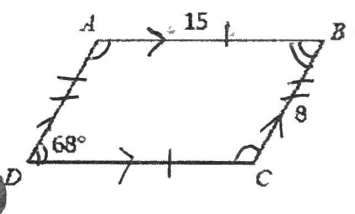
Main Ideas/Questions	Notes 10/26/18
PROPERTIES OF Parallelograms	① opposite sides are $\cong$ (congruent)
	② opposite sides are parallel
	③ opposite angles are $\cong$
	④ consecutive angles are supplementary (sum 180)
	⑤ diagonals bisect each other - segments are cut in half.

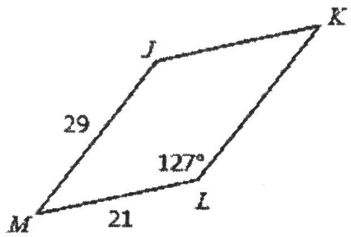
Directions: Each quadrilateral below is a parallelogram. Find the missing measures.

1.



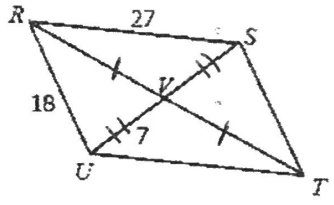
$AD = 8$
$DC = 15$
$m\angle A = 112°$
$m\angle B = 68°$
$m\angle C = 112°$

2.



$JK = 21$
$KL = 29$
$m\angle J = 127°$
$m\angle K = 53°$
$m\angle M = 53°$

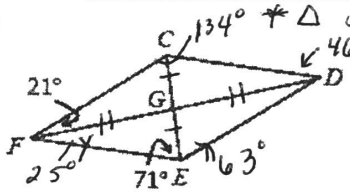
3.



*$RT = 30$

$UT = 27$
$ST = 18$
$VS = 7$
$VT = 15$

4.

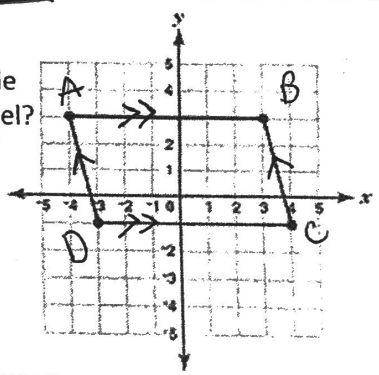


* $\triangle$ Sum Thm - all $\triangle$'s of $\triangle = 180$

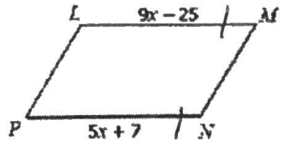
*$m\angle FED = 134°$

$m\angle DEC = 63°$
$m\angle CDE = 46°$
$m\angle ECD = 71°$
$m\angle DFE = 25°$

$21 + y + 71 + 63 = 180$
$y = 25$

formula given **Distance Formula** *do not have to memorize	$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$	EXAMPLE: Find the length of segment AB given A (-4, 1) and B (3,-1). $\sqrt{(3+4)^2+(-1-1)^2}$ $\sqrt{7^2+(-2)^2}$ $\sqrt{49+4}$ $\sqrt{53}$ (x^1, y^1) (x^2, y^2)
Slope Formula *formula not given to you	$m = \frac{y_2-y_1}{x_2-x_1} = \frac{\text{rise}}{\text{run}}$	EXAMPLE: (x^1, y^1) (x^2, y^2) Find the slope of segment AB given A (-4, 1) and B (3,-1). $m = \frac{-1-1}{3+4} = \frac{-2}{7}$
Slopes of Parallel Lines	The slopes of parallel lines are the same.	EXAMPLE: Are ~~these~~ the opposite side of this quadrilateral parallel? $m\overline{AD} = \frac{-4}{1} = -4$ $m\overline{BC} = \frac{-4}{1} = -4$ $m\overline{AB} = \frac{0}{7} = 0$ $m\overline{DC} = \frac{0}{7} = 0$  yes

7. Solve for x.



$9x - 25 = 5x + 7$

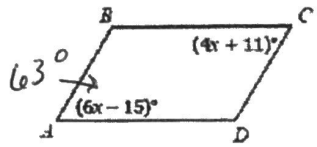
$-5x \quad -5x$

$4x - 25 = 7$

$4x = 32$

$\boxed{x = 8}$

11. Find $m\angle B$.



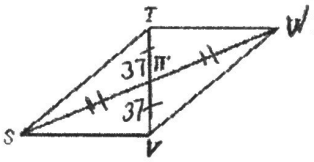
$6x - 15 = 4x + 11$

$6(13) - 15 = 63$

$\boxed{x = 13}$

$\boxed{m\angle B = 63^\circ}$

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

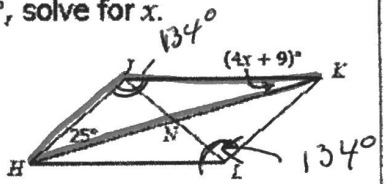


$4x + 1 = 37$

$4x = 36$

$\boxed{x = 9}$

13. If $m\angle KLH = 134°$, solve for x.



$25 + 134 + 4x + 9 = 180$

$4x + 168 = 180$

$4x = 12$

$\boxed{x = 3}$

$(x_1, y_1)\ (x_2, y_2)\ (x_1, y_1)\ (x_2, y_2)$

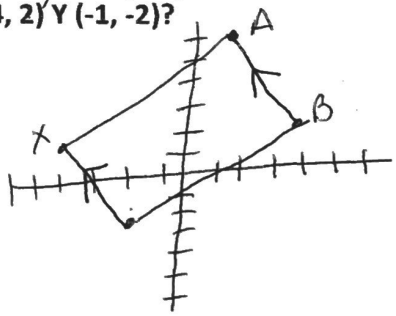
Is segment AB parallel to segment XY given that A (1, 6) B (4, 2) X (-4, 2) Y (-1, -2)?

check slopes

$m = \left(\frac{2-6}{4-1}\right) = \frac{-4}{3}$

$m = \left(\frac{-2-2}{-1+4}\right) = \frac{-4}{3}$

yes because their slopes are the same



Find the length of each side of quadrilateral ABCD given that A (1, 6) B (4, 2) X (-4, 2) Y (-1, -2)?

distance formula $X(-4,2)$ $A(1,6)$

$d_{\overline{XA}} = \sqrt{(1+4)^2 + (6-2)^2}$

$= \sqrt{5+4^2}$

$= \sqrt{25+16}$

$= \sqrt{41}$

$B(4,2)$ $Y(-1,-2)$

$d_{\overline{BY}} = \sqrt{(-1-4)^2 + (-2-2)^2}$

$= \sqrt{(-5)^2 + (-4)^2}$

$= \sqrt{25+16}$

$= \sqrt{41}$