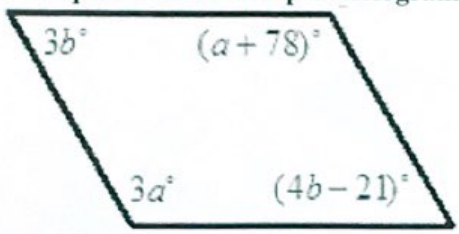
Secondary Math 2 2.3 Homework Name: KEY Period: _____

Properties of Parallelograms

Given the quadrilateral is a parallelogram, find the value of the variable(s).

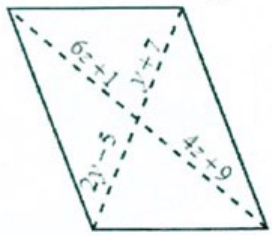
1.



$3b = 4b - 21$
$-4b \quad -4b$
$-b = -21$
$b = 21$

$3a = a + 78$
$-a \quad -a$
$\frac{2a}{2} = \frac{78}{2}$
$a = 39$

2.

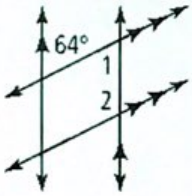


$6z + 1 = 4z + 9$
$2z = 8$
$z = 4$

$2y - 5 = y + 7$
$y = 12$

Review Problems:

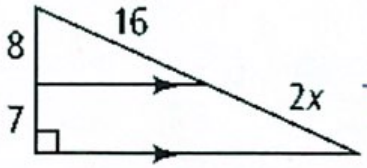
3. Find the $m\angle 1$ and $m\angle 2$. Justify your answer.



Alternate Interior ∠'s
$\angle 1 = 64°$
$\angle 2 = 180 - 64 = 116°$

$\angle 1 = 64°$
$\angle 2 = 116°$

4. Solve for x.

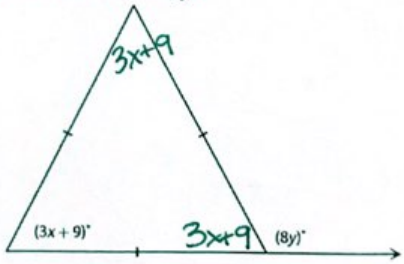


$\frac{8}{7} = \frac{16}{2x}$
$16x = 112$
$x = 7$

5. Solve for x.

$\frac{6}{9} = \frac{x-4}{x}$
$6x = 9x - 36$
$-9x \quad -9x$
$-3x = -36$
$x = 12$

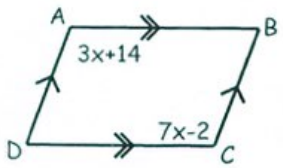
6. Solve for x and y.



$3x + 9 + 3x + 9 + 3x + 9 = 180$
$9x + 27 = 180$
$9x = 153$
$x = 17$

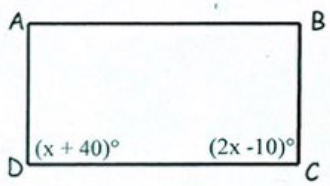
Construct a proof for each problem

7. Given: $\square ABCD$ is a parallelogram,
Prove: x = 4



Statement	Reason
1. $\square ABCD$	1. Given
2. $\angle A \cong \angle C$	2. Opposite sides of $\square$ are congruent
3. $3x+14 = 7x-2$	3. Substitution
4. $14 = 4x-2$	4. Subtraction
5. $16 = 4x$	5. Addition
6. $x = 4$	6. Substitution

8. Given: $\square ABCD$ is a rectangle,
Prove: x = 50



Statement	Reason
1. $\square ABCD$ is a rectangle	1. Given
2. $\angle D \cong \angle C$	2. Same Side interior theorem
3. $x+40 = 2x-10$	3. Substitution
4. $x+50 = 2x$	4. Addition
5. $50 = x$	5. subtraction