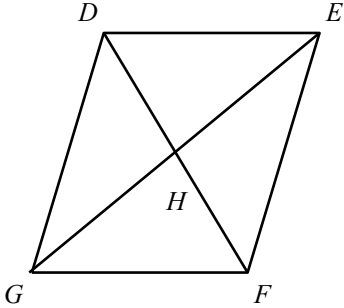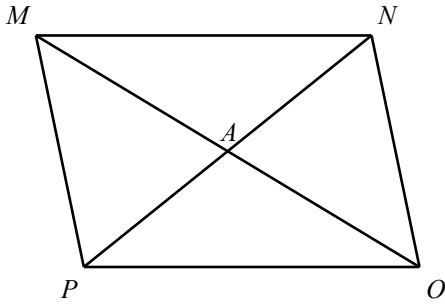## Quadrilaterals Test Review
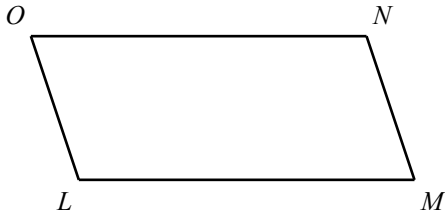
____ 1. In parallelogram $DEFG$, $DH = x + 4$, $HF = 3y$, $GH = 2x - 3$, and $HE = 4y + 3$. Find the values of $x$ and $y$. The diagram is not to scale.
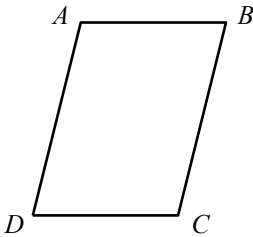


A. $x = 8, y = 20$      B. $x = 7, y = 17$      C. $x = 17, y = 7$      D. $x = 20, y = 8$

____ 2. Find $AM$ in the parallelogram if $PN = 14$ and $AO = 6$. The diagram is not to scale.



A. 12      B. 6      C. 14      D. 7

____ 3. $LMNO$ is a parallelogram. If $NM = x + 6$ and $OL = 2x + 3$, find the value of $x$ and then find $NM$ and $OL$.



A. $x = 5, NM = 9, OL = 11$      C. $x = 5, NM = 11, OL = 11$
B. $x = 3, NM = 9, OL = 9$      D. $x = 3, NM = 11, OL = 9$

____ 4. If $m\angle B = m\angle D = 36$, find $m\angle C$ so that quadrilateral $ABCD$ is a parallelogram. The diagram is not to scale.
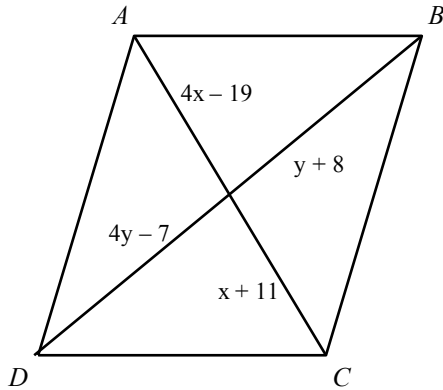
A. 144           B. 72           C. 36           D. 288

____ 5. Find values of $x$ and $y$ for which $ABCD$ must be a parallelogram. The diagram is not to scale.
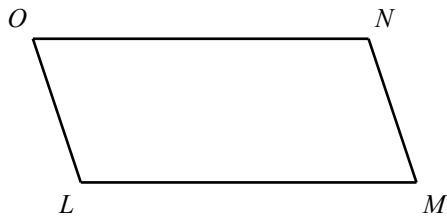
A. $x = 10$, $y = 13$     B. $x = 5$, $y = 10$     C. $x = 10$, $y = 21$     D. $x = 10$, $y = 5$

____ 6. If $ON = 9x - 5$, $LM = 8x + 6$, $NM = x - 5$, and $OL = 5y - 4$, find the values of $x$ and $y$ for which $LMNO$ must be a parallelogram. The diagram is not to scale.
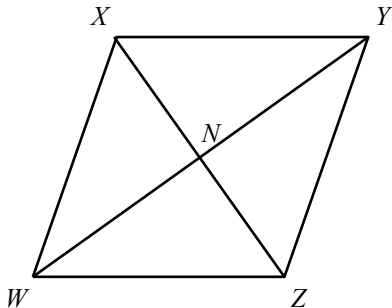
A. $x = 11$, $y = \dfrac{1}{2}$                     C. $x = 6$, $y = \dfrac{1}{2}$

B. $x = 6$, $y = 2$                         D. $x = 11$, $y = 2$

____ 7. Based on the information given, can you determine that the quadrilateral must be a parallelogram? Explain.

**Given:** $\overline{XY} \cong \overline{WZ}$ and $\overline{XW} \cong \overline{YZ}$

A. Yes; opposite sides are congruent.
B. Yes; diagonals of a parallelogram bisect each other.
C. Yes; two opposite sides are both parallel and congruent.
D. No; you cannot determine that the quadrilateral is a parallelogram.

____ 8. Which description does NOT guarantee that a quadrilateral is a parallelogram?
    A. a quadrilateral with both pairs of opposite sides congruent
    B. a quadrilateral with the diagonals bisecting each other
    C. a quadrilateral with consecutive angles supplementary
    D. quadrilateral with two opposite sides parallel

____ 9. What is the most precise name for quadrilateral $ABCD$ with vertices $A(-4, 1)$, $B(-2, 3)$, $C(4, 3)$, and $D(2, 1)$?
    A. parallelogram    B. quadrilateral    C. rhombus    D. rectangle

____ 10. Which statement is true?
    A. All squares are quadrilaterals.
    B. All rectangles are squares.
    C. All quadrilaterals are parallelograms.
    D. All quadrilaterals are squares.

____ 11. In quadrilateral $ABCD$, $m\angle ACD = 2x + 4$ and $m\angle ACB = 5x - 2$. For what value of $x$ is $ABCD$ a rhombus?
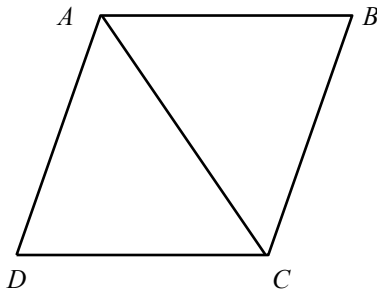


    A. 1                    C. 3
    B. 2                    D. 4

____ 12. Find the values of $a$ and $b$. The diagram is not to scale.
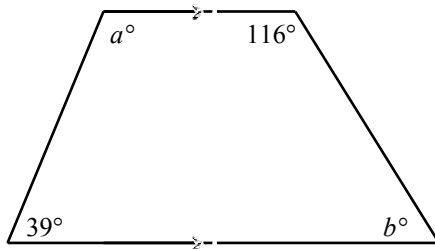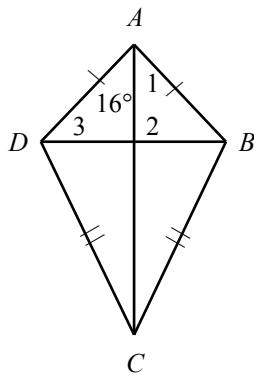


    A. $a = 141, b = 64$                    C. $a = 141, b = 39$
    B. $a = 116, b = 39$                    D. $a = 116, b = 64$

____ 13. $\angle J$ and $\angle M$ are base angles of isosceles trapezoid $JKLM$. If $m\angle J = 17x + 7$, and $m\angle M = 14x + 10$, find $m\angle K$.
    A. 1             B. 78             C. 156             D. 24

____ 14. $\overline{LM}$ is the midsegment of $\square ABCD$. $AB = 26$ and $DC = 138$. What is $LM$?
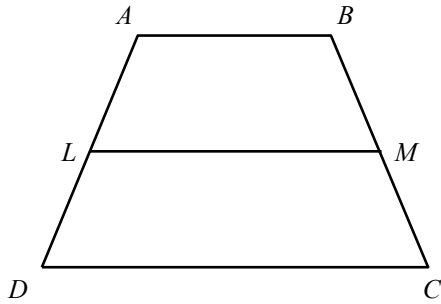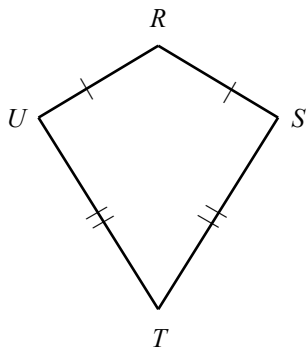
A. 82          B. 92          C. 112          D. 164

_____ 15. Find $m\angle 1$ and $m\angle 3$ in the kite. The diagram is not to scale.



A. $m\angle 1 = 16$, $m\angle 3 = 74$          C. $m\angle 1 = 74$, $m\angle 3 = 16$
B. $m\angle 1 = 16$, $m\angle 3 = 16$          D. $m\angle 1 = 74$, $m\angle 3 = 74$

_____ 16. $m\angle R = 110$ and $m\angle S = 80$. Find $m\angle T$. The diagram is not to scale.



A. 55          B. 80          C. 90          D. 45

17. Give a convincing argument that quadrilateral *ABCD* with *A*(–5, –3), *B*(–1, 1), *C*(8, 1), and *D*(4, –3) is a parallelogram.

18. In the coordinate plane, draw parallelogram *ABCD* with *A*(–5, 0), *B*(1, –4), *C*(5, 2), and *D*(–1, 6).Then demonstrate that *ABCD* is a rectangle.

# Quadrilaterals Test Review
## Answer Section

1.  C
2.  B
3.  B
4.  A
5.  D
6.  D
7.  A
8.  D
9.  A
10. A
11. B
12. A
13. C
14. A
15. A
16. C
17. Slope of $\overline{AB}$ is 1.
    Slope of $\overline{CD}$ is 1.
    Slope of $\overline{BC}$ is 0.
    Slope of $\overline{AD}$ is 0.

    $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$.
    Therefore $ABCD$ is a parallelogram.
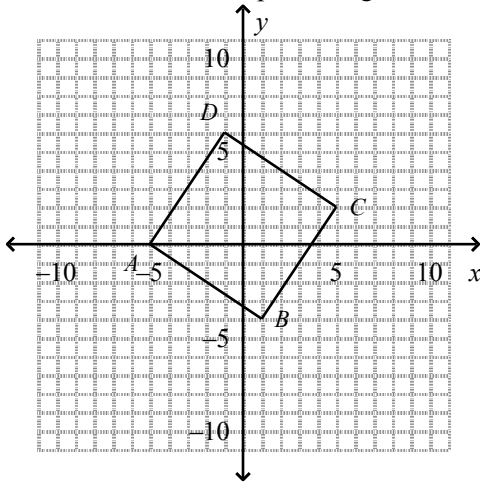
18.



Answers may vary. Sample:

slope of $\overline{AB}$ is $-\dfrac{2}{3}$

slope of $\overline{BC}$ is $\dfrac{3}{2}$

slope of $\overline{CD}$ is $-\dfrac{2}{3}$

slope of $\overline{AD}$ is $\dfrac{3}{2}$

$\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$, so $ABCD$ is a parallelogram.

$\overline{AB} \perp \overline{BC}$, $\overline{BC} \perp \overline{CD}$, $\overline{CD} \perp \overline{AD}$, and $\overline{AB} \perp \overline{AD}$.

$\angle ABC$, $\angle BCD$, $\angle CDA$, $\angle BAD$ are right angles.

$ABCD$ is a rectangle.