Aim: What are the properties of trapezoids?

Do Now: Mark the box with a **check mark** of the quadrilateral for which the property is **always** true.

Special Properties	Rectangle	Rhombus	Square
All ∠'s are ≅			
All sides are ≅ .			
Diagonals are ≅ .			
Diagonals are ⊥ .			
Diagonals bisect the vertex angles.			
Both pairs of opposite sides are ≅ .			
Both pairs of opposite ∠'s are ≅			
Any two consecutive vertex ∠'s are supplementary.			
Diagonals bisect each other.			

Properties of a Trapezoid
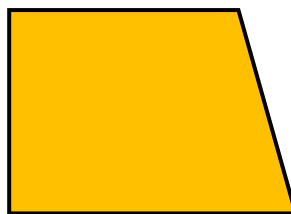
1. A trapezoid has _____

    -We call the parallel sides the _____
    -We call the non-parallel sides the _____

2. Consecutive angles from different bases are _____
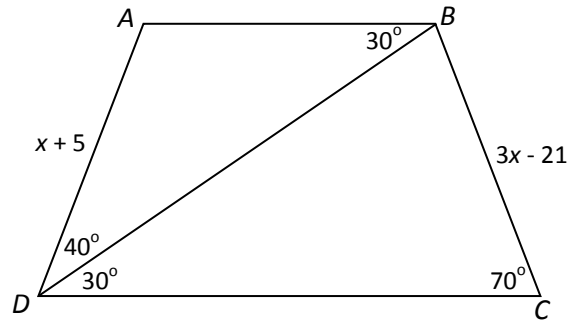
And then there's the...Isosceles Trapezoid!

1. An isosceles trapezoid has all the properties of a _____

2. The legs are _____

3. The angles on the same base are _____

4. The diagonals are _____

1) *ABCD* is an isosceles trapezoid, with $\overline{AB} \, // \, \overline{DC}$. If $AD = 2x + y$, $BC = 7y - 2x$, and $x = 3$, find *AD*.
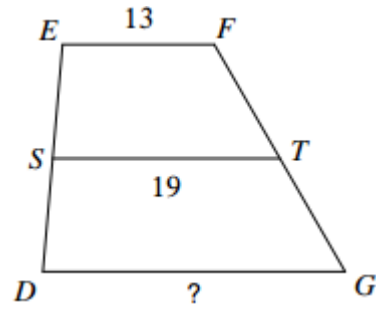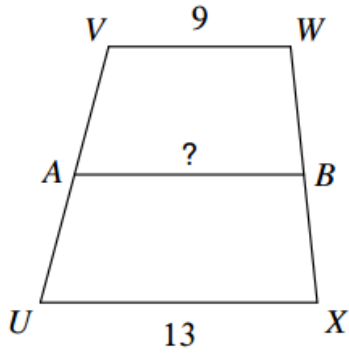
2) Refer to the diagram to the right:

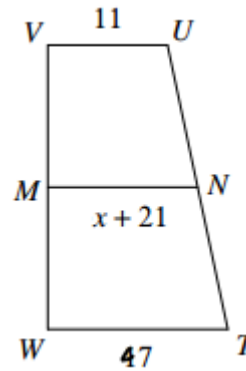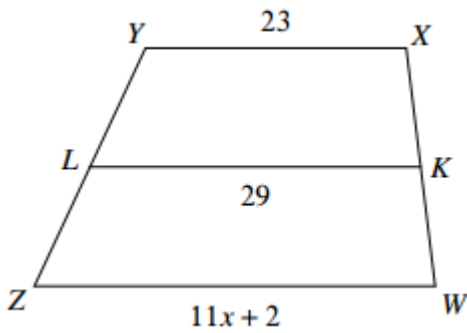 a] Explain why *ABCD* is an isosceles trapezoid.

 b] Find *AD* and *BC*.

Median of a Trapezoid

Find the lengths of the indicated segment if the segment drawn in the trapezoid is a median.

V   9   W
?
A   B
U   13   X

E   13   F
S
19
D   ?   G

Find the value of x:

Y   23   X
L   K
29
Z   11x+2   W

V   11   U
M   N
x+21
W   47   T

Practice Problems

3) $ABCD$ is an isosceles trapezoid, with $\overline{AB}\,//\,\overline{DC}$. If $m\angle ADC = 80$, find the following:

a] $m\angle BCD$

b] $m\angle DAB$

4) $ABCD$ is an isosceles trapezoid, with $\overline{AB}\,//\,\overline{DC}$. If $AD = 3x+4$, and $BC = 22$, what is x?

5) *ABCD* is an isosceles trapezoid, with $\overline{AB} \,/\!/\, \overline{DC}$. If $AD = 2y - 7$, and $BC = y + 5$, find *AD*.

6) *ABCD* is an isosceles trapezoid, with $\overline{AB} \,/\!/\, \overline{DC}$. If $m\angle ADC = 4x - 5$ and $m\angle BCD = 3x + 15$, find the value of *x*.

7) *ABCD* is an isosceles trapezoid, with $\overline{AB} \,/\!/\, \overline{DC}$. If $m\angle ADC = 4x + 20$ and $m\angle DAB = 8x - 20$, find the measures of **all four** angles in the trapezoid.

8) *ABCD* is a trapezoid, with $\overline{AB} \,/\!/\, \overline{DC}$. Diagonal *BD* is drawn. $m\angle ABD = 30$ and $m\angle ABC = 100$.

  a] Find $m\angle BDC$

  b] Find $m\angle BCD$

9) *ABCD* is a trapezoid, with $\overline{AB} \,/\!/\, \overline{DC}$. Diagonal *BD* is drawn. $m\angle ADB = 60$ and $m\angle ADC = 80$.

  a] Find $m\angle DAB$

  b] Find $m\angle ABD$