

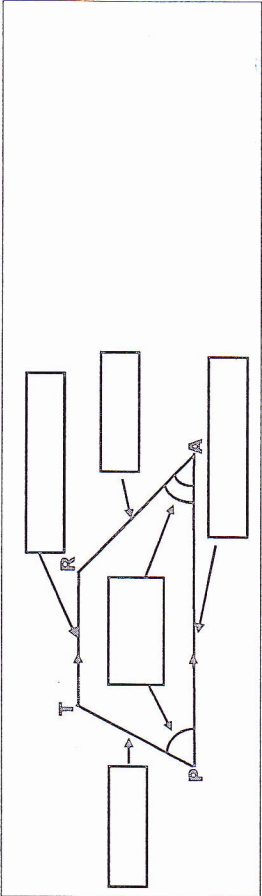
# NOTES 7.5: TRAPEZOIDS & KITES

Objective: \_\_\_\_\_  
 \_\_\_\_\_

## TRAPEZOID:

A quadrilateral with one pair of parallel sides

BASES: The parallel sides  
 LEGS: The non-parallel sides  
 BASE ANGLES: The  $\angle$ s at the bases



## ISOSCELES TRAPEZOID: A trapezoid in which the legs are $\cong$ .

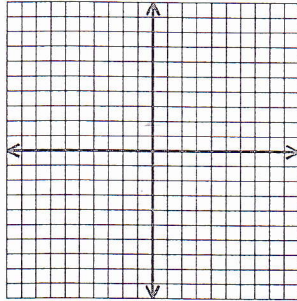


\* The base angles of an isosceles trapezoid are congruent.

The diagonals of an isosceles trapezoid also have a special relationship...

Graph the isosceles trapezoid MATH by plotting the points:

$M(0, -2)$ ;  $A(0, 5)$ ;  $T(6, 7)$ ;  $H(6, -4)$ .



Name the diagonals of trapezoid MATH: \_\_\_\_\_

Find the length of each diagonal:

MT = \_\_\_\_\_

AH = \_\_\_\_\_

What can you say about the length of each diagonal?

What conclusion can you make?

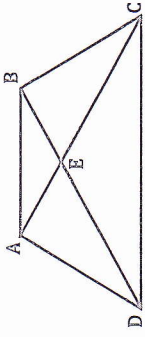
## EXAMPLE 1:

ABCD is an isosceles trapezoid. Decide whether each statement is TRUE or FALSE and explain.

a)  $AC = BD$

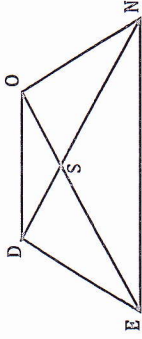
b)  $\overline{AD} \cong \overline{BC}$

c)  $\overline{CA}$  and  $\overline{BD}$  bisect each other



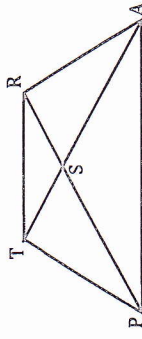
## EXAMPLE 2:

DONE is an isosceles trapezoid.  $m\angle EDO = 110^\circ$  and  $m\angle DEN = (15x - 5)^\circ$ . Find the value of 'x'.



## EXAMPLE 3:

TRAP is an isosceles trapezoid.  $PR = 3x - 7$  and  $TA = 20$ . Find the value of 'x'.



Notes 7.5 (Continued)

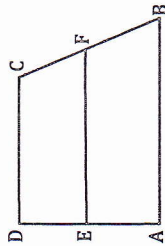
**MEDIAN:** The segment that joins the midpoints of the legs

MEDIAN = \_\_\_\_\_

**EXAMPLE 4:**

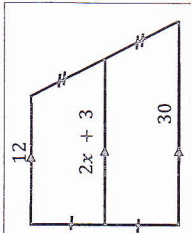
In trapezoid ABCD,  $\overline{EF}$  is a median. Find each of the following.

- a)  $AB = 25$ ,  $DC = 13$ ,  $EF =$  \_\_\_\_\_
- b)  $AE = 11$ ,  $FB = 8$ ,  $AD =$  \_\_\_\_\_,  $BC =$  \_\_\_\_\_
- c)  $AB = 29$ ,  $EF = 24$ ,  $DC =$  \_\_\_\_\_
- d)  $AB = 7y + 6$ ,  $EF = 5y - 3$ ,  $DC = y - 2$ ,  $y =$  \_\_\_\_\_



**EXAMPLE 6:**

Find the value of 'x' for the trapezoid.



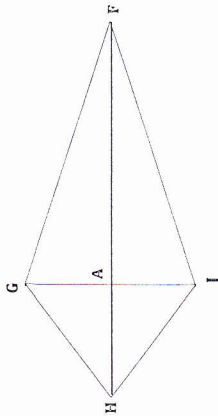
To summarize, what can we say about all trapezoids?

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_

In addition to these, what can we say about isosceles trapezoids?

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

**KITE:** A quadrilateral that has 2 pairs of consecutive  $\cong$  sides



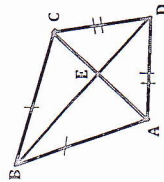
**Example 1:**

In kite ABCD,  $m\angle BCD = 98^\circ$  and  $m\angle ADE = 47^\circ$ . Find each measure.

$m\angle DAE =$  \_\_\_\_\_

$m\angle BCE =$  \_\_\_\_\_

$m\angle ABC =$  \_\_\_\_\_



**EXAMPLE 5:**

Find the value of 'x' for the trapezoid.

