6.5 Trapezoids and Kites

Quadrilaterals

Parallelograms
2 pair ‖ sides

Rectangle    Rhombus
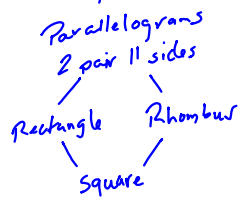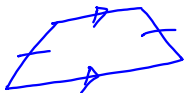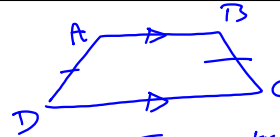
Square

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Trapezoid
1 pair of parallel sides
parallel sides are called
bases
other sides are legs

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Special Case for Trapezoids
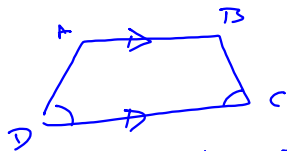When 1 pair of sides is parallel
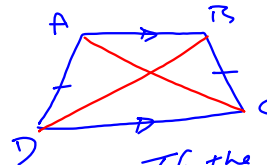and the other pair is congruent

Isosceles
Trapezoid

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If the trapezoid is isosceles
then the base angles are $\cong$

If ABCD is Isosceles
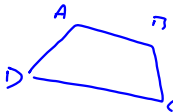then $\angle A \cong \angle B$
$\angle D \cong \angle C$

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If it is a trapezoid and 1 pair
of base angles are congruent,
then it is isosceles

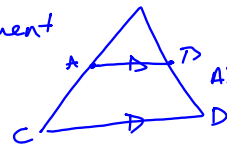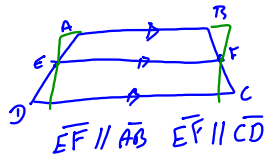If $\angle D \cong \angle C$   then $\overline{AD} \cong \overline{BC}$

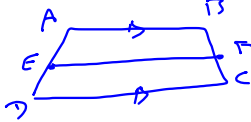---

If the trapezoid is isosceles
then the diagonals are $\cong$

If ABCD is isosceles
then $\overline{AC} \cong \overline{BD}$

Coordinates

A   B   C   D   D
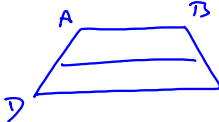
Find Slope
  Slope of $\overline{AB}$, $\overline{CD}$ same
  Slope of $\overline{AD}$, $\overline{BC}$ not equal
        Trapezoid

distance $\overline{AD} \doteq \overline{BC}$
        Isosceles

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midsegment

In a △           $AB = \frac{1}{2} CD$

In a ▱

$\overline{EF} \parallel \overline{AB}$   $\overline{EF} \parallel \overline{CD}$

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If ABCD is a trapezoid and
EF is the midsegment,
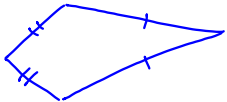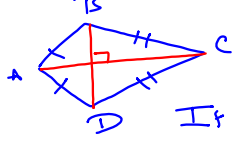then EF is parallel to AB, CD
and $EF = \frac{1}{2}(AB + CD)$

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$\frac{1}{2}(14 + 16)$
$\frac{1}{2}(30) = 15$

midsegment = 35

AB  3x + 5    CD = 5x - 15
$35 = \frac{1}{2}((3x+5) + (5x-15))$
$70 = 3x + 5 + 5x - 15$
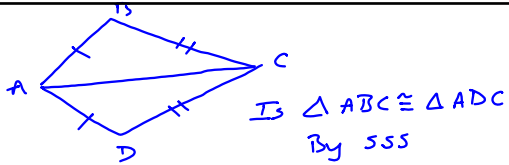$70 = 8x - 10$
$80 = 8x$
$10 = x$

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Kite - a quadrilateral
where no sides are
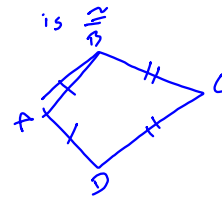parallel and where
consecutive sides are congruent

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If the quad is a kite
then the diagonals are
perpendicular

If ABCD is a kite
then $AC \perp BD$
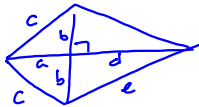
Is $\triangle ABC \cong \triangle ADC$
By SSS

In a kite the angles
between the pairs of
consecutive congruent
sides are $\cong$

$\angle B \cong \angle D$

If a quad is a kite
then one pair of opp $\angle$'s
is $\cong$

ABCD is a
kite
$\angle B \cong \angle D$
$\angle A \not\cong \angle C$

Find sides or diagonals

$a^2 + b^2 = c^2$

$e^2 - b^2 = d^2$

P 359-361

2-40 even