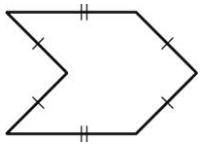
Name: _____ Period: _____ Date: _____

Polygons and Quadrilaterals

Chapter Review *Form A*

Circle the best answer.

1. Which term does NOT describe the figure?



A concave C polygon

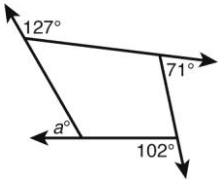
B hexagon D regular

2. What is the sum of the measures of the interior angles of a 5-sided convex polygon?

A 72 C 540

B 360 D 900

3. What is the value of *a*?



A 60

B 80

4. The diagonals of $\square ABCD$ intersect at *X*. Which is NOT true?

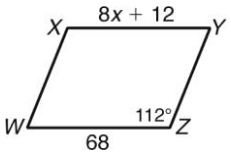
A $\angle DAB \cong \angle BCD$

B $m\angle DAB + m\angle CBA = 180°$

C $\overline{BC} \cong \overline{AD}$

D $\overline{AX} \cong \overline{XB}$

Use the figure for Exercises 5 and 6.



5. *WXYZ* is a parallelogram. Which is $m\angle W$?

A 68°

B 112°

6. *WXYZ* is a parallelogram. What is the value of *x*?

A 7

B 10

7. Which MUST be a parallelogram?

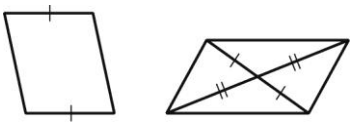
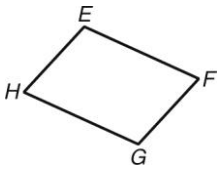


Figure 1 Figure 2

A Figure 1

B Figure 2

8. If $\overline{EF} \parallel \overline{GH}$, what additional information would allow you to conclude that *EFGH* is a parallelogram?



A $\overline{EF} \cong \overline{GH}$

B $\overline{FG} \cong \overline{EH}$

9. Which is NOT always true?

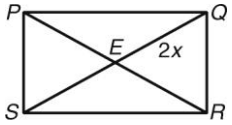
A A square is a rhombus.

B A rectangle is a parallelogram.

C A rhombus is a rectangle.

D A square is a rectangle.

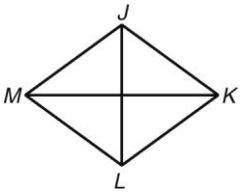
10. *PQRS* is a rectangle. $PR = 26$. What is the value of x?



A 6.5

B 13

11. *JKLM* is a rhombus. If $m\angle JML = 70°$, what is the value of $m\angle JKM$?



A 35°

B 55°

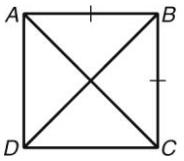
C 70°

D 110°

12. **Given:** $ABCD$ is a parallelogram, $\overline{AC} \perp \overline{BD}$, and $\overline{AB} \cong \overline{CD}$.

    Conclusion: $ABCD$ is a square.

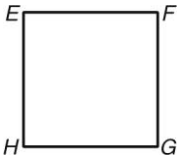
    What can be said about the conclusion?



A Valid

B Not valid

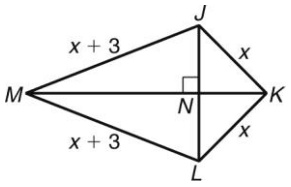
13. Which statement is needed to prove $\square EFGH$ is a rectangle?



A $\overline{EG} \perp \overline{HF}$

B $\overline{EG} \cong \overline{HF}$

14. Which best describes the figure?



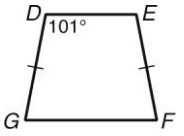
A kite

B parallelogram

C quadrilateral

D trapezoid

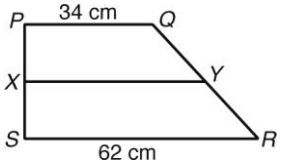
15. What is m$\angle F$ in the isosceles trapezoid?



A 79°

B 101°

16.In trapezoid *PQRS*, what is the length of midsegment $\overline{XY}$?



A 48 cm

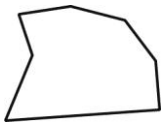
B 51 cm

Polygons and Quadrilaterals

Chapter Review *Form B*

Circle the best answer.

1. Which best describes the figure?



A regular convex heptagon

B irregular convex heptagon

C irregular concave heptagon

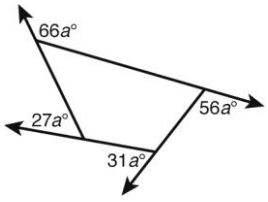
D irregular convex hexagon

2.What is the measure of each interior angle in a regular convex nonagon?

F 40° H 180°

G 140° J 1260°

3.What is the value of *a*?



A 2 C 180

B 90 D Not here

4.The diagonals of $\square ABCD$ intersect at *X*. Which is always true?

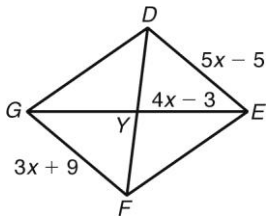
F $\overline{BX} \cong \overline{XD}$

G $\overline{AX} \cong \overline{XB}$

H $\angle A \cong \angle D$

J $m\angle A + m\angle C = 180°$

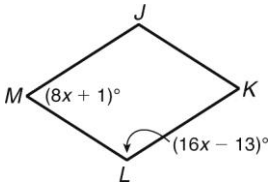
5. In $\square DEFG$, what is $\overline{EG}$?



A 25 C 50

B 30 D Not here

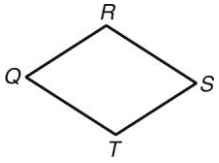
6. In $\square JKLM$, what is the value of $m\angle K$?



F 15° H 65°

G 57° J 115°

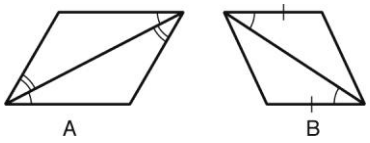
7. $\overline{QR} \parallel \overline{ST}$. Which additional information is NOT enough to conclude that *QRST* is a parallelogram?



A $\overline{RS} \parallel \overline{QT}$ C $\overline{QR} \cong \overline{ST}$

B $\overline{RS} \cong \overline{QT}$ D $\angle Q \cong \angle S$

8.Which of the quadrilaterals MUST be parallelograms?



F A only H Neither A nor B

G B only J Both A and B

9.Which is NOT always true?

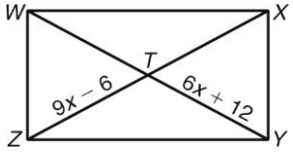
A The diagonals of a rectangle divide the rectangle into four nonoverlapping isosceles triangles.

B The diagonals of a square divide the square into four nonoverlapping right triangles.

C The longer diagonal of a rhombus is perpendicular to two sides of the rhombus.

D The sum of the lengths of the diagonals of a rhombus is less than the perimeter of the rhombus.

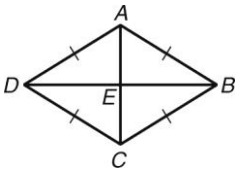
10. *WXYZ* is a rectangle. Which is NOT an expression for $\overline{WT}$?



F $5x + 18$ H $10x - 12$

G $7x + 6$ J $12x - 10$

11. Which set of numbers could be the measures of $\angle DAB$, $\angle ACB$, and $\angle DBC$, respectively?



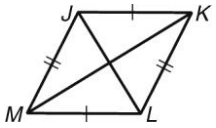
A 114°, 57°, 32.5°

B 115°, 32.5°, 57.5°

C 116°, 57.5°, 32.5°

D 117°, 58.5°, 31.5°

12. What additional information would allow you to conclude that *JKLM* is a rhombus?



F $\overline{JK} \parallel \overline{ML}$ and $\overline{JM} \parallel \overline{KL}$.

G $\overline{JM} \cong \overline{JK}$

H $\overline{JL}$ and $\overline{MK}$ bisect each other.

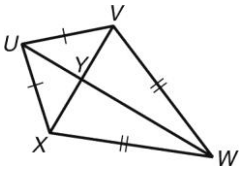
J $\overline{JL} \cong \overline{MK}$

13. Which is the best name for the quadrilateral with vertices at (2, 2), (5, –2), (1, –5), and (–2, –1)?

A parallelogram C rhombus

B rectangle D square

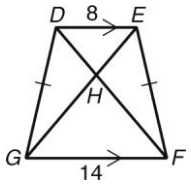
14. In kite *UVWX*, $m\angle XUV = 84°$, and $m\angle WVX = 68°$. What is $m\angle VWX$?



F 22° H 44°

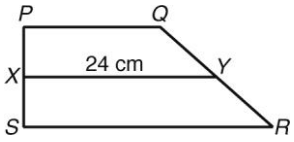
G 42° J 45°

15. $GE = 5x + 2$ and $DF = 8x - 7$.
What is GE?



A 16
B 17
C 18
D 19

16. In trapezoid $PQRS$, if $\overline{YX}$ is the midsegment, what could be the lengths of $\overline{PQ}$ and $\overline{SR}$?

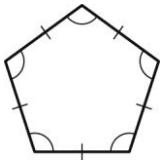


F 4 cm and 8 cm
G 9 cm and 15 cm
H 17 cm and 31 cm
J 18 m and 30 m

Polygons and Quadrilaterals

Chapter Review *Form A*

1. Write *True* or *False.* The figure is a regular polygon.



_____

2. Find the sum of the measures of the interior angles of the polygon.

_____

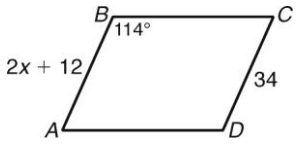
3. Find the measure of each exterior angle of a regular quadrilateral.

_____

4. Write *True* or *False.* If $\overline{AB} \parallel \overline{CD}$, then $ABCD$ is a parallelogram.

_____

Use the figure for Exercises 5 and 6.



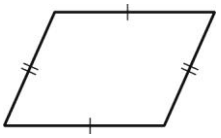
5. *ABCD* is a parallelogram. Find the value of *x*.

_____

6. *ABCD* is a parallelogram. Find m∠*C*.

_____

7. Write *True* or *False.* The quadrilateral is a parallelogram.



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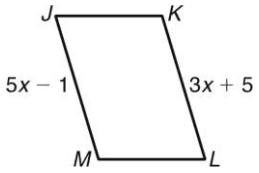
8. In the figure, $\overline{JM} \parallel \overline{KL}$. Show that the quadrilateral is a parallelogram for $x = 3$.



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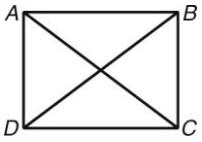
9. Write *True* or *False.* A square is a rhombus.

_____

10. *ABCD* is a rectangle. $AD = 15$, $AC = 25$, and $DC = 20$. Find *BD*.



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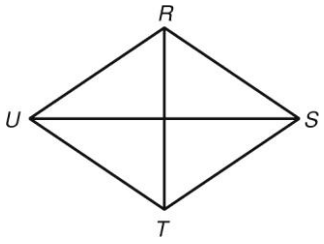
11. *RSTU* is a rhombus. m∠*SRU* = 112.
Find m∠*TRU*.



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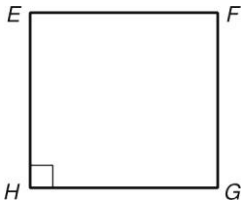
12. Write *True* or *False.* If $\overline{EF} \parallel \overline{HG}$ and $\overline{EH} \parallel \overline{FG}$, then $\square EFGH$ is a rectangle.



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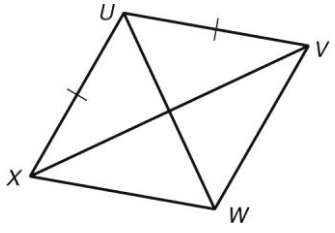
13. **Given:** *UVWX* is a parallelogram and $\overline{UV} \cong \overline{XU}$.
Conclusion: *UVWX* is a rhombus. Determine whether the conclusion is valid.



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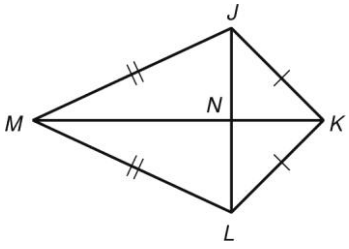
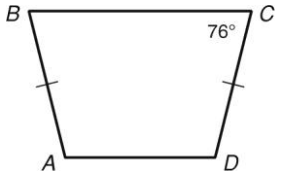
14. In kite *JKLM*, m∠*JMN* = 25°.
Find m∠*NJM*.



15. In trapezoid *ABCD*, find m∠*A*.



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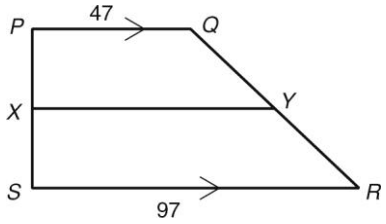
16. Find the length of the midsegment of trapezoid *PQRS*.



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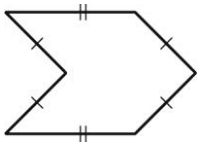
Polygons and Quadrilaterals

Chapter Review *Form B*

1. Name the polygon by its number of sides and tell whether it is regular or irregular.



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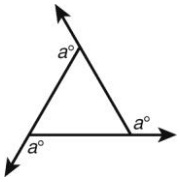
2. Find the measures of each interior angle of a regular octagon.

_____

3. Find the value of *a*.



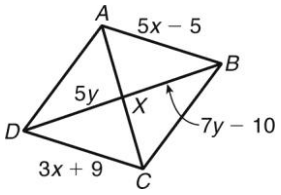
_____

4. Write a biconditional statement to define the term *parallelogram.*

_____

_____

5. *ABCD* is a parallelogram. Find *AB* and *BX*.



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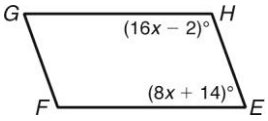
6. *EFGH* is a parallelogram. Find m∠*E*.

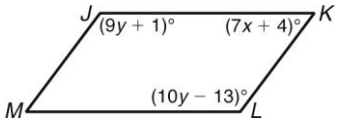


_____

7. Write *True* or *False.* The quadrilateral must be a parallelogram.

_____

8. Show that *JKLM* is a parallelogram for $x = 7$ and $y = 14$.



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_____

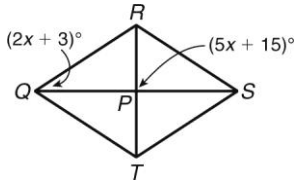
9. Complete the sentence. A _____ is a parallelogram that has the properties of both a _____ and a _____.

_____

10. *ABCD* is a rectangle with diagonals $\overline{BD}$ and $\overline{AC}$ that intersect at *X*. $BD = 12x - 6$ inches and $AX = 4x + 5$ inches. Find *DX*.

_____

11. *RSTQ* is a rhombus. Find m∠*PST*.



_____

12. **Given:** *WXYZ* is a parallelogram.
$\overline{WY}$ and $\overline{XZ}$ bisect each other and
$\overline{WY} \perp \overline{XZ}$.

Conclusion: *WXYZ* is a rectangle. Determine whether the conclusion is valid. If not, tell why not.

_____

_____

_____

_____

_____

_____

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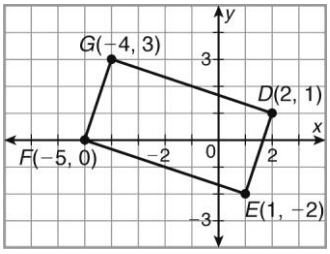
13. Tell whether the parallelogram is a rectangle, rhombus, or square.



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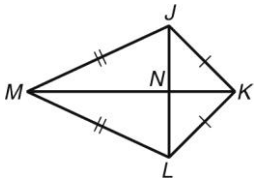
14. In kite *JKLM*, m∠*LMN* = 25°, and m∠*LKN* = 43°. Find m∠*MLK*.



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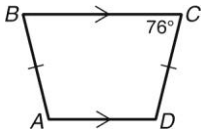
15. In trapezoid *ABCD*, find m$\angle A$.



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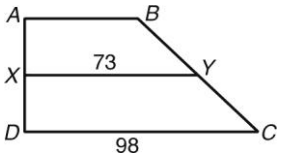
16. $\overline{XY}$ is the midsegment of trapezoid *ABCD*. Find *AB*.



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Answer Key Polygons and Quadrilaterals

Chapter Review Form A: Multiple Choice

1. D
2. C
3. A
4. D
5. A
6. A
7. B
8. A
9. C
10. A
11. A
12. B
13. B
14. A
15. A
16. A

Chapter Review Form B: Multiple Choice

1. C
2. G
3. A
4. F
5. C
6. H
7. B
8. J
9. C
10. J
11. D
12. G
13. D
14. H
15. B
16. H

Chapter Review Form A: Free Response

1. True
2. 540°
3. 90°
4. False
5. 11
6. 66°
7. True
8. Find *JM* and *KL*.
   $JM = 5x - 1$ and $KL = 3x + 5$ *Given*
   $JM = 5(3) - 1 = 14$ *Subst. and simplify.*
   $KL = 3(3) + 5 = 14$ *Subst. and simplify.*
   Since $JM = KL$ and $\overline{JM} \parallel \overline{KL}$, *JKLM* is a parallelogram by Theorem 6-3-1.
9. True
10. 25
11. 56°
12. True
13. valid
14. 65°
15. 104°
16. 72

Chapter Review Form B: Free Response

1. irregular hexagon
2. 135°
3. 120°
4. A quadrilateral is a parallelogram if and only if it has two pairs of parallel sides.
5. $AB = 30$; $BX = 25$
6. 70°
7. True
8. $m\angle J = (9y + 1)° = [9(14) + 1]° = 127°$; $m\angle L = (10y - 13)° = [10(14) - 13]° = 127°$; $m\angle K = (7x + 4)° = [7(7) + 4]° = 53°$; Since $127° + 53° = 180°$, $\angle K$ is supplementary to both $\angle J$ and $\angle L$. *JKLM* is a parallelogram by Theorem 6-3-4.
9. square; rhombus; rectangle
10. 21 in.
11. 33°
12. Not valid; possible answer: conditions for a rectangle are 1 $\angle$ of a $\square$ is a rt. $\angle$ or the diagonals of a $\square$ are $\cong$. While the quadrilateral is a $\square$ and a rhombus, neither of the conditions for a rectangle are met.
13. Sample answer:
    $DF = \sqrt{[2-(-5)]^2 + (1-0)^2}$
    $= \sqrt{7^2 + 1^2} = \sqrt{50} = 5\sqrt{2}$
    $EG = \sqrt{[1-(-4)]^2 + [(-2)-3]^2}$
    $= \sqrt{5^2 + (-5)^2} = \sqrt{50} = 5\sqrt{2}$
    The diagonals are congruent so by Theorem 6-5-2, *DEFG* is a rectangle.
    slope of $\overline{DF} = \frac{1-0}{2-(-5)} = \frac{1}{7}$
    slope of $\overline{EG} = \frac{-2-3}{1-(-4)} = \frac{-5}{5} = 1$
    $\left(\frac{1}{7}\right)(1) \neq -1$, so $\overline{DF}$ is not perpendicular to $\overline{EG}$.
    So *DEFG* is not a rhombus and therefore cannot be a square. *DEFG* is a rectangle.
14. 112°
15. 104°
16. 48