Lesson 10.1- SWBAT solve problems using properties of parallelograms

Kick off-

1) Factor: $x^2 - 4x - 12$

$(x-6)(x+2)$

12
+6 · -2
-4 · 3
-6 · +2

1) G.C.F.
2) DOTS
3) Trinomial
4) Factor by grouping

12
1 · 12
2 · 6
3 · 4

2) Factor: $x^2 - xy + yx - y^2$

$x(x-y)+y(x-y)$

$(x+y)(x-y)$

• Factor by grouping

Apr 23-7:09 AM

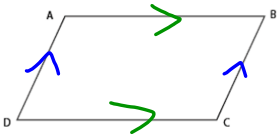
Properties of a Parallelogram

1) Opposite sides are parallel

∥

never cross or intersect

4 sided.



AB ∥ DC
AD ∥ BC

Apr 23-7:09 AM

2) Opposite sides are congruent. ≅

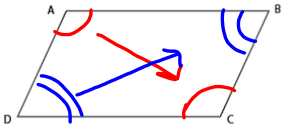
the same or equal

AB ≅ DC
AD ≅ BC

Apr 23-7:10 AM

3) Opposite angles are congruent. ≅

the same angle



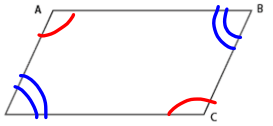
∠A ≅ ∠C
∠D ≅ ∠B

Apr 23-7:10 AM

4) Consecutive angles are supplementary

next to

add to 180°

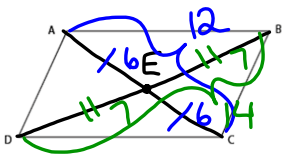


∠A + ∠D = 180°
∠C + ∠B = 180°
∠C + ∠D = 180°
∠A + ∠B = 180°

Apr 23-7:10 AM

5) Diagonals bisect each other.

Cross/intersect and form two congruent halfs.

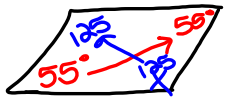


AE ≅ EC
DE ≅ EB

Apr 23-7:10 AM

Examples:

1) If one angle of a parallelogram measures 55°, find the measures of the other 3 angles.



$55 + x = 180$

$-55 \quad -55$

$x = 125$

Apr 23-7:10 AM

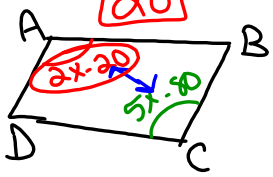
2) In parallelogram ABCD, $m\angle A = 2x - 20$ and $m\angle C = 5x - 80$. Find the value of <A.

angle A angle C

$\angle A = 2x - 20$

$2(20) - 20$

20°



$2x - 20 = 5x - 80$

$-2x \quad -2x$

$-20 = 3x - 80$

$+80 \quad +80$

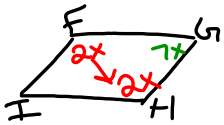
$60 = 3x$

$\frac{60}{3} = \frac{3x}{3}$

$20 = x$

Apr 23-7:10 AM

3) In parallelogram FGHI, $m\angle F : m\angle G = 2 : 7$. Find the measure of <H.



$2x : 7x$

$\angle F = 2x$

$\angle G = 7x$

$2x + 7x = 180$

$\frac{9x}{9} = \frac{180}{9}$

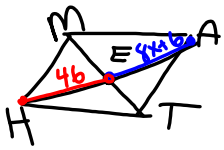
$x = 20$

$\angle H = 2(20)$

$= 40°$

Apr 23-7:11 AM

4) In parallelogram MATH, diagonals AH, MT intersect at E. $AE = 8x + 6$ and $EH = 46$. Find the value of x.



$8x + 6 = 46$

$-6 \quad -6$

$\frac{8x}{8} = \frac{40}{8}$

$x = 5$

Apr 23-7:11 AM

5) In the accompanying diagram of parallelogram $ABCD$, if $m\angle A = (2x + 10)$ and $m\angle B = 3x$. Find the number of degrees in $m\angle B$.

Apr 23-7:11 AM