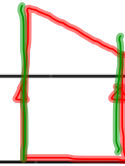


Special Quadrilaterals:

Trapezoid: a quadrilateral with one pair of opposite parallel sides



Bases of a trapezoid: 2 parallel sides

Legs of a trapezoid: 2 non-parallel sides

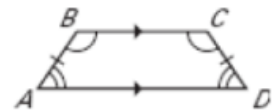
Base angles of a trapezoid: angles formed by same base and legs

Isosceles Trapezoid: trapezoid with congruent legs

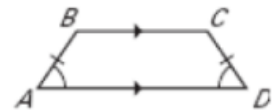
Midsegment of a Trapezoid: connects midsegments of the legs;
parallel to bases; length = avg of bases

Kite: quadrilateral with two pairs of adjacent congruent sides

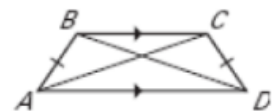
If a trapezoid is isosceles, then each pair of base angles is \cong
(Theorem 8.14)



If a trapezoid has a pair of base angles congruent, then it is an isosceles trapezoid
(Theorem 8.15)



A trapezoid is isosceles if and only if its diagonals are \cong
(Theorem 8.16)



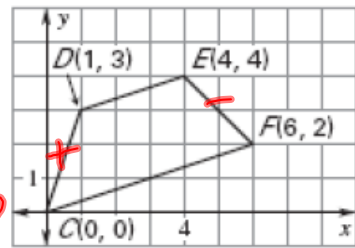
Show that CDEF is a trapezoid.

$$\overline{DE} \parallel \overline{CF}$$

\therefore trapezoid

$$m_{DE} = \frac{1}{3}$$

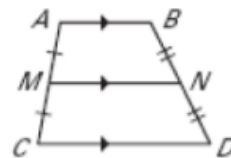
$$m_{CF} = \frac{2}{6} = \frac{1}{3}$$



The midsegment of a trapezoid is parallel to each base and its length is one half the sum of the lengths of the bases.

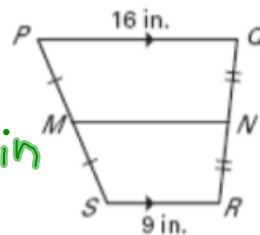
(Theorem 8.17)

$$MN = \frac{AB + CD}{2}$$



Find MN.

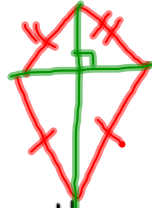
$$\frac{16 + 9}{2} = \frac{25}{2} = 12.5 \text{ in}$$



If a quadrilateral is a kite, then its diagonals are

perpendicular

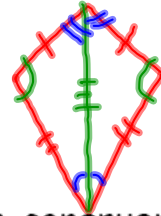
(Theorem 8.18)



If a quadrilateral is a kite, then exactly one pair of opposite

angles are congruent

(Theorem 8.19)



If a quadrilateral is a kite, then the non-congruent angles are

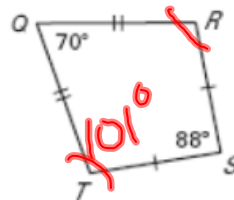
bisected

by the diagonals.

Classify the quadrilateral. Find $m\angle T$

Kite

$$\begin{array}{r} 70 + 88 = 158 \\ 360 \\ - 158 \\ \hline 202 \end{array}$$



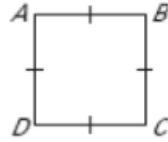
Quadrilateral WXYZ has both pair of opposite sides congruent. What types of quadrilaterals meet this condition?

Square, rhombus, rectangle, parallelogram



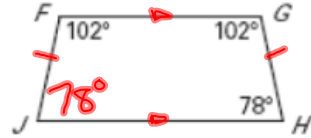
Classify quadrilateral ABCD.

rhombus



Is the given information enough to show FGHI is an isosceles trapezoid? Why or why not?

yes



Given: quadrilateral ABCD with vertices at the given coordinates. Classify the quadrilateral without using graph paper.

A(1,4) B(3,6) C(6,5) D(2,1)

$$m_{BC} = -3$$

$$m_{AD} = -\frac{1}{3}$$

$$m_{AB} = 1$$

$$m_{CD} = 1$$



isos trapezoid

$$BC = \sqrt{(3)^2 + (-1)^2} = \sqrt{10}$$

$$AD = \sqrt{(1)^2 + (-3)^2} = \sqrt{10}$$