

A quadrilateral is a _____ if exactly _____ pair of opposite sides is _____.

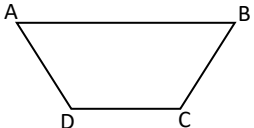
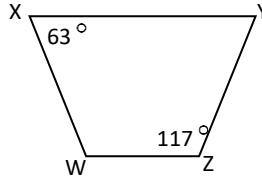
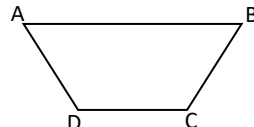
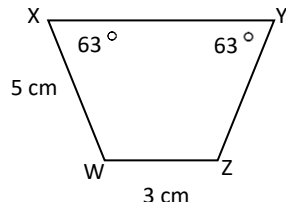
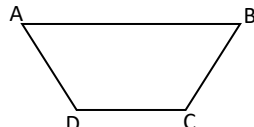
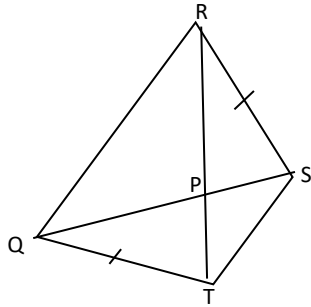
Trapezoid:



Isosceles Trapezoid:

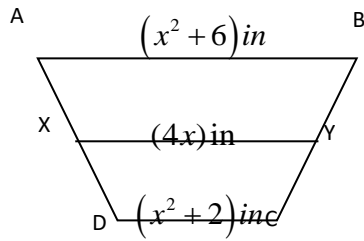


Theorems of Isosceles Trapezoids:

Theorem	Example
<p>1. If a quadrilateral is an isosceles trapezoid, then both pairs of base angles must be congruent.</p> 	<p>Find the measure of angle Y and the measure of angle W in isosceles trapezoid WXYZ.</p> 
<p>2. If a trapezoid has one pair of congruent base angles, then the trapezoid is isosceles.</p> 	<p>Find the length of YZ in trapezoid WXYZ.</p> 
<p>3. A trapezoid is isosceles if and only if its diagonals are congruent.</p> 	<p>In isosceles trapezoid QRST, RT = 24.1 mm and QP = 9.6 mm. Find the length of PS.</p> 

4. **Midsegment Theorem:** The midsegment of a trapezoid is parallel to each base, and it is $\frac{1}{2}$ the length of the sum of the bases.

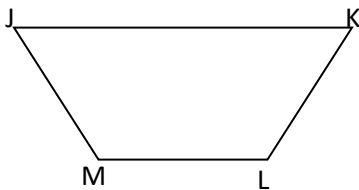
Ex. Find the length of the midsegment \overline{XY} .



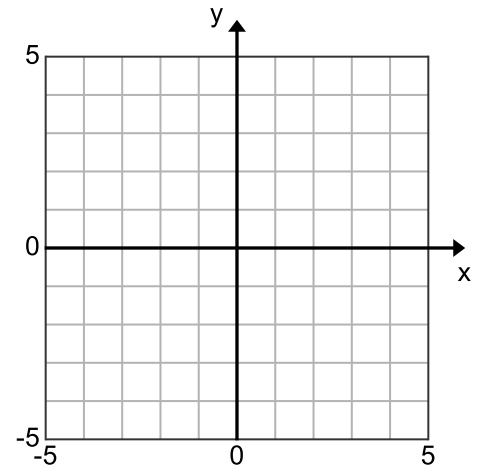
Classwork / Application Problems

1. Find the value of y so that Trapezoid $EFGH$ is isosceles with one pair of base angles being G and F . The $m\angle G = (2y^2 - 25)^\circ$ and $m\angle F = (y^2 + 24)^\circ$. Draw a diagram to justify your work.

2. Diagonals JL & KM are drawn in Isosceles Trapezoid $JKLM$. $JL = (z^2 + 38)cm$ and $KM = (3z^2 - 12)cm$. Find the value of z and the length of each diagonal.



3. Quadrilateral JAKE has coordinates J(0, 3), A(3, 3), K(4, 0), and E(-1, 0). Prove by coordinate geometry that quadrilateral JAKE is an isosceles trapezoid.



Slope	Distance	Midpoint
$m = \frac{y_2 - y_1}{x_2 - x_1}$	$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$