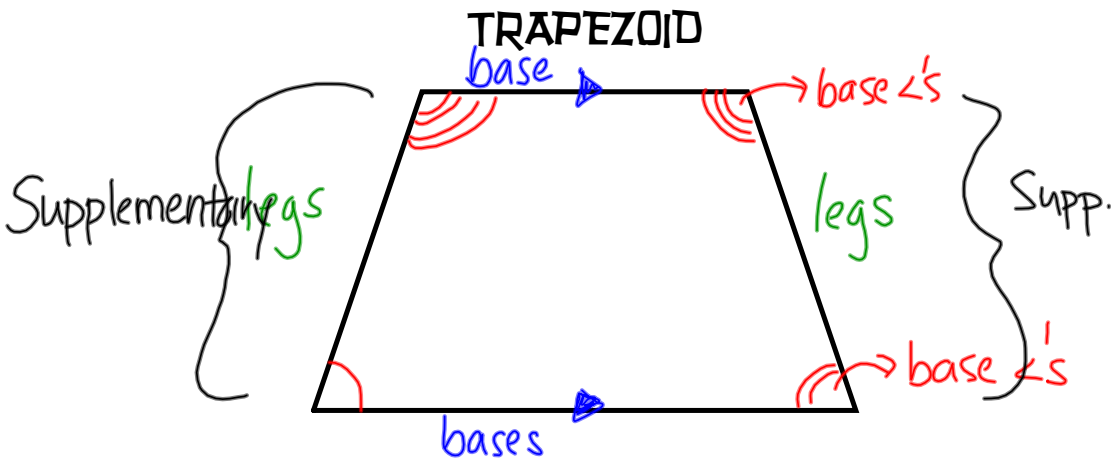


4.

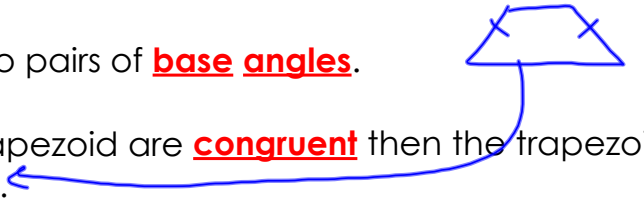


6.5: **Trapezoids** Date: **1/24**

*Goal: To use properties of trapezoids*

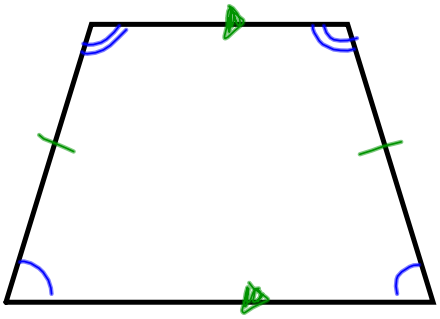



- A trapezoid is a **quadrilateral (4 sides)**.
- A trapezoid has exactly one pair of **parallel** sides.
- The parallel sides are the **bases**.
- The nonparallel sides are the **legs**.
- A trapezoid has two pairs of **base angles**.
- If the legs of the trapezoid are **congruent** then the trapezoid is an **isosceles** trapezoid.



## THEOREM 6.12

"If a trapezoid is isosceles, then each pair of **base** angles are congruent."

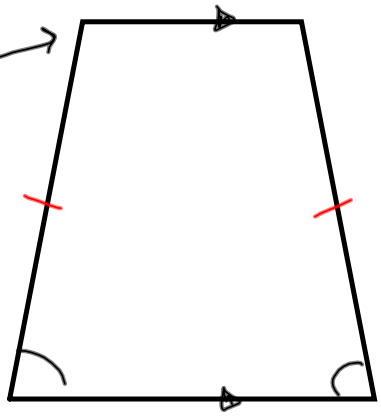


## THEOREM 6.13

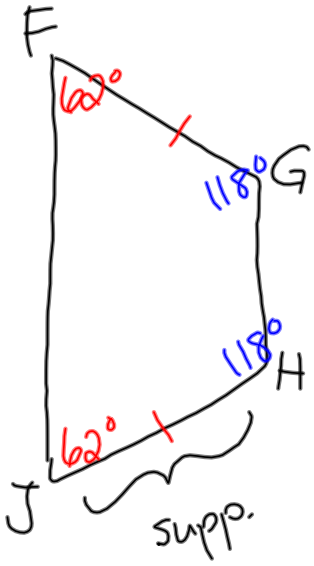
"If a trapezoid has a pair of congruent base angles, then it is **isosceles**."

Only one pair of ≅ base <'s is needed.

or



**Example 1:** *FGHJ* is an isosceles trapezoid. Find the missing angle measures.




$\angle J = 62°$

$180 - 62 = 118°$

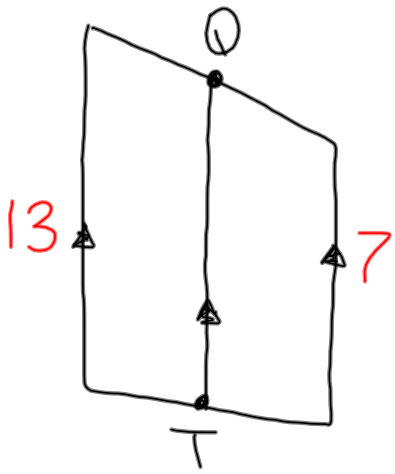
$\angle H = 118°$

$\angle G = 118°$

- The **midsegment of a trapezoid** is the segment that connects the **midpoints** of its legs.
- The midsegment of a trapezoid is **parallel** to the bases.
- The length of the midsegment of a trapezoid is half the sum of the lengths of the bases.

Midsegment $= \frac{1}{2}(\text{base} + \text{base})$

**Example 2:** Find the length of the midsegment $\overline{QT}$ of trapezoid *PRSU*.

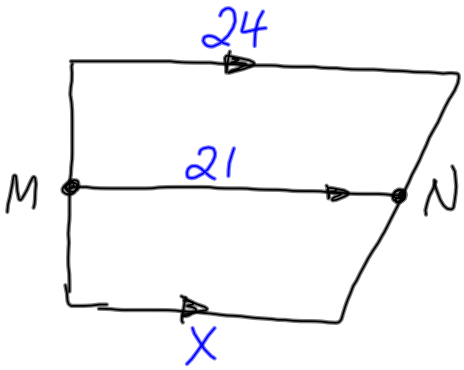



$QT = \frac{1}{2}(20)$

$QT = 10$

**Example 3:** Find the length of the midsegment $\overline{MN}$ of the trapezoid.

FIND BASE:




Midseg = $\frac{1}{2}$(base + base)

$21 = \frac{1}{2}(24 + x)$

$21 = 12 + \frac{1}{2}x$

$-12 \quad -12$

$2 \cdot 9 = \frac{2}{2}x$

$18 = x$

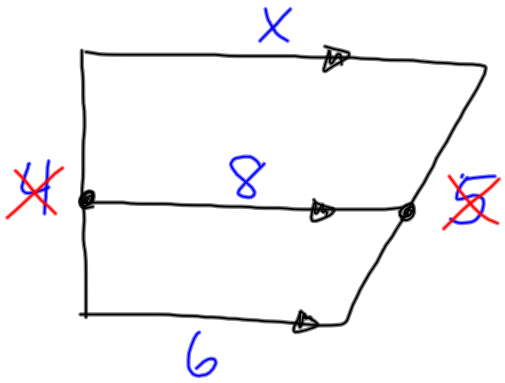
$2 \cdot 21 = 2 \cdot \frac{1}{2}(24 + x)$

$42 = 24 + x$

$-24 \quad -24$

$18 = x$

**Example 4:** Find the length of the midsegment $\overline{MN}$ of the trapezoid.




$2 \cdot 8 = 2 \cdot \frac{1}{2}(6 + x)$

$16 = 6 + x$

$-6 \quad -6$

$10 = x$

# Homework:

pg. 334 #1 - 13, 14 - 24 (e)

**Chapter 6: Quiz #2 (6.4 - 6.6) - Friday 1/27**