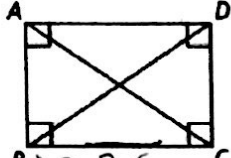
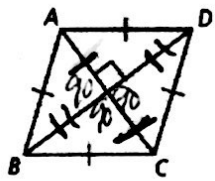
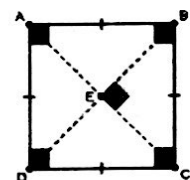


6

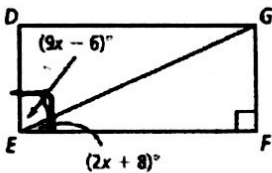
(4 sided figure)

6.4 Quadrilaterals

SWBAT use the properties of quadrilaterals to solve for unknowns.

Rectangle	Rhombus	Square
A rectangle is a parallelogram with four right angles.	A rhombus is a parallelogram with four congruent sides.	A square is a parallelogram with four congruent sides and four right angles.
A rectangle has all the properties of a parallelogram PLUS: <ul style="list-style-type: none"> 4 right angles Diagonals are congruent 	A rhombus has all the properties of a parallelogram PLUS: <ul style="list-style-type: none"> 4 congruent sides Diagonals bisect angles Diagonals are perpendicular 	A square has all the properties of a parallelogram PLUS: <ul style="list-style-type: none"> All the properties of a rectangle All the properties of a rhombus
 <p>$AC \cong BD$</p>		

Example 1: Solve for x and the measure of each angle if □DGFE is a rectangle.



$$9x - 6 + 2x + 8 = 90^\circ$$

$$11x + 2 = 90$$

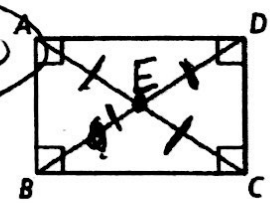
$$x = 8$$

Example 2: □ABCD is a rectangle whose diagonals intersect at point E.

a) If AE = 36 and CE = 2x - 4, find x.

$$36 = 2x - 4$$

$x = 20$



b) If BE = 6y + 2 and CE = 4y + 6, find y.

$$6y + 2 = 4y + 6$$

$$y = 2$$

Example 3: Using the diagram to the right to answer the following if □ABCD is a rhombus.

a) Find the m∠1.

90

b) Find the m∠2.

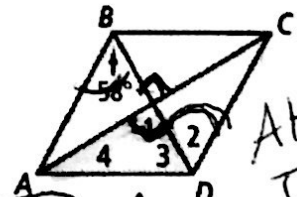
58

c) Find the m∠3.

58

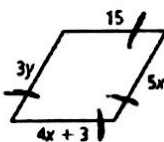
d) Find the m∠4.

32



Example 4: Solve for each variable if the following are rhombi.

a)



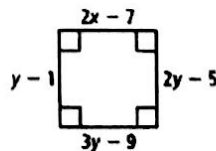
$$4x + 3 = 15$$

$x = 3$

$$3y = 15$$

$y = 5$

b)



$$y - 1 = 2y - 5$$

$y = 4$

180 in a Δ

$$180 - 90 - 58$$

$$3(4) - 9 = 2x - 7$$

$$3 = 2x - 7$$

$$10 = 2x$$

$x = 5$

Trapezoid

Example What are



Example What is x

$$x + 2 = \dots$$

$$x + 2 = \dots$$

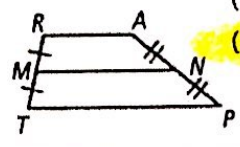
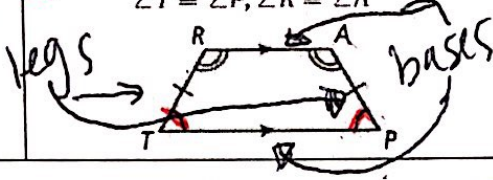
Kite

Example m∠2 and

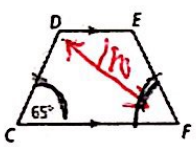


These are NOT Parallelograms!!

Trapezoid	A trapezoid is a quadrilateral with exactly one pair of parallel sides, called bases, and two nonparallel sides, called legs.	Isosceles Trapezoids	Trapezoid-Midsegment
		An isosceles trapezoid is a trapezoid with congruent legs.	The median (also called the midsegment) of a trapezoid is a segment that connects the midpoint of one leg to the midpoint of the other leg.
		A trapezoid is isosceles if there is only: <ul style="list-style-type: none"> • One set of parallel sides • Base angles are congruent • Legs are congruent • Diagonals are congruent • Opposite angles are supplementary $\angle T \cong \angle P, \angle R \cong \angle A$	Theorem: If a quadrilateral is a trapezoid, then a) the midsegment is parallel to the bases and b) the length of the midsegment is half the sum of the lengths of the bases (1) $\overline{MN} \parallel \overline{TP}, \overline{MN} \parallel \overline{RA}$, and (2) $MN = \frac{1}{2}(TP + RA)$



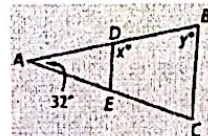
Example 5: CDEP is an isosceles trapezoid and $m\angle C = 65$. What are $m\angle D$, $m\angle E$, and $m\angle F$?



$m\angle D = 115$
 $m\angle E = 115$
 $m\angle F = 65$

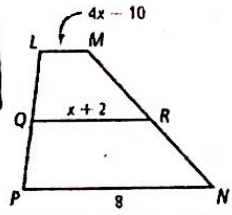
$180 - 65 = 115$

Example 6: What are the values of x and y in the isosceles triangle below if $DE \parallel DC$?



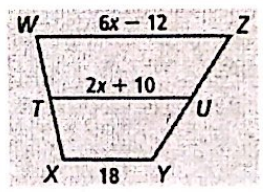
$y = 74$
 $x = 106$

Example 7: QR is the midsegment of trapezoid LMNP. What is x and the length of LM?



$x + 2 = \frac{1}{2}(4x - 10 + 8)$
 $x + 2 = 2x - 1$
 $x = 3$

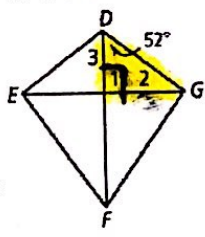
You Try! TU is the midsegment of trapezoid WXYZ. What is x and the length of TU?



$x = 7$
 $TU = 24$

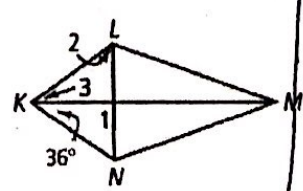
Kite	A kite is a quadrilateral with two pairs of adjacent, congruent sides.	If a quadrilateral is a kite, then:			
		Its diagonals are perpendicular.	Its diagonals bisect the opposite angles.	One pair of opposite angles are congruent.	One diagonal bisects the other.

Example 4: Quadrilateral DEFG is a kite. What are $m\angle 1$, $m\angle 2$, and $m\angle 3$?



$m\angle 1 = 90^\circ$
 $m\angle 2 = 38^\circ$
 $m\angle 3 = 52^\circ$

You Try! Quadrilateral KLMN is a kite. What are $m\angle 1$, $m\angle 2$, and $m\angle 3$?



$m\angle 1 = 90^\circ$
 $m\angle 2 = 54^\circ$
 $m\angle 3 = 36^\circ$

58
 $= 2x - 7$
 $2x - 7$
 $2x$

5)