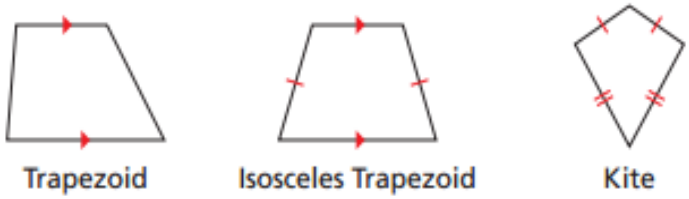
Round 3!!

Trapezoid and Kite it out.

Jan 26-12:26 PM



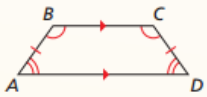
Trapezoid | Isosceles Trapezoid | Kite

7.5 Properties of Isosceles Trapezoids

Theorem 7.14 Isosceles Trapezoid Base Angles Theorem

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

If trapezoid $ABCD$ is isosceles, then $\angle A \cong \angle D$ and $\angle B \cong \angle C$.



Proof Ex. 39, p. 409

Theorem 7.15 Isosceles Trapezoid Base Angles Converse

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

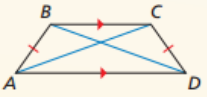
If $\angle A \cong \angle D$ (or if $\angle B \cong \angle C$), then trapezoid $ABCD$ is isosceles.

Proof Ex. 40, p. 409

Theorem 7.16 Isosceles Trapezoid Diagonals Theorem

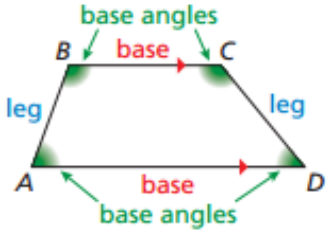
A trapezoid is isosceles if and only if its diagonals are congruent.

Trapezoid $ABCD$ is isosceles if and only if $\overline{AC} \cong \overline{BD}$.



Proof Ex. 51, p. 410

A trapezoid is a quadrilateral with exactly one pair of parallel sides that are called the bases.

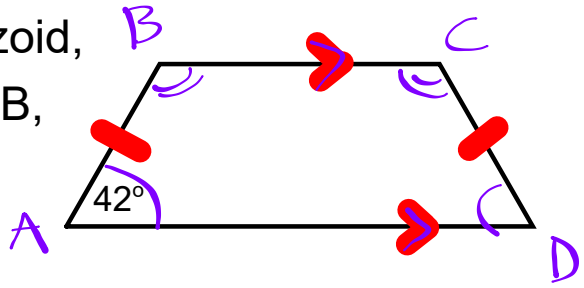


Isosceles trapezoid

Mar 13-9:28 AM

7.5 Example

ABCD is an isosceles trapezoid, and m∠A = 42°. Find the m∠B, m∠C, and m∠D.



m∠B = 138°

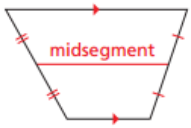
m∠C = 138°

m∠D = 42°

Mar 13-9:33 AM

Using the Trapezoid Midsegment Theorem

Recall that a midsegment of a triangle is a segment that connects the midpoints of two sides of the triangle. The **midsegment of a trapezoid** is the segment that connects the midpoints of its legs. The theorem below is similar to the Triangle Midsegment Theorem (Thm. 6.8).



READING
The midsegment of a trapezoid is sometimes called the *median* of the trapezoid.

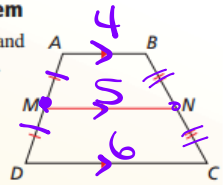
Theorem

Theorem 7.17 Trapezoid Midsegment Theorem

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

If $\overline{MN}$ is the midsegment of trapezoid $ABCD$, then $\overline{MN} \parallel \overline{AB}, \overline{MN} \parallel \overline{DC}$, and $MN = \frac{1}{2}(AB + CD)$.

Proof Ex. 49, p. 410

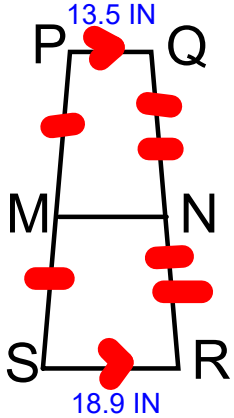


Example:

In the diagram, $\overline{MN}$ is the midsegment of trapezoid PQRS. Find MN.

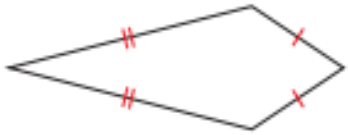
$\frac{1}{2}(13.5 + 18.9)$

16.2



Mar 13-9:32 AM

A kite is a quadrilateral that has two pairs of consecutive congruent sides, but opposite sides are NOT congruent.

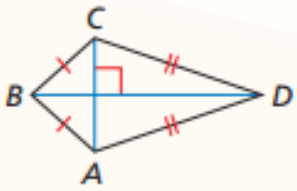


Theorem 7.18 Kite Diagonals Theorem

If a quadrilateral is a kite, then its diagonals are perpendicular.

If quadrilateral $ABCD$ is a kite, then $\overline{AC} \perp \overline{BD}$.

Proof p. 405

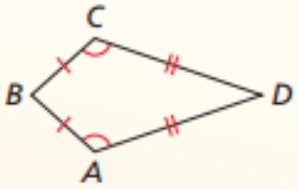


Theorem 7.19 Kite Opposite Angles Theorem

If a quadrilateral is a kite, then exactly one pair of opposite angles are congruent.

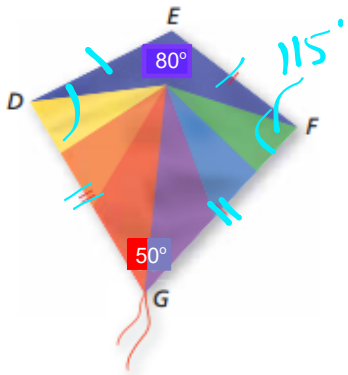
If quadrilateral $ABCD$ is a kite and $\overline{BC} \cong \overline{BA}$, then $\angle A \cong \angle C$ and $\angle B \ncong \angle D$.

Proof Ex. 47, p. 410



Mar 13-9:54 AM

7.5 Kite Example:



Find the measure of angle F.

$360 - (80+50)$

$360 - 130$

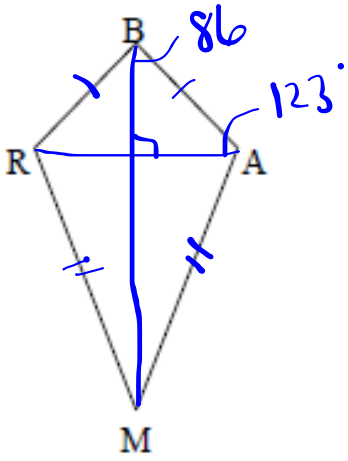
$\frac{230}{2} = 115^\circ$

Mar 13-9:56 AM

Kite

AB = BR, m∠BAM = 123°, m∠ABR = 86°

m∠R = 123° m∠M = 28°



$86 + 123 + 123 + x = 360°$

$x = 28$

Mar 13-12:30 PM

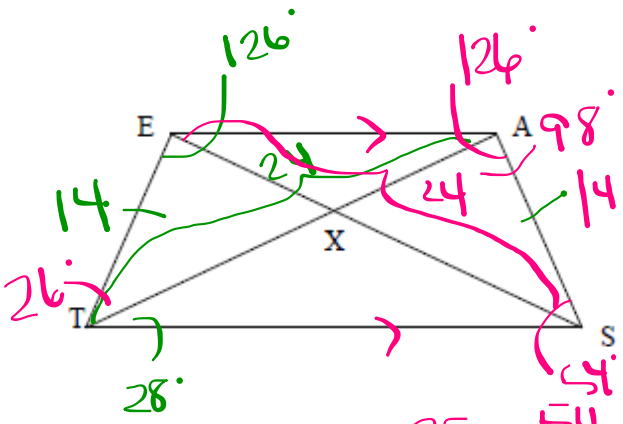
Trapezoid

TEAS is an isosceles trapezoid, TE = 14,
TA = 24, m∠TEA = 126°, m∠ATS = 28°

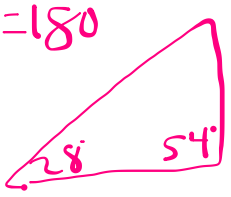
m∠AST = 54° m∠EAS = 126°

m∠SAT = 98° m∠ETX = 26°

ES = 24 AS = 14



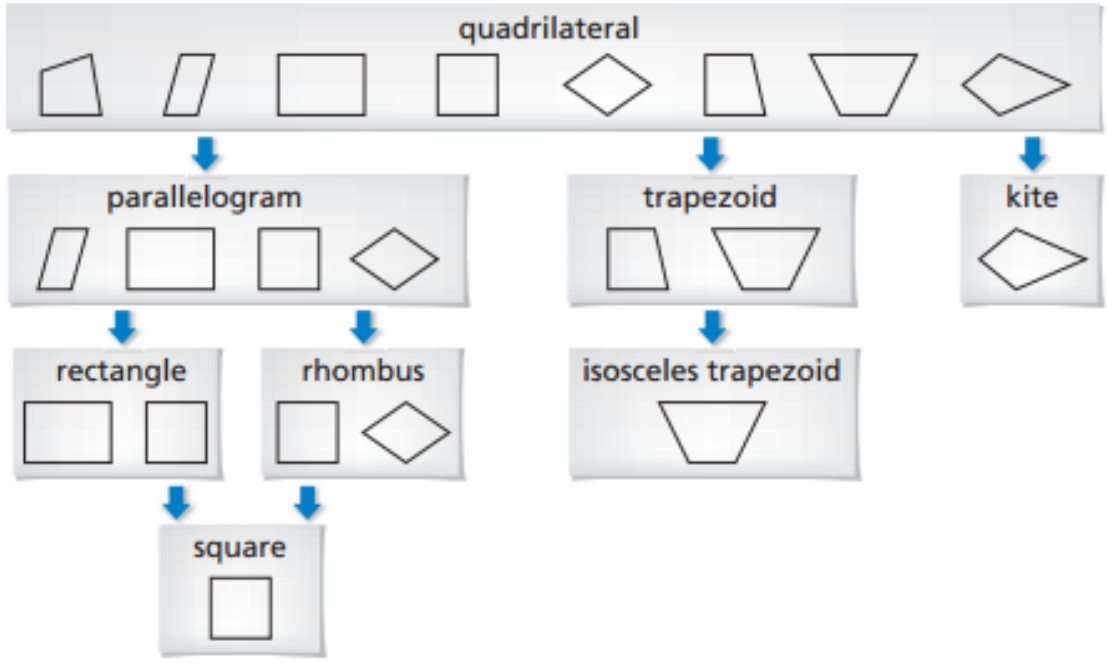
$x + 28 + 126 = 180$



$26 + 28 = 54$

Mar 13-12:32 PM

Tree Diagram



Mar 13-9:57 AM

HOMEWORK

7.2: pg. 372: 3, 7, 9, 13, 17, 19, 21, 48 - 50

7.3: pg 381: 9, 11, 17, 21, 33, 51 - 54

7.4: pg. 393: 3, 7, 9, 13, 25, 29 - 35 (o), 65 - 69 (o), 89 - 91

7.5: pg. 403: 3, 7, 9, 11, 13, 15, 19, 29

Mar 12-3:26 PM

Attachments

Christopher Le and Hunter Lockwood Rhombus.pptx

Rhombus follow up.gsp

Square follow up.gsp

Get on the RhomBUS! 2nd per.pptx

Squares 4th period.docx

The Square 4th per.pptx

Parallelogram follow up.gsp

Rectangle follow up.gsp