Name: Answer Key Date: _____

Lesson #1: Parallelograms

Fill in the blanks:

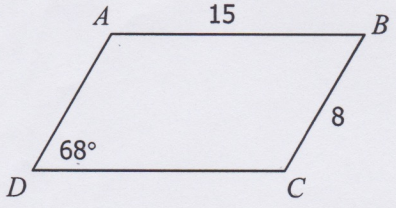
1. Opposite sides are congruent.
2. Opposite sides are parallel.
3. Opposite angles are congruent. show on figure
4. Consecutive angles are supplementary. $180^\circ - 80^\circ = 100^\circ$ makes 180°
5. Diagonals bisect each other.

alt interior angles

Practice Together:

1.

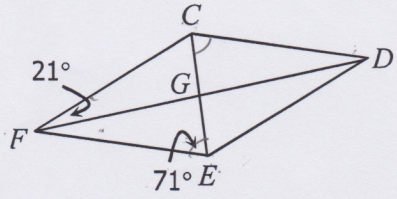
1, 3, 4



$AD =$ 8
$DC =$ 15
$m\angle A =$ 112° $180^\circ - 68^\circ = 112^\circ$
$m\angle B =$ 68° opposite
$m\angle C =$ 112° opposite $\angle A$

2.

2, 3, 4



*$m\angle FED = 134^\circ$

$m\angle DEC =$ 63° $134^\circ - 71^\circ = 63^\circ$
$m\angle CDE =$ 46° $180^\circ - 134^\circ = 46^\circ$
$m\angle ECD =$ 71°
$m\angle DFE =$ 25° $46^\circ - 21^\circ = 25^\circ$
opp $\angle CDE$

$m\angle CDE = m\angle CFE$
$46^\circ = 46^\circ$

Length of LM

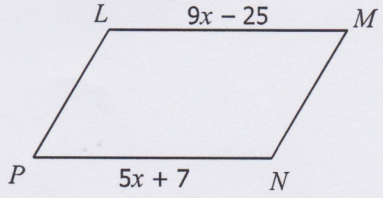
$9(8) - 25$

$72 - 25$

47

3.

Solve for x.



$9x - 25 = 5x + 7$ (−5x)

$9x - 5x - 25 = 7$ (+25)

$4x - 25 = 7 + 25$

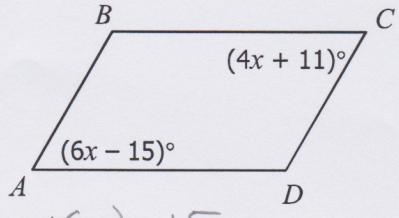
$4x = 32$

$x = 8$

x = 8

4.

Find $m\angle B$.



$4x + 11 = 6x - 15$ (−4x)

$11 = 6x - 4x - 15$

$2x - 15 = 11$

$2x = 26$

$x = 13$

$m\angle A = 6(13) - 15$

$m\angle A = 63°$

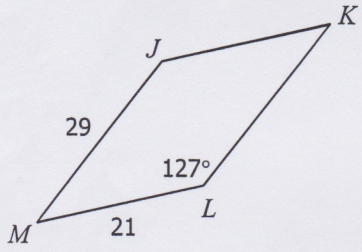
$m\angle B = 180° - 63°$

$m\angle B = 117°$

m∠B = 117°

Practice in Pairs:

1.



JK = 21

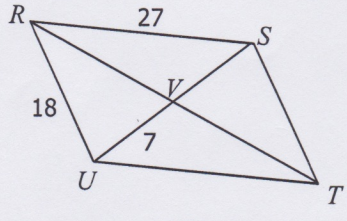
KL = 29

m∠J = 127°

m∠K = 53° $180° - 127° = 53°$

m∠M = 53°

2.



*RT = 30

UT = 27

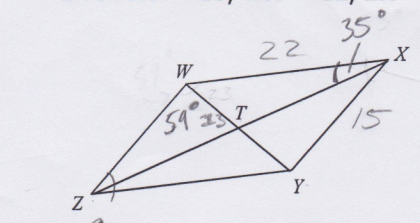
ST = 18

VS = 7

VT = 15 $\frac{30}{2} = 15$

3. Just sides or just angles

Given $XY = 15$, $WX = 22$, $ZX = 52$, $WT = 23$, $m\angle WZY = 72°$, $m\angle WXT = 35°$, and $m\angle ZWT = 59°$.



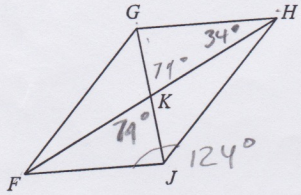
72° ZX = 52

$ZW =$ 15 $ZY =$ 22 $\frac{52}{2} = 26$ $TX =$ 26 $WY =$ 46 $23 \cdot 2 = 46$

$m\angle TZY =$ 35° alt int ∠'s
$m\angle XYZ =$ 108° 180° − 72°
$m\angle XWT =$ 49° 108° − 59°
$m\angle XYT =$ 59° alt int ∠'s

4.

Given $m\angle GHF = 34°$, $m\angle HJF = 124°$, and $m\angle FKJ = 79°$.



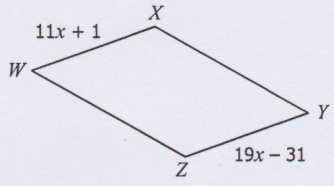
$180° - 124° = 56°$

$m\angle GFJ =$ 56° $m\angle FGH =$ 124° $m\angle HFJ =$ 34° $180° - 79° = 101°$ $m\angle HKJ =$ 101°

$m\angle JGH =$ 67° 180° − 34° − 79°
$m\angle FGJ =$ 57° 124° − 67°
$m\angle FHJ =$ 22° 56° − 34°
$m\angle GJF =$ 67° 180° − 79° − 34°

5H 5. Green

Find YZ.



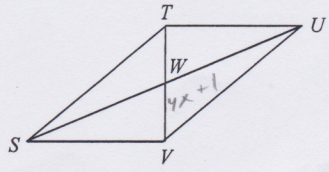
$11x + 1 = 19x - 31$
$1 = 19x - 11x - 31$
$32 = 8x$
$x = 4$

$YZ = 19(4) - 31$
$= 45$

YZ = 45

5H 6. Purple

If $TV = 74$ and $WV = 4x + 1$, solve for x.



$2(4x + 1) = 74$
$8x + 2 - 2 = 74 - 2$
$8x = 72$
$x = 9$

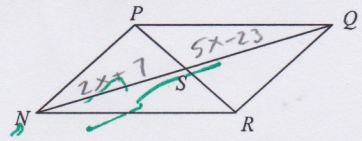
$TV = 74$

x = 9

20 min review parallelograms on board

7. Blue

If $NS = 2x + 7$ and $SQ = 5x - 23$, find NQ.



$NS = 2(10) + 7$
$NS = 20 + 7$
$NS = 27$

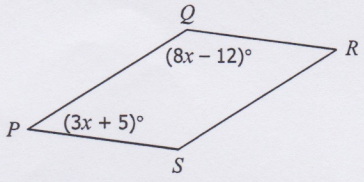
$27 + 27 = 54$

$2x + 7 = 5x - 23$
$7 = 5x - 2x - 23$
$7 = 3x - 23$
$3x = 30$
$x = 10$

NQ = 54

8. Orange

Find $m\angle R$.



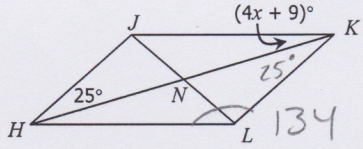
$m\angle R$ = 56°

$8x - 12 + 3x + 5 = 180$
$11x - 7 = 180$
$11x = 187$
$x = 17$

$m\angle P = 3(17) + 5$
$m\angle P = 56°$
$m\angle R = 56°$

9. Yellow

If $m\angle KLH = 134°$, solve for x.

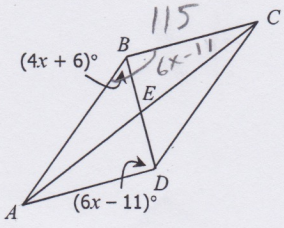


x = 3

$4x + 9 + 25 + 134 = 180$
$4x + 168 = 180$
$4x = 12$
$x = 3$

10. Black

If $m\angle ABC = 115°$, find $m\angle ADB$.



$m\angle ADB$ = 61°

$4x + 6 + 6x - 11 = 115$
$10x - 5 = 115$
$10x = 120$
$x = 12$

$m\angle ADB = 6(12) - 11$
$m\angle ADB = 61°$