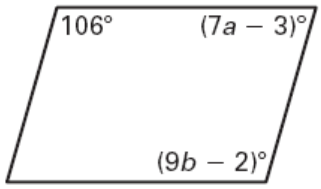
Geometry H
8.2 Practice Worksheet (Prop. Of Parallelograms)

Name: _____
Date: _____ Period: _____

Find the value of each variable in the parallelogram.

1.



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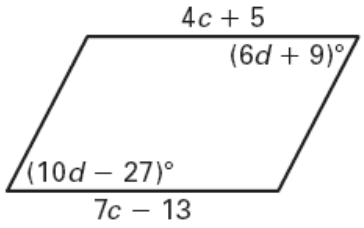

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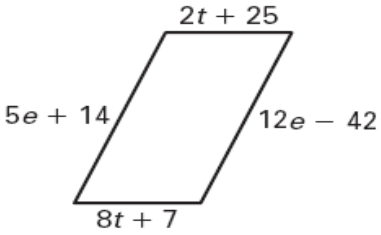

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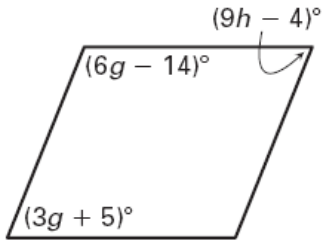

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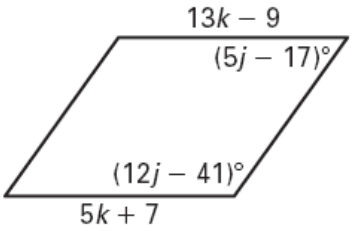

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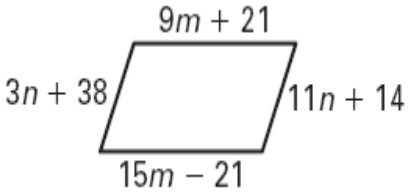

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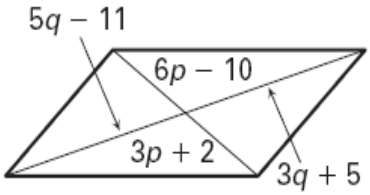

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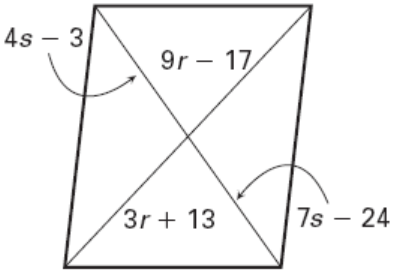
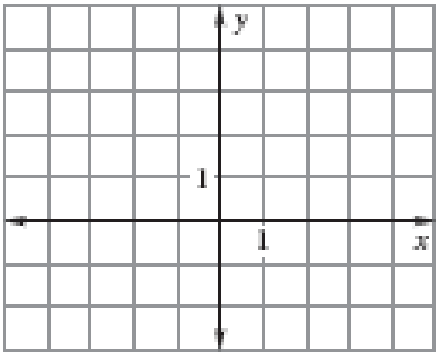
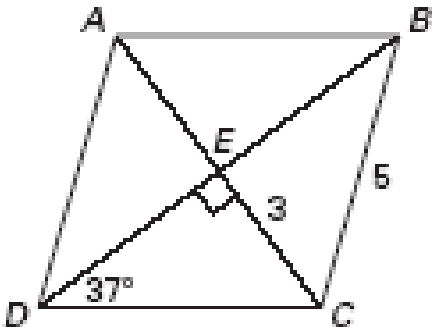


9. The coordinates for $\square ABCD$ are $A(-1, 3)$, $B(4, 2)$, $C(2, -1)$, and $D(-3, 0)$. Plot the points and draw $\square ABCD$ on the coordinate plane. Then draw the diagonals $\overline{AC}$ and $\overline{BD}$. Label the intersection of the diagonals as point E. What are the coordinates of point E?



10. Find the indicated measure in $\square ABCD$. *Explain*.



a. AE

b. AD

c. EB

d. DB

e. AB

f. Perimeter of $\triangle AEB$

g. $m\angle DBA$

h. $m\angle DEC$

i. $m\angle ACD$

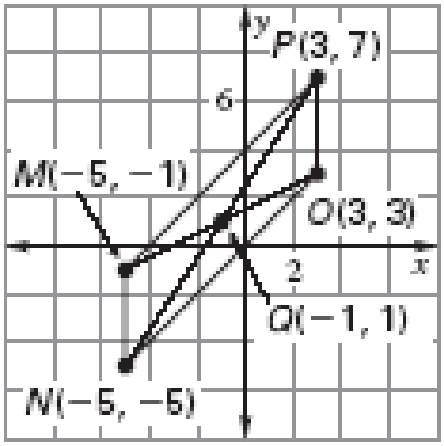
j. $m\angle CAB$

k. Perimeter of $\square ABCD$

11. The measure of one interior angle of a parallelogram is 2.6 times the measure of another angle. Find the measure of each angle.

12. The measure of one interior angle of a parallelogram is 57.8 degrees more than the measure of another angle. Find the measure of each angle.

13. Use the diagram of $\square MNOP$ at the right.



a) Use the distance formula to show $\overline{MP} \cong \overline{NO}$

b) Use the distance formula to show $\overline{MN} \cong \overline{PO}$.

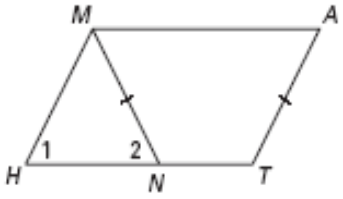
c) Find the slopes of $\overline{MP}$ and $\overline{NO}$.

d) How do the slopes found in part c show that $\overline{MN}$ and $\overline{PO}$ are parallel?

e) Use the midpoint formula to show that the diagonals bisect each other.

14. Complete the following proof.

GIVEN: $MATH$ is a $\square$.
$\overline{MN} \cong \overline{AT}$
PROVE: $\angle 1 \cong \angle 2$



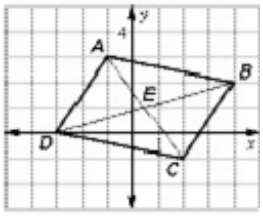
Statements	**Reasons**
1. $MATH$ is a .	**1.** ?
2. ?	**2.** Given
3. $\overline{MH} \cong \overline{AT}$	**3.** ?
4. ?	**4.** Transitive Property of $\cong$
5. $\angle 1 \cong \angle 2$	**5.** ?

The given point coordinates represent three vertices of a parallelogram. Write the coordinates of each other point that could be the fourth vertex. *Justify* your answers.

15. A(2, 0), B(3, 5), C(6, 0)

16. J(a, b), K(a+2, b), L(a+4, b+3)

Answer Key

1. $a = 11, b = 12$
2. $c = 6, d = 9$
3. $e = 8, t = 3$
4. $g = 21, h = 8$
5. $j = 14, k = 2$
6. $m = 7, n = 3$
7. $p = 4, q = 8$
8. $r = 5, s = 7$
9. 

$\left(\frac{1}{2},1\right)$

10. a) 3; Diagonals of $\square$ bisect each other.
b) 5; Opposite sides of $\square$ are $\cong$.
c) 4; Pythagorean Theorem
d) 8; Diagonals of $\square$ bisect each other, so $DB = 2EB$.
e) 5; Pythagorean Theorem or SAS $\cong$ Theorem
f) 12; $P = 3+4+5=12$
g) 37º; Alternate Interior Angles Theorem
h) 90º; Definition of a right triangle
i) 53º; Triangle Sum Theorem
j) 53º; Alternate Interior Angles Theorem
k) 20; All 4 Δ's are $\cong$ with hypotenuse = 5.

11. 50º and 130º
12. 61.1º and 118.9°
13. a) $MP = 8\sqrt{2}$ and $NO = 8\sqrt{2}$, so $\overline{MP} \cong \overline{NO}$
b) $MN = 4$ and $PO = 4$, so $\overline{MN} \cong \overline{PO}$
c) slope of $\overline{MP} = 1$, and slope of $\overline{NO} = 1$
d) Parallel lines have the same slope.
e) The midpoint of $\overline{MO}$ is (-1,1) and midpoint of $\overline{PN}$ is (-1,1). Since they intersect each other at their midpoint, they bisect each other.
14. Given; $\overline{MN} \cong \overline{AT}$; Opposite sides of $\square$ are $\cong$.; $\overline{MN} \cong \overline{MH}$; Base Angles Theorem
15. (–1, 5), (7, 5)
16. $(a + 2, b + 3), (a + 6, b + 3)$