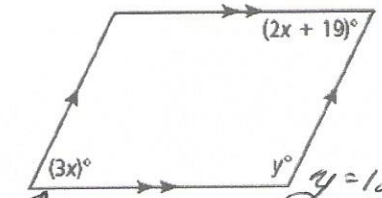
Geometry: 6.5 Classify Parallelograms Name Key Period ____ Date _____

Bell Work: Find the value of each variable in the parallelograms (*show sufficient work*).

a.



$3x = 2x + 19$

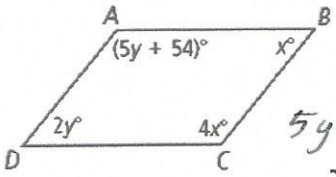
$x = 19$

$3(19) = 57$

$y = 180 - 57$

$y = 123$

b.



$4x + x = 180$

$5x = 180$

$x = 36$

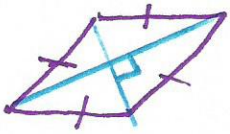
$5y + 54 + 2y = 180$

$7y = 126$

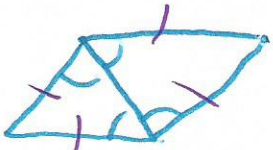
$y = 18$

take note

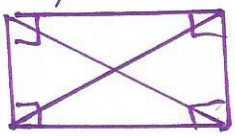
Theorems 6-16, 6-17, and 6-18



Theorem 6-16 If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.



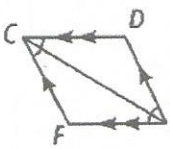
Theorem 6-17 If one diagonal of a parallelogram bisects a pair of opposite angles, then the parallelogram is a rhombus.



Theorem 6-18 If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

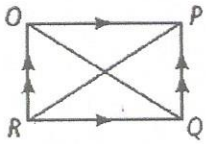
Classify each Parallelogram: Rectangle, Rhombus, Square (choose all that apply).

1.



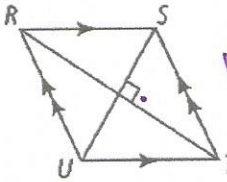
rhombus

2.



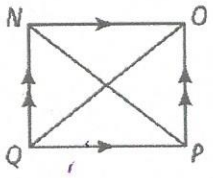
none

3.



rhombus

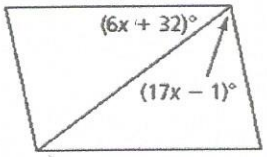
4. $\overline{NP} \cong \overline{OQ}$



rectangle

Find the value of x.

5. rhombus



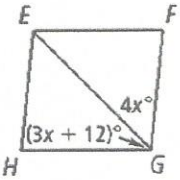
$6x + 32 = 17x - 1$

$32 = 11x - 1$

$33 = 11x$

$3 = x$

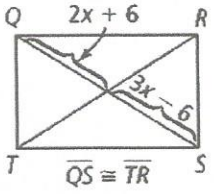
6. rhombus



$3x + 12 = 4x$

$12 = x$

7. rectangle



$2x + 6 = 3x - 6$

$6 = x - 6$

$12 = x$

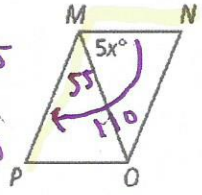
$2x + 6 = 3x - 6$

$6 = x - 6$

$12 = x$

Find the value of x.

8. rhombus

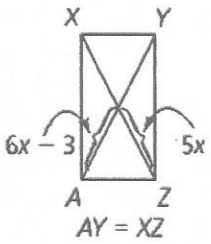


$m\angle PMN = 110$

$5x = 55$

$x = 11$

9. rectangle



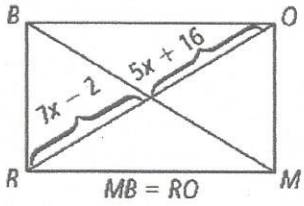
$AY = XZ$

$6x - 3 = 5x$

$-3 = -x$

$3 = x$

10. rectangle



$MB = RO$

$7x - 2 = 5x + 16$

$2x - 2 = 16$

$2x = 18$

$x = 9$

Algebra *TUVW* **is a rectangle. Find the value of *x* and the length of each diagonal.**

11. $TV = 3x$ and $UW = 5x - 10$

$3x = 5x - 10$

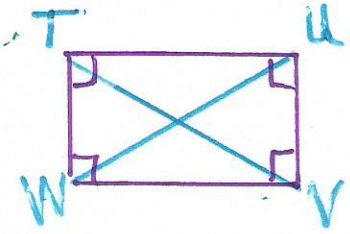
$-2x = -10$

$x = 5$

$TV = 15$

$UW = 15$

12. $TV = 2x - 4$ and $UW = x + 10$



$2x - 4 = x + 10$

$x - 4 = 10$

$x = 14$

$UW = 14 + 10 = 24$

$TV = 24$

For Exercises 13–16, determine whether the parallelogram is a *rhombus*, a *rectangle*, or a *square*. Give the most precise description in each case.

13. A parallelogram has perpendicular diagonals and angle measures of 45, 135, 45, and 135.

rhombus

not a square

14. A parallelogram has perpendicular and congruent diagonals.

rhombus rectangle

square

15. A parallelogram has perpendicular diagonals and angle measures that are all 90.

rhombus rectangle

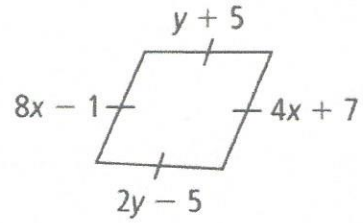
square

16. A parallelogram has congruent diagonals.

rectangle

Classify each polygon (precisely) **and find the values of the variable(s).**

17. rhombus



$8x - 1 = 4x + 7$

$4x - 1 = 7$

$4x = 8$

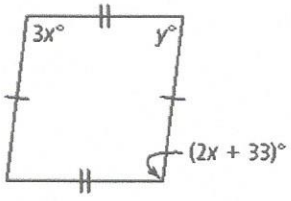
$x = 2$

$y + 5 = 2y - 5$

$5 = y - 5$

$10 = y$

18. parallelogram



$3x = 2x + 33$

$x = 33$

Standardized Test Prep 6. 5
(page 165 in Practice Workbook)

1. Ⓐ ● Ⓒ Ⓓ
2. Ⓕ ● Ⓗ Ⓘ
3. ● Ⓑ Ⓒ Ⓓ
4. Ⓕ Ⓖ ● Ⓘ