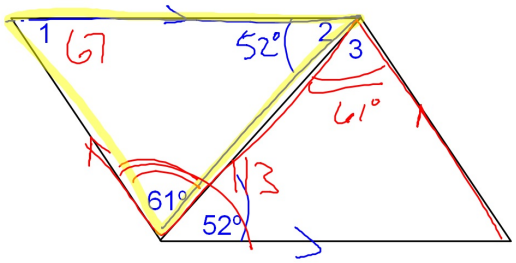
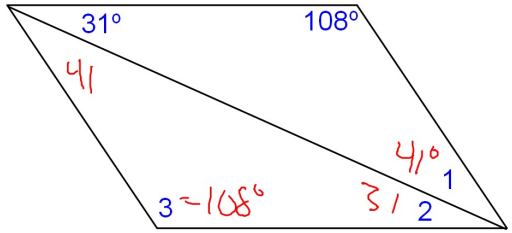
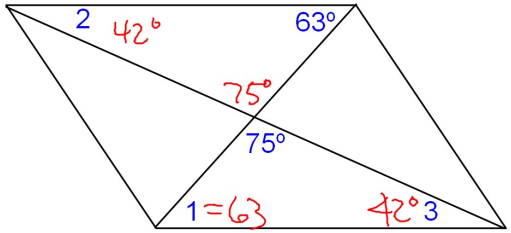
Find the measures of the numbered angles in this parallelogram.



Find the measures of the numbered angles in this parallelogram.



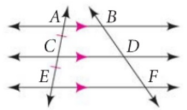
Find the measures of the numbered angles in this parallelogram.



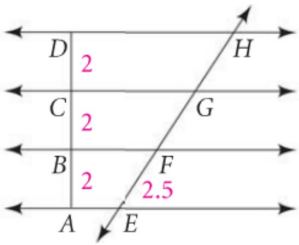
Theorem 6-4

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

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



In the figure at the right, $\overleftrightarrow{DH} \parallel \overleftrightarrow{CG} \parallel \overleftrightarrow{BF} \parallel \overleftrightarrow{AE}$, $AB = BC = CD = 2$, and $EF = 2.5$. Find EH.

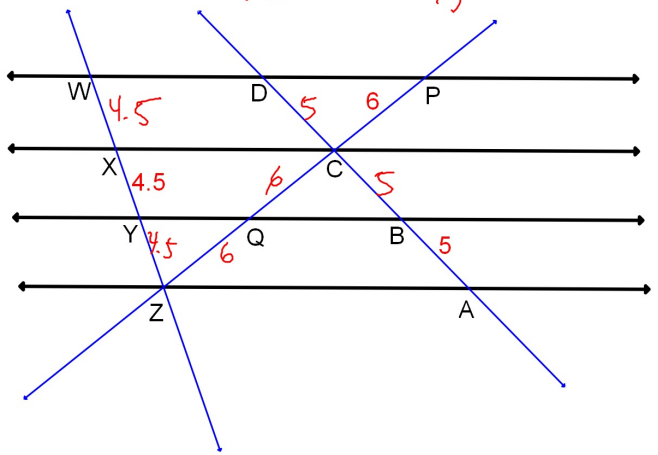


GH = 2.5 EH = 7.5

The four black lines are parallel and AB=BC=CD

Find each: ZC= 12 CD = 5 WZ = 13.5

QP = 12 AD = 15



Hwk #17

Sec 6-2

Pages 316-317

Problems 24, 25, 29, 30, 37-39, 45

Section 6-3: Proving That a Quadrilateral is a Parallelogram.

Property of a Parallelogram:

Both pairs of opposite sides are parallel

Converse

Converse:
If both pairs of opposite sides of a quadrilateral are parallel, then the quadrilateral is a parallelogram.

Is ABCD a Parallelogram?

A (4,3) B (5,8) C(-3,2) D(-4,-3)

AB $m = \frac{5}{1}$

BC $m = -\frac{6}{8} = \frac{3}{4}$

CD $m = \frac{2-3}{-3-4} = \frac{5}{1}$

DA $m = \frac{3-3}{4-4} = \frac{1}{8} = \frac{3}{4}$

Yes ABCD is a ll-gram b/c both pair of opp sides are ll

Property of a Parallelogram:

Both pairs of opposite sides are congruent.

Theorem 6-5

If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.

Is EFGH a Parallelogram?

E(3,-1) F(6,5) G(1,13) H(-5,7)

EF $\sqrt{3^2+6^2} = \sqrt{45}$

FG

GH $\sqrt{6^2+6^2} = \sqrt{72}$

HE

NOT a ||-gram b/c opp sides aren't $\cong$

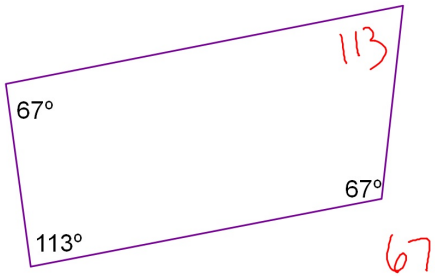
Property of a Parallelogram:

Both pairs of opposite angles are congruent.

Theorem 6-6

If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.

Is PQRS a Parallelogram?



$67+67+113=247$

$360-247=113$

Yes, because both pair of opposite angles are congruent

Property of Parallelograms:

The diagonals bisect each other.

Theorem 6-7

If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.

Is WXYZ a Parallelogram?

W(8,3) X(-9,-1) Y(4,5) Z(21,10)

midpoint WY $\left(\frac{8+4}{2}, \frac{3+5}{2}\right) = (6,4)$

midpoint XZ $\left(\frac{21+-9}{2}, \frac{10+-1}{2}\right) = (6, 4.5)$

NOT A ||-gram b/c diagonals don't bisect

On a piece of graph paper plot Point A in the second quadrant and Point D in the third quadrant.

From A do a rise of 2 and a run of 7. Label this point B

From D do a rise of 2 and a run of 7. Label this point C.

Connect the four points to create a quadrilateral.

How are AB and CD related to each other? $\cong$ i.||

This figure is a parallelogram