

Geometry Q8A (8.1-8.3)

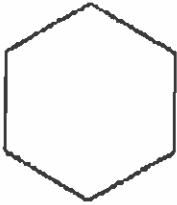
1. The sum of the measures of the interior angles of a convex quadrilateral is _____.

- a. 180°
- b. 270°
- c. 360°
- d. 540°

$$(4-2)180 = 360$$

29

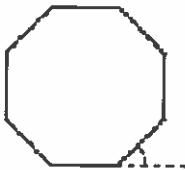
2. The measure of each interior angle of a regular hexagon is _____.



$$(6-2)180 = \frac{720}{6} = 120^\circ$$

- a. 30°
- b. 120°
- c. 15°
- d. 60°

3. The measure of each exterior angle of a regular octagon is _____.

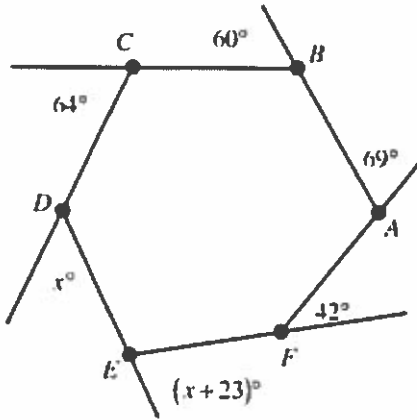


$$\frac{360}{8} = 45^\circ$$

- a. 22.5°
- b. 67.5°
- c. 45°
- d. 135°

Find the value of x . (The figure may not be drawn to scale.)

4.



$$60 + 69 + 42 + x + 23 + x + 64 = 360$$

$$258 + 2x = 360$$

$$x = 51$$

D

- a. 74
- b. 108
- c. 49
- d. 51

5. Find the measure of each exterior angle of a regular polygon with 16 sides.

- a. 11.25°
- b. 360°
- c. 22.5°
- d. 157.5°

$$\frac{360}{16} =$$

6. Find the measure of one of the exterior angles of a regular polygon with nine sides.

- a. 140°
- b. 40°
- c. 160°
- d. 20°

$$\frac{360}{9} = 40$$

B

Name: _____

ID: A

7. Find the measure of the missing angle.

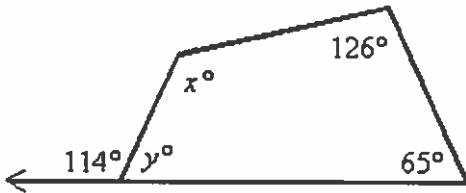


$$(4-2)180 = 360$$

$$67 + 66 + x + 113 = 360$$

$$x = 114^\circ$$

8. Find x and y .



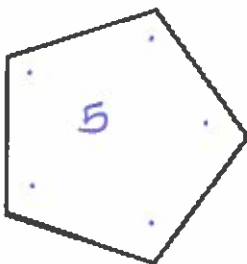
$$\neq (4-2)180 = 360$$

$$\begin{array}{r} 180 \\ - 114 \\ \hline 66^\circ = y \end{array}$$

$$66 + x + 126 + 65 = 360$$

$$x = 103^\circ$$

9. Find the sum of the measures of the interior angles in the figure.



$$(5-2)180 = 540^\circ$$

10. A regular pentagon has five congruent interior angles. What is the measure of each angle?

$$\frac{(5-2)180}{5} = 108^\circ$$

11. What is the measure of each interior angle in a regular octagon?

$$\frac{(8-2)180}{8} = 135^\circ$$

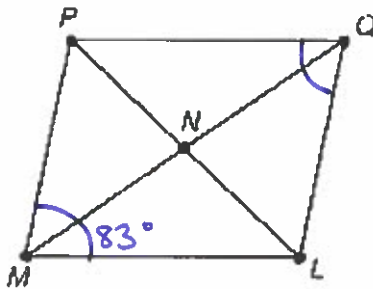
12. Find the measure of an interior angle and an exterior angle of a regular polygon with 20 sides.

$$\frac{(20-2)180}{20} = 162^\circ \text{ interior } 18^\circ \text{ exterior}$$

13. What is the measure of each exterior angle in a regular pentagon?

$$\frac{360}{5} = 72^\circ$$

14. For parallelogram $PQLM$ below, if $m\angle PML = 83^\circ$, then $m\angle PQL = \underline{\hspace{2cm}}$.



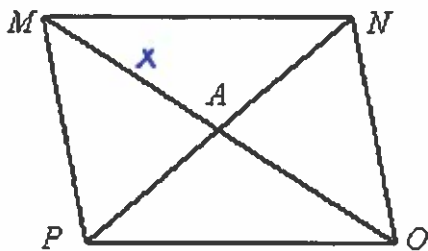
- a. $m\angle PQM$
 b. 83°
 c. 97°
 d. $m\angle QLM$

Name: _____

ID: A

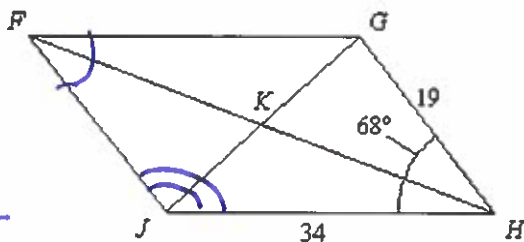
18. Find AM in the parallelogram if $PN = 10$ and $MO = 19$.

$$\frac{10 + 19}{2} = 9.5$$



$$AM = 9.5$$

19. Use the figure below.



$$180 - 68$$

Given: $FGHJ$ is a parallelogram, $m\angle JHG = 68^\circ$, $JH = 34$, $GH = 19$

a. Find $m\angle FJH$. 112°

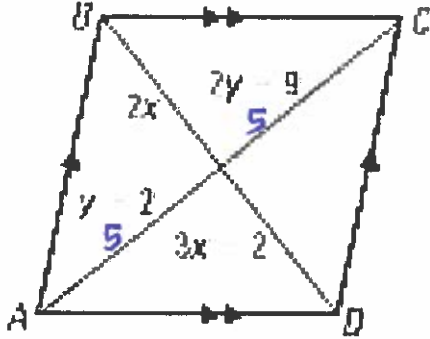
b. Find JF . 19

c. Find $m\angle GFJ$. 68°

d. Find FG . 34

4 points

(next 2 problems) Use the diagram to find the values of x and y . Then find the given length.



$$2x = 3x - 2$$

$$2 = x$$

$$\frac{1}{2}$$

$$2y - 9 = y - 2$$

$$y = 7$$

$$\frac{1}{2}$$

20. AC 10 $\frac{1}{2}$

21. BD 8 $\frac{1}{2}$

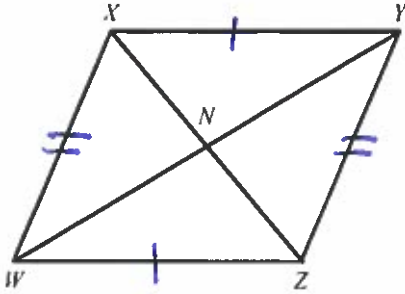
22. $(2, 3)$ and $(3, 1)$ are opposite vertices in a parallelogram. If $(0, 0)$ is the third vertex, then the fourth vertex is

D

- a. $(1, -1)$
- b. $(\frac{5}{2}, 2)$
- c. $(-1, 2)$
- d. $(5, 4)$

Extra Credit.

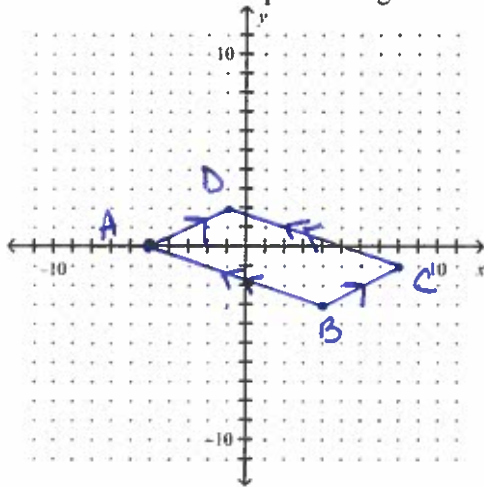
23. Given the following, determine whether quadrilateral $XYZW$ must be a parallelogram. Justify your answer.
 $\overline{XY} \cong \overline{WZ}$ and $\overline{XW} \cong \overline{YZ}$.



Theorem 8.7

if both ~~pairs~~ sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram

24. Draw a figure in the coordinate plane.
 Given: Quadrilateral $ABCD$ with $A(-5, 0)$, $B(4, -3)$, $C(8, -1)$, $D(-1, 2)$
 Show that $ABCD$ is a parallelogram.



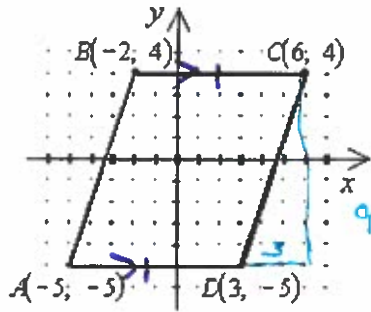
$$AD \parallel BC \quad m = \frac{2}{4} = \frac{1}{2}$$

$$AB \parallel DC \quad m = \frac{-3}{9} = -\frac{1}{3}$$

Name: _____

ID: A

25. Show that $ABCD$ below is a parallelogram.



$$BC \parallel AD \quad m = \text{zero}$$
$$BC \cong AD \quad 8 \text{ units long}$$

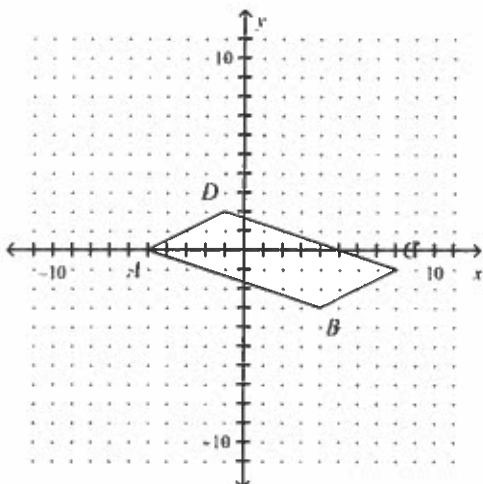
26. (EXTRA CREDIT) Find the number of sides of a convex polygon if the measures of its interior angles have a sum of 2880° .

$$(n-2)180 = 2880$$

$$n = 18$$

Geometry Q8A (8.1-8.3)
Answer Section

1. C
2. B
3. C
4. D
5. C
6. B
7. 114°
8. $x = 103, y = 66$
9. 540°
10. 108°
11. 135°
12. interior angle: 162 degrees; exterior angle: 18 degrees
13. 72°
14. B
15. C
16. $x = 21^\circ, y = 55^\circ, z = 104^\circ$
17. \overline{BC} , the opposite sides of a parallelogram are congruent
18. 9.5
19. a. 112°
b. 19
c. 68°
d. 34
20. 10
21. 8
22. D
23. Yes. If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.



24.

1. Quadrilateral $ABCD$ with $A(-5, 0)$,
 $B(4, -3)$, $C(8, -1)$, $D(-1, 2)$

1. Given

$$2. \text{ slope of } \overline{AB} = \frac{-3 - 0}{4 - (-5)} = \frac{-3}{9}$$

2. Definition of slope

$$\text{ slope of } \overline{BC} = \frac{-1 - (-3)}{8 - 4} = \frac{2}{4}$$

$$\text{ slope of } \overline{CD} = \frac{2 - (-1)}{-1 - 8} = \frac{3}{-9}$$

$$\text{ slope of } \overline{AD} = \frac{0 - 2}{-5 - (-1)} = \frac{-2}{-4} = \frac{1}{2}$$

$$3. \overline{AB} \parallel \overline{DC}, \overline{AD} \parallel \overline{BC}$$

3. Lines with = slopes are \parallel .4. $ABCD$ is a parallelogram.

4. Definition of a parallelogram

25. Since $AB = CD = 3\sqrt{10}$ and $BC = AD = 8$, $ABCD$ is a parallelogram.

26. 18

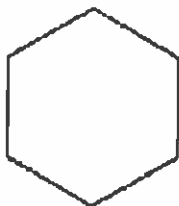
Geometry Q8A (8.1-8.3)

1. The sum of the measures of the interior angles of a convex quadrilateral is _____.

A

- a. 360°
- b. 540°
- c. 270°
- d. 180°

2. The measure of each interior angle of a regular hexagon is _____.



A

- a. 120°
- b. 30°
- c. 15°
- d. 60°

3. The measure of each exterior angle of a regular octagon is _____.

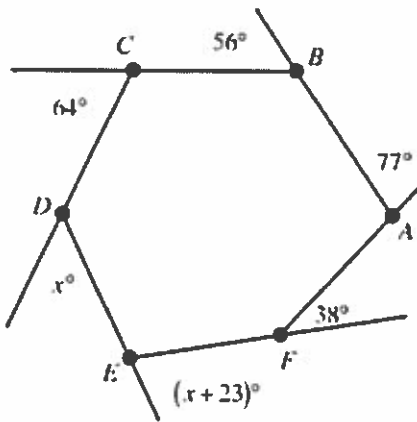


A

- a. 45°
- b. 22.5°
- c. 67.5°
- d. 135°

Find the value of x . (The figure may not be drawn to scale.)

4.



$$56 + 77 + 38 + x + 23 + x + 64 = \cancel{360}$$

$$258 + 2x = 360$$

$$x = 51$$

- a. 74
 b. 51
 c. 49
 d. 108

5. Find the measure of each exterior angle of a regular polygon with 36 sides.

- a. 170°
 b. 360°
 c. 10°
 d. 5°

$$\frac{360}{36} = 10$$

6. Find the measure of one of the exterior angles of a regular polygon with twelve sides.

- a. 15°
 b. 30°
 c. 150°
 d. 165°

$$\frac{360}{12} =$$

Name: _____

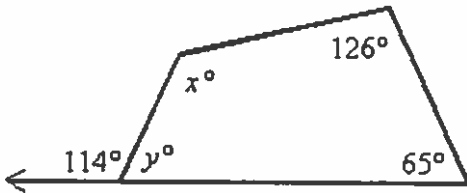
ID: B

7. Find the measure of the missing angle.



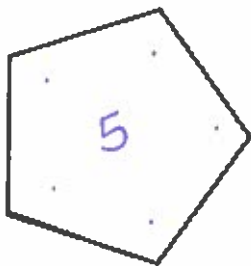
$$x = 102^\circ$$

8. Find x and y .



$$y = 66^\circ$$
$$x = 103^\circ$$

9. Find the sum of the measures of the interior angles in the figure.



$$(5-2)180 = 540^\circ$$

Name: _____

ID: B

10. A regular pentagon has five congruent interior angles. What is the measure of each angle?

$$\frac{540}{5} = 108^\circ$$

11. What is the measure of each interior angle in a regular octagon?

$$\frac{(8-2)180}{8} = 135^\circ$$

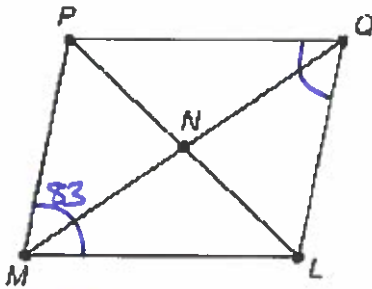
12. Find the measure of an interior angle and an exterior angle of a regular polygon with 45 sides.

$$\frac{(45-2)180}{8} = 172^\circ \quad 8^\circ$$

13. What is the measure of each exterior angle in a regular pentagon?

$$\frac{540}{5} = 72^\circ$$

14. For parallelogram $PQLM$ below, if $m\angle PML = 83^\circ$, then $m\angle PQL =$ _____.



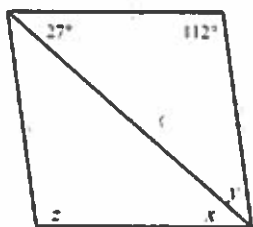
- A
- a. 83°
 - b. $m\angle PQM$
 - c. $m\angle QLM$
 - d. 97°

15. Consecutive angles in a parallelogram are always _____.

- a. congruent angles
 b. supplementary angles
 c. vertical angles
 d. complementary angles

B

16. Find the value of the variables in the parallelogram.



$$x = 27^\circ$$

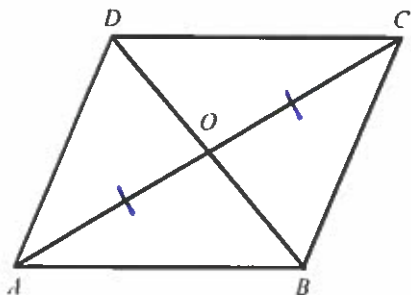
$$z = 112^\circ$$

$$27 + y + 112 = 180$$

$$y = 41^\circ$$

17. Complete the statement for parallelogram $ABCD$. Then state a definition or theorem as the reason.

$AO \cong$ _____


 \overline{OC}

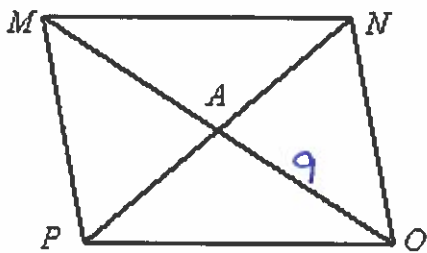
Theorem 8.6

If a quad is a parallelogram
 then it's diagonals
 bisect each other.

Name: _____

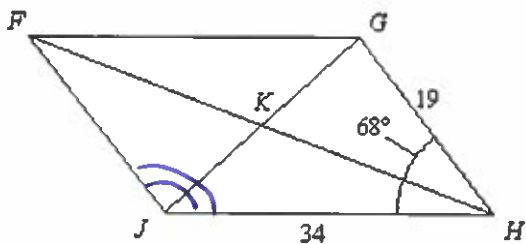
ID: B

18. Find AM in the parallelogram if $PN = 9$ and $AO = 9$.



$$AM = 9$$

19. Use the figure below.



$$\begin{array}{r} 180 \\ - 68 \\ \hline 112 \end{array}$$

Given: $FGHJ$ is a parallelogram, $m\angle JHG = 68^\circ$, $JH = 34$, $GH = 19$

a. Find $m\angle FJH$. 112°

b. Find JF . 19

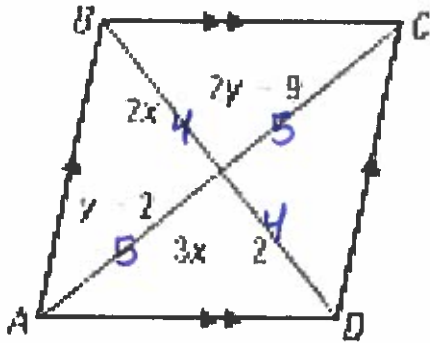
c. Find $m\angle GFJ$. 68°

d. Find FG . 34

Name: _____

ID: B

(next 2 problems) Use the diagram to find the values of x and y . Then find the given length.



$$2x = 3x - 2$$
$$2 = x$$

$$y - 2 = 2y - 9$$
$$7 = y$$

20. $AC = 10$

21. $BD = 8$

22. $(2, 3)$ and $(3, 1)$ are opposite vertices in a parallelogram. If $(0, 0)$ is the third vertex, then the fourth vertex is

a. $(-1, 2)$

b. $(5, 4)$

c. $(\frac{5}{2}, 2)$

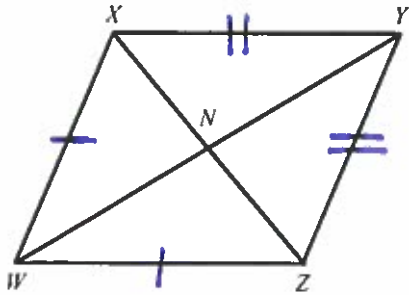
d. $(1, -1)$

B

Name: _____

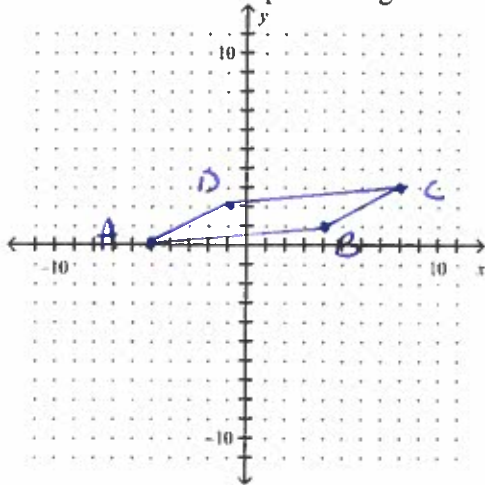
ID: B

23. Given the following, determine whether quadrilateral $XYZW$ must be a parallelogram. Justify your answer.
 $XW = WZ$ and $XY = YZ$.



no - not a parallelogram

24. Draw a figure in the coordinate plane.
Given: Quadrilateral $ABCD$ with $A(-5, 0)$, $B(4, 1)$, $C(8, 3)$, $D(-1, 2)$
Show that $ABCD$ is a parrallelogram.



$$AD \parallel BC \quad \frac{2}{4} = \frac{1}{2} = m$$

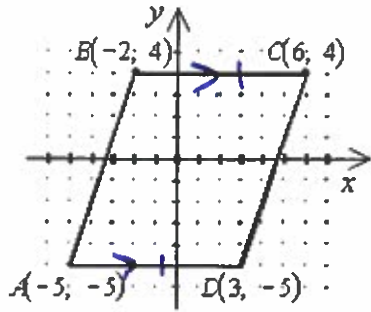
$$DC \parallel AB \quad \frac{1}{9} = m$$

$$\sqrt{2^2 + 2^2} = \sqrt{4 + 4} = \sqrt{8}$$

Name: _____

ID: B

25. Show that $ABCD$ below is a parallelogram.



$$BC \parallel AD = m \text{ is zero}$$

$$BC \cong AD \quad 8 \text{ units}$$

26. (EXTRA CREDIT) Find the number of sides of a convex polygon if the measures of its interior angles have a sum of 2880° .

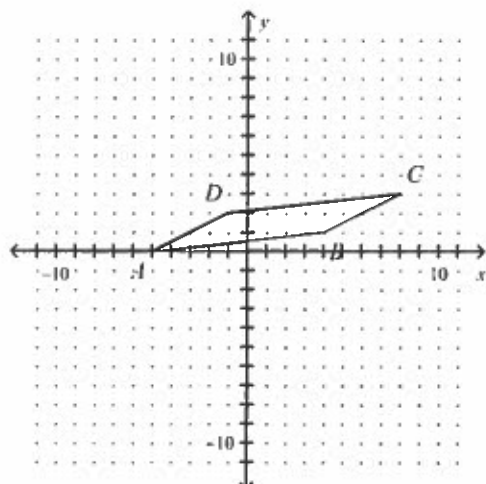
$$(n-2)180 = 2880$$

$$n = 18$$

Geometry Q8A (8.1-8.3)

Answer Section

1. A
2. A
3. A
4. B
5. C
6. B
7. 102°
8. $x = 103, y = 66$
9. 540°
10. 108°
11. 135°
12. interior angle: 172 degrees; exterior angle: 8 degrees
13. 72°
14. A
15. B
16. $x = 27^\circ, y = 41^\circ, z = 112^\circ$
17. \overline{OC} , the diagonals of a parallelogram bisect each other
18. 9
19. a. 112°
b. 19
c. 68°
d. 34
20. 10
21. 8
22. B
23. No. The information does not justify the conclusion that the quadrilateral is a parallelogram.



24.

1. Quadrilateral $ABCD$ with $A(-5, 0)$, $B(4, 1)$, $C(8, 3)$, $D(-1, 2)$

1. Given

2. slope of $\overline{AB} = \frac{1-0}{4-(-5)} = \frac{1}{9}$

2. Definition of slope

slope of $\overline{BC} = \frac{3-(1)}{8-4} = \frac{2}{4}$

slope of $\overline{CD} = \frac{2-(3)}{-1-8} = \frac{-1}{-9}$

slope of $\overline{AD} = \frac{0-2}{-5-(-1)} = \frac{-2}{-4} = \frac{1}{2}$

3. $\overline{AB} \parallel \overline{DC}$, $\overline{AD} \parallel \overline{BC}$

3. Lines with = slopes are \parallel .4. $ABCD$ is a parallelogram.

4. Definition of a parallelogram

25. Since $AB = CD = 3\sqrt{10}$ and $BC = AD = 8$, $ABCD$ is a parallelogram.

26. 18