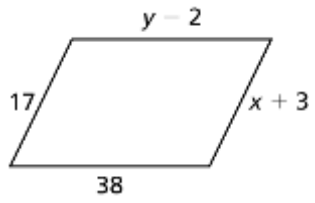
Name_____ Date _____

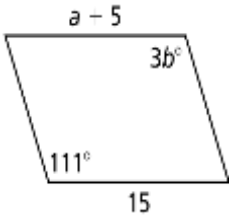
7.2 Practice A

In Exercises 1–4, find the value of each variable in the parallelogram.

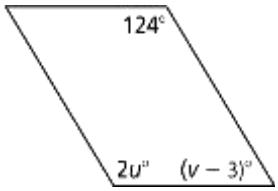
1.



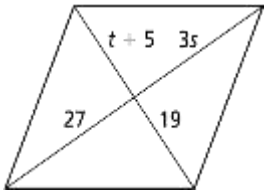
2.



3.



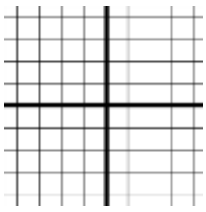
4.



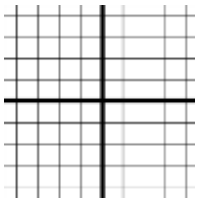
5. Find the coordinates of the intersection of the diagonals of the parallelogram with vertices $(-2, -1)$, $(1, 3)$, $(6, 3)$, and $(3, -1)$. (Hint: Think about the midpoint formula!)

In Exercises 6 and 7, three vertices of parallelogram *ABCD* are given. Find the remaining vertex.

6. $A(-2, 0)$, $B(-2, -2)$, $D(2, 2)$



7. $A(-1, -3)$, $C(1, 2)$, $D(-1, -2)$

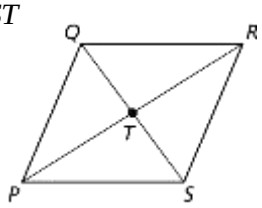


8. The measure of one interior angle of a parallelogram is $30°$ more than two times the measure of another angle. Find the measure of each angle of the parallelogram.

10. Use the diagram to write a two-column proof.

Given: $PQRS$ is a parallelogram.

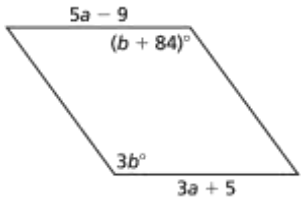
Prove: $\triangle PQT \cong \triangle RST$



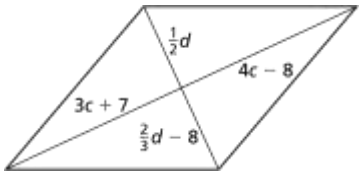
7.2 Practice B

In Exercises 1–4, find the value of each variable in the parallelogram.

3.



4.



8. State whether each statement is *always*, *sometimes*, or *never* true for a parallelogram. Explain your reasoning.

a. The opposite sides are congruent.

b. All four sides are congruent.

c. The diagonals are congruent.

d. The opposite angles are congruent.

e. The adjacent angles are congruent.

f. The adjacent angles are complementary.

7.2 Practice A

1. $x = 14, y = 40$
2. $a = 10, b = 37$
3. $u = 62, v = 59$
4. $s = 9, t = 14$
5. $(2, 1)$
6. $C(2, 0)$
7. $B(1, 1)$
8. Two angles are 50°, and two angles are 130°.
9. no; The side lengths of the parallelograms may not be congruent.
10.

STATEMENTS	REASONS
1. $PQRS$ is a parallelogram.	1. Given
2. $\overline{PQ} \cong \overline{SR}$	2. Parallelogram Opposite Sides Theorem (Thm. 7.3)
3. $\overline{QT} \cong \overline{TS}$	3. Parallelogram Diagonals Theorem (Thm. 7.6)
4. $\overline{PT} \cong \overline{TR}$	4. Parallelogram Diagonals Theorem (Thm. 7.6)
5. $\triangle PQT \cong \triangle RST$	5. SSS Congruence Theorem (Thm. 5.8)

7.2 Practice B

1. $x = 11, y = 8$
2. $u = 66, v = 38$
3. $a = 7, b = 42$
4. $c = 15, d = 48$
5. $(0, 4)$
6. $C(2, -2)$
8. **a.** always; Parallelogram Opposite Sides Theorem (Thm. 7.3)
   b. sometimes; when the parallelogram is a square
   c. sometimes; when the parallelogram is a square
   d. always; Parallelogram Opposite Angles Theorem (Thm. 7.4)
   e. sometimes; when the parallelogram is a square
   f. never; The angles are supplementary by the Consecutive Interior Angles Theorem (Thm. 3.4).