Sec. 15.2 Notes: Trapezoids

**Trapezoid:** A trapezoid is a quadrilateral with exactly _____________________________________________.

- Bases:
- Legs:
- Base angles:

**Median of a Trapezoid:** _____________________________________________.

**Trapezoid Median Theorem:**
1. _____________________________________________.
2. _____________________________________________.

**Example 1:** Given trapezoid EFGH and \( MN \) is a median. Use the figure and the Trapezoid Median theorem and the given information to answer the questions.

   a. If \( m \angle GFE = 42^\circ \), then \( m \angle NME = \) _____ and \( m \angle MEH = \) _____.

   b. Write an equation and solve for \( x \) if \( FG = 4x + 4 \), \( EH = x + 5 \), and \( MN = 22 \).

**Example 2:** Given trapezoid EFGH and \( MN \) is a median. Find \( FG \) if \( MN = 19 \) and \( EH = 12 \).
Isosceles Trapezoid: A trapezoid whose legs are _______________________________________.

Properties of an Isosceles Trapezoid:
1. __________________________________________________________________________________
2. __________________________________________________________________________________
3. __________________________________________________________________________________

Example 3:QRST is an isosceles trapezoid with bases $QR$ and $ST$ and median $XY$.

a. Find TS if $QR = 22$ and $XY = 15$.

b. Find the measure of all four angles of the trapezoid if $m\angle Q = 4a - 10$ and $m\angle T = 3a + 32.5$.

Example 4:JKLM is an isosceles trapezoid with JK parallel to LM and median RP.

a. Find RP if $JK = 2x + 6$, $RP = 5 + x$, and $ML = \frac{1}{2}x - 1$.

b. Find $m\angle J$ and $m\angle K$ if $m\angle L = 5x$ and $m\angle M = x^2 - 84$.

Example 5:TVZY is an isosceles trapezoid with bases TV and YZ.

a. If $TY = 3x + 16$ and $VZ = 10x - 33$, find $TY$.

b. Find $m\angle T$, $m\angle Z$, and $m\angle Y$ if $m\angle V = 52^\circ$.