Geometry Honors   Mathematician: _____
Unit 10: Properties of Parallelograms   Period:_____
10.1a Use Properties of Parallelograms

LEVEL: EMERGING

Directions: Find the value of each variable in the parallelogram. Also write the property that you used.

1)

y
x 9
15

2)

$m + 1$
n 12
6
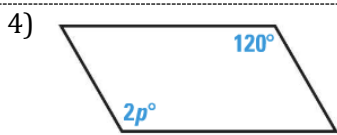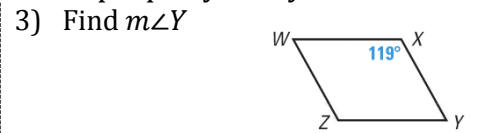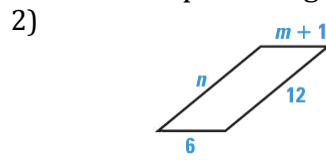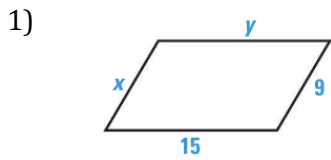
3) Find $m\angle Y$

W   X
   119°
Z   Y

4)

120°
$2p°$

5)

$(d - 21)°$
20                    $z - 8$
105°

6)

125°
x
y
z

7)

15   9
$b - 1$ $5a$

8)

16     $2n$
         $4m$
9 − n

9)

z
38° x
y
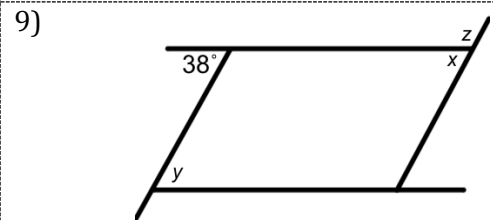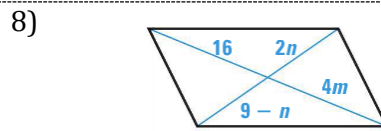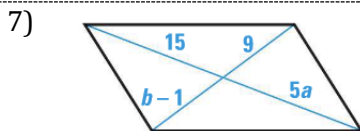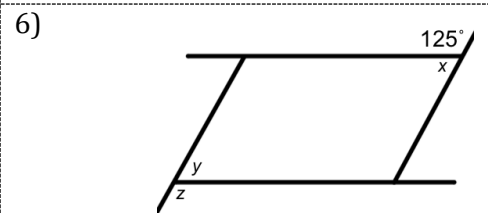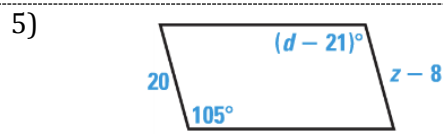
LEVEL: PROFICIENT

10) In parallelogram PQRS, $m\angle R$ is 24 degrees more than $m\angle S$. Sketch parallelogram PQRS. Find the measure of each interior angle. Then label each angle with its measure.

11) A parallelogram OPQR has points O(0, 0) P(-2, 5) Q(2, 5) R(4, 0). The diagonals intersect at point M. What are the coordinates of point M?

---

12) Use the photo to copy and complete the statement. _Explain_

a) $\overline{AD} \cong$ _____ $\cong$ _____

b) $\angle DAB \cong$ _____

c) $\angle BCA \cong$ _____   e) $m\angle CAB =$ _____

d) $m\angle ABC =$ _____   f) $m\angle CAD =$ _____
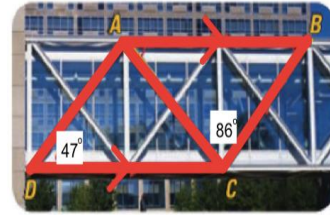
LEVEL: MASTERY

13) If the perimeter of the parallelogram is 84 in and TU = $2y + 5$, find the value of x in terms of y.
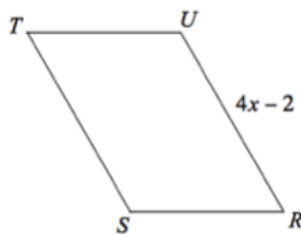
14) If the perimeter of the parallelogram is 236 ft, find the length of QR.
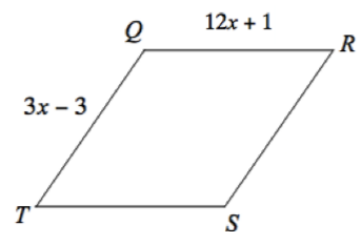
ERROR ANALYSIS

15) In parallelogram ABCD, $m\angle B = 50°$. A student says that $m\angle A = 50°$. _Explain_ why this statement is incorrect.

---

16) The mirror shown is attached to wall by an arm that can extend away from the wall. In the figure, point P, Q, R, and S are vertices of a parallelogram. This parallelogram is one of several that change shape

a) If PQ = 3 inches, find RS.

b) If $m\angle Q = 70°$, what is $m\angle P$?

c) What happens to $m\angle P$ as $m\angle Q$ increases?

d) What happens to QS as $m\angle Q$ decreases?