

Geometry  
Quad Properties HW

Name \_\_\_\_\_  
Date \_\_\_\_\_

Using the following quadrilaterals: **Parallelogram, Rectangle, Rhombus, Square**, write the name of the quadrilateral below each of its properties.

1. All sides are  $\cong$ .
2. Opposite sides are  $\cong$ .
3. Opposite sides are  $\parallel$ .
4. Opposite  $\angle$ 's are  $\cong$ .
5. All  $\angle$ 's are right  $\angle$ 's.
6. Consecutive  $\angle$ 's are supplementary.
7. Diagonals bisect each other.
8. Diagonals are  $\cong$ .
9. Diagonals are  $\perp$ .
10. Each diagonal bisects opposite  $\angle$ 's.

Which, if any, of the properties in Exercises 1–10 can the following type of quadrilateral have?

11. a trapezoid
12. a kite

State whether each statement is *true* or *false*. Justify your response.

13. All squares are rectangles.

14. A trapezoid is a parallelogram.

15. A rhombus can be a kite.

16. Some parallelograms are squares.

17. Every quadrilateral is a parallelogram.

18. All rhombuses are squares.

19. Which statement is NEVER true?

- A. Square  $ABCD$  is a rhombus.
- B. Parallelogram  $PQRS$  is a square.
- C. Trapezoid  $GHJK$  is a parallelogram.
- D. Square  $WXYZ$  is a parallelogram.

20. Which statement is true for some, but not all, rectangles?

- F. Opposite sides are parallel.
- G. It is a parallelogram.
- H. Adjacent sides are perpendicular.
- J. All sides are congruent.

21. A parallelogram has four congruent sides. Which name best describes the figure?

- A. trapezoid
- B. parallelogram
- C. rhombus
- D. square

22. Which name best describes a parallelogram with four congruent angles?

- F. kite
- G. rhombus
- H. rectangle
- J. square

24. A diagonal of a parallelogram bisects one angle of the parallelogram. What kind of quadrilateral must the figure be?

- a. rhombus
- b. rectangle
- c. square
- d. cannot tell

25. The diagonals of a quadrilateral are perpendicular bisectors of each other. What name best describes the quadrilateral?

- A. rectangle
- B. parallelogram
- C. quadrilateral
- D. rhombus

26. The diagonals of a quadrilateral bisect both pairs of opposite angles. What name best describes the quadrilateral?

- F. parallelogram
- G. quadrilateral
- H. rectangle
- J. rhombus

27. Which statement is true for every trapezoid?

- A. Exactly two sides are congruent.
- B. Exactly two sides are parallel.
- C. Opposite angles are supplementary.
- D. The diagonals bisect each other.

28. Which statement is true for every kite?

- F. Opposite sides are congruent.
- G. At least two sides are parallel.
- H. Opposite angles are supplementary.
- J. The diagonals are perpendicular.

Fill in the blank with the word **always**, **sometimes**, or **never**.

29. The diagonals of a trapezoid are \_\_\_\_\_ perpendicular.

30. The diagonals of a kite are \_\_\_\_\_ the perpendicular bisectors of each other.

31. If a quadrilateral has three angles of equal measure, the fourth angle is \_\_\_\_\_ a right angle.

32. Adjacent angles in a square are \_\_\_\_\_ supplementary.

33. The diagonals of a rectangle are \_\_\_\_\_ the bisectors of the angles.

34. There is \_\_\_\_\_ one right angle in a parallelogram if it is not a rectangle.

35. The opposite angles of a parallelogram are \_\_\_\_\_ supplementary.

36. The diagonals of a rhombus are \_\_\_\_\_ congruent.

Using the following quadrilaterals: **Parallelogram, Rectangle, Rhombus, Square**, write the name of the quadrilateral below each of its properties.

1. All sides are  $\cong$ .

Rhombus

Square

2. Opposite sides are  $\cong$ .

All

3. Opposite sides are  $\parallel$ .

All

4. Opposite  $\angle$ 's are  $\cong$ .

All

5. All  $\angle$ 's are right  $\angle$ 's.

Square

Rectangle

6. Consecutive  $\angle$ 's are supplementary.

All

7. Diagonals bisect each other.

All

8. Diagonals are  $\cong$ .

Square

Rectangle

9. Diagonals are  $\perp$ .

Square

Rhombus

10. Each diagonal bisects opposite  $\angle$ 's.

Rhombus

Square

Which, if any, of the properties in Exercises 1-10 can the following type of quadrilateral have?

11. a trapezoid

12. a kite

Diagonals are  $\perp$

State whether each statement is *true* or *false*. Justify your response.

13. All squares are rectangles.

Yes, true b/c squares have all prop of rect.

14. A trapezoid is a parallelogram.

False

15. A rhombus can be a kite.

False

16. Some parallelograms are squares.

True

17. Every quadrilateral is a parallelogram.

False

18. All rhombuses are squares.

False

19. Which statement is NEVER true?

- A. Square  $ABCD$  is a rhombus.
- B. Parallelogram  $PQRS$  is a square.
- ☒ C. Trapezoid  $GHJK$  is a parallelogram.
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- G. It is a parallelogram.
- H. Adjacent sides are perpendicular.
- ☒ J. All sides are congruent.

21. A parallelogram has four congruent sides. Which name best describes the figure?

- A. trapezoid
- B. parallelogram
- ☒ C. rhombus
- D. square

22. Which name best describes a parallelogram with four congruent angles?

F. kite

G. rhombus

☒ H. rectangle

J. square

24. A diagonal of a parallelogram bisects one angle of the parallelogram. What kind of quadrilateral must the figure be?

☒ a. rhombus

b. rectangle

c. square

d. cannot tell

25. The diagonals of a quadrilateral are perpendicular bisectors of each other. What name best describes the quadrilateral?

A. rectangle

B. parallelogram

C. quadrilateral

☒ D. rhombus

26. The diagonals of a quadrilateral bisect both pairs of opposite angles. What name best describes the quadrilateral?

F. parallelogram

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A. Exactly two sides are congruent.

☒ B. Exactly two sides are parallel.

☒ C. Opposite angles are supplementary.

D. The diagonals bisect each other.

28. Which statement is true for every kite?

F. Opposite sides are congruent.

G. At least two sides are parallel.

H. Opposite angles are supplementary.

☒ J. The diagonals are perpendicular.

Fill in the blank with the word **always**, **sometimes**, or **never**.

29. The diagonals of a trapezoid are Sometimes perpendicular.

30. The diagonals of a kite are never the perpendicular bisectors of each other.

31. If a quadrilateral has three angles of equal measure, the fourth angle is Sometimes a right angle.

32. Adjacent angles in a square are always supplementary.

33. The diagonals of a rectangle are Sometimes the bisectors of the angles.

34. There is never one right angle in a parallelogram if it is not a rectangle.

35. The opposite angles of a parallelogram are Sometimes supplementary.

36. The diagonals of a rhombus are Sometimes congruent.