Quadrilaterals Booklet

5 pieces of blank paper

Title of booklet on the cover:

Quadrilaterals
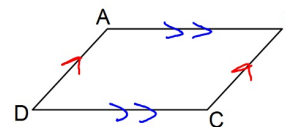

Parallelogram

we'll put the information on the following pages here.
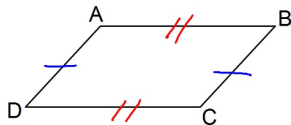
Parallelogram:

Definition: A quad with both pairs of opposite sides parallel.

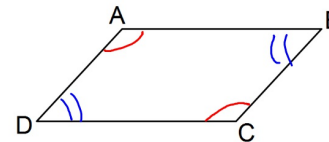## Section 6-2: Properties of Parallelograms.

Theorem 6-1

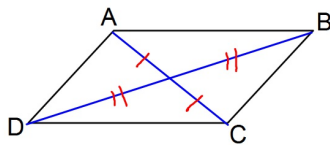Opposite sides of a parallelogram are congruent.

Theorem 6-2

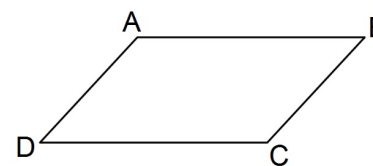Opposite angles of a parallelogram are congruent.

Theorem 6-3

The diagonals of a parallelogram bisect each other.

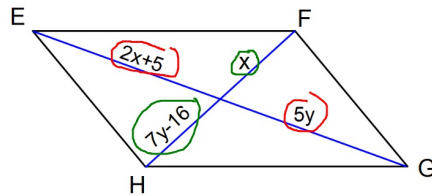Fact:

Consecutive angles of a parallelogram are Supplementary.

$$\angle A + \angle D = 180°$$
$$\angle D + \angle C = 180°$$
$$\angle C + \angle B = 180°$$
$$\angle B + \angle A = 180°$$

Panel 1 (top-left)

Use what you now know to find the values of x and y in this parallelogram.

Parallelogram with vertices E (top-left), F (top-right), H (bottom-left), G (bottom-right). Diagonals labeled: $2x+5$, x, $7y-16$, $5y$.

$X = \boxed{7y-16}$

$5y = 2x+5$ Diagonals bisect each other.

$X = 7(3) - 16$

$X = 21 - 16$

$\boxed{X = 5}$

$5y = 2(7y-16)+5$

$5y = 14y - 32 + 5$

$5y = 14y - 27$

$\underline{-14y \quad -14y}$

$\dfrac{-9y}{-9} = \dfrac{-27}{-9}$

$\boxed{y = 3}$

Panel 2 (top-right)
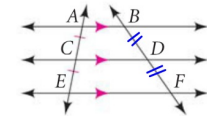
another theorem - not necessarily about parallelograms:

Theorem 6-4

If three (or more) parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal.

$\overline{BD} \cong \overline{DF}$

Said another way: Whenever three or more parallel lines cut any transversal into congruent segments, they cut EVERY transversal into congruent segments.

Panel 3 (bottom-left)

Given: these parallel lines cut transversal m into congruent segments.

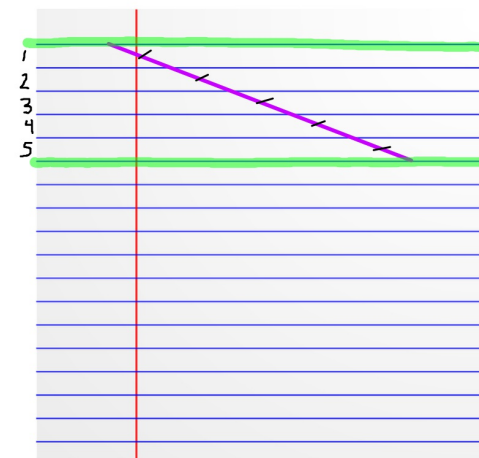Points on transversal: A, B, C, D
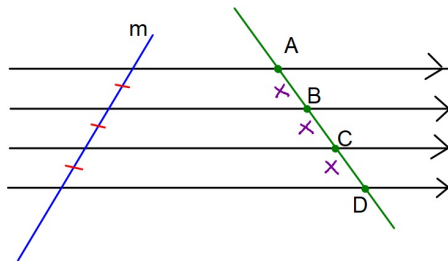
IF BD = 12 find the following: a) AB   b) AD

using Thm 6-4   AB = BC = BD. Lets label them all X.

a) BD = 12   Therefore,   b) AD = 3x

    2x = 12   AB = x   AD = 3(6)

    $\boxed{X=6}$ $\boxed{AB = 6}$ $\boxed{AD = 18}$

Panel 4 (bottom-right)

How could you use a piece of lined paper to cut a piece of string into 5 equal pieces?

Lined paper labeled 1, 2, 3, 4, 5.

Pick six consecutive lines, creating 5 equal spaces. Put one end of the string on the top line and stretch the string tight while placing the other end of the string on the last line.

Cut the string where it crosses a line of the paper, creating 5 equal pieces.

Hwk #3   Sec 6-2

Page 315   Due Tomorrow

Problems: 6, 7, 10, 12, 14,
                24, 26, 28, 30, 32.