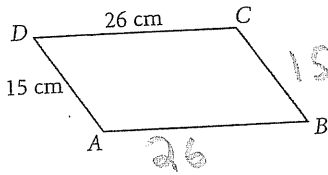


Lesson 5.5 • Properties of Parallelograms

Name Key Period _____ Date _____

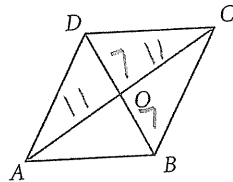
In Exercises 1–7, ABCD is a parallelogram.

1. Perimeter ABCD = 82



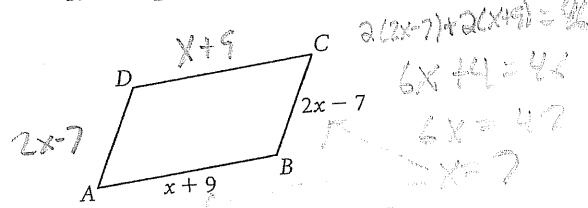
2. AO = 11, and BO = 7.

AC = 22, BD = 14

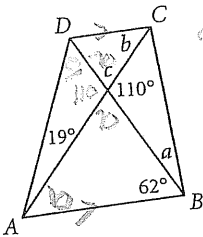


3. Perimeter ABCD = 46.

AB = 16, BC = 7



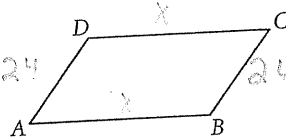
4. a = 51°, b = 48°,
c = 70°



$a + 110 + 19 = 180$
 $a + 129 = 180$
 $a = 51$

5. Perimeter ABCD = 119, and

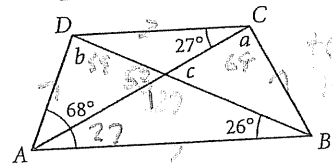
BC = 24. AB = 35.5



$b + 70 + 62 = 180$
 $b + 132 = 180$
 $b = 48$

$48 + 2x = 119$
 $2x = 71$
 $x = 35.5$

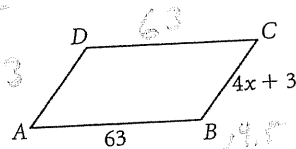
6. a = 68°, b = 59°,
c = 53°



$2(27) + 2(59) = 180$
 $6x + 4 = 180$
 $6x = 176$
 $x = 29.33$

$33 + 127 = 160$
 $16x - 12 = 200 + 34 = 234$
 $16x - 12 = 8x + 132$
 $8x = 144$
 $x = 18$

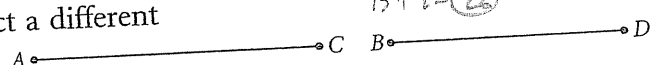
7. Perimeter ABCD = $16x - 12$. AD = 75



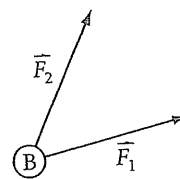
8. If the diagonals of a quadrilateral are 15 cm and 9 cm, what is the perimeter of the quadrilateral formed by connecting the midpoints of the sides?

9. Construct a parallelogram with diagonals \overline{AC} and \overline{BD} .

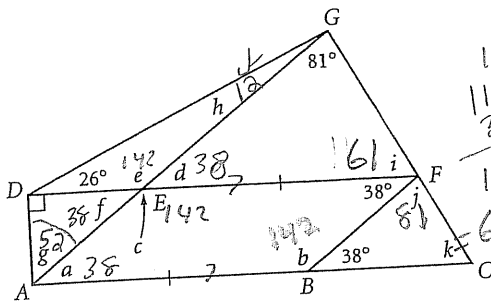
Is your parallelogram unique? If not, construct a different (noncongruent) parallelogram.



10. Ball B is struck at the same instant by two forces, \vec{F}_1 and \vec{F}_2 . Copy the figure and show the resultant force on the ball.



11. Find each lettered angle measure.



$\frac{119}{38} = 3$
 $\frac{119}{38} = 3$
 $\frac{180}{-119} = 1$

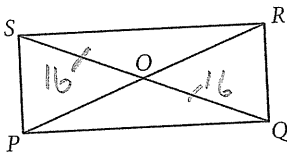
12. If the perimeter of a parallelogram is 132 cm, the longest possible length of a diagonal is less than 66.

Lesson 5.6 • Properties of Special Parallelograms

Name Key Period _____ Date _____

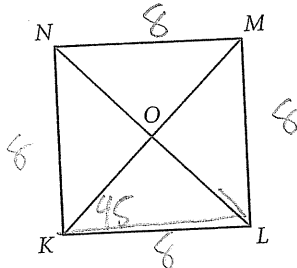
1. PQRS is a rectangle and OS = 16.

OQ = 16
 $m\angle QRS = \underline{90}$
 SQ = 32



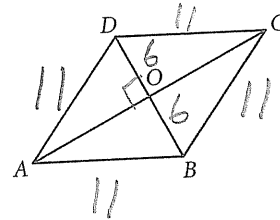
2. KLMN is a square and NM = 8.

$m\angle OKL = \underline{45}$
 $m\angle MOL = \underline{90}$
 Perimeter KLMN = 32

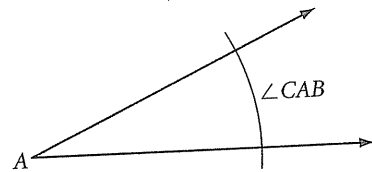
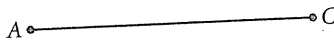


3. ABCD is a rhombus, AD = 11, and DO = 6.

OB = 6
 BC = 11
 $m\angle AOD = \underline{90^\circ}$



4. Construct rectangle ABCD with diagonal \overline{AC} and $\angle CAB$.



In Exercises 5–13, match each description with all the terms that fit it.

- | | | | |
|--------------|-----------------------|------------------|-----------------------|
| a. Trapezoid | b. Isosceles triangle | c. Parallelogram | d. Rhombus |
| e. Kite | f. Rectangle | g. Square | h. All quadrilaterals |
5. c, d, f, g Diagonals bisect each other.
7. f, g Diagonals are congruent.
9. c, d, f, g Opposite sides are congruent.
11. d, g Both diagonals bisect angles.
13. a Has exactly one pair of congruent sides.
6. d, g Diagonals are perpendicular.
8. h Measures of interior angles sum to 360° .
10. c, d, g Opposite angles are congruent.
12. f, g Diagonals are perpendicular bisectors of each other.

In Exercises 14–17, determine whether quadrilateral ABCD with the given coordinates is a trapezoid, parallelogram, rectangle, or none of these.

14. A(4, 0), B(12, 4), C(10, 8), D(2, 4)
15. A(-5, -2), B(10, 3), C(6, 5), D(-3, 2)
16. A(-4, -1), B(0, -3), C(4, 0), D(-1, 5)
17. A(2, -6), B(8, -2), C(0, 4), D(-6, 0)
18. PQRS is a square. What are the coordinates of R and S?

