TABE Math-E

PAXEN

Unit-6 Geometry
Lesson 43
Quadrilaterals

Revised: November 4, 2023
Nolan Tomboulian

Some graphics may not have copied well during the scan process.

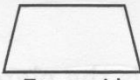# Math-E - Lesson 43 – Quadrilaterals
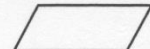
Lesson 43 | Quadrilaterals
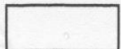
3.G.1 – Medium

Quadrilaterals are two-dimensional shapes that have 4 sides and 4 angles. You can further describe and classify quadrilaterals by their sides and angles. To classify quadrilaterals, keep in mind the following terms.

Parallel sides: Sides are parallel if they are a fixed distance apart and never meet. The lines to the right are parallel.

Perpendicular sides: Sides are perpendicular if they form a right angle. A right angle measures 90°. The lines to the right are perpendicular. Each corner is a right angle.

Quadrilaterals		
Trapezoid • 1 pair of parallel sides	**Parallelogram** • opposite sides parallel (2 pairs of parallel sides)	**Rectangle** • opposite sides parallel (2 pairs of parallel sides) • opposite sides of equal length • 4 right angles
Square • opposite sides parallel (2 pairs of parallel sides) • all 4 sides of equal length • 4 right angles	**Rhombus** • opposite sides parallel (2 pairs of parallel sides) • all 4 sides of equal length	

This diagram shows how certain quadrilaterals fall into multiple categories.

Parallelograms — Quadrilaterals
Rectangles
Squares — Trapezoids
Rhombuses
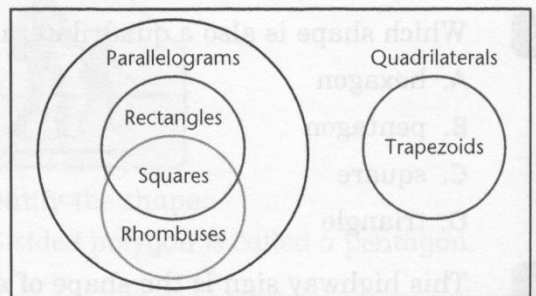
Example **Which quadrilateral is also a rectangle and a rhombus?**

1) Think about the attributes of a rectangle. Opposite sides are parallel and all 4 angles measure 90°.

2) Think about the attributes of a rhombus. Opposite sides are parallel and all 4 sides are equal in length.

3) Which other type of quadrilateral meets the criteria of rectangles and rhombuses?
4 equal sides, opposite sides parallel, and all 4 angles measure 90° describes a square.

So, the quadrilateral that is also a rectangle and a rhombus is a square.

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Practice
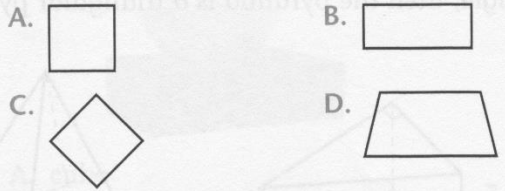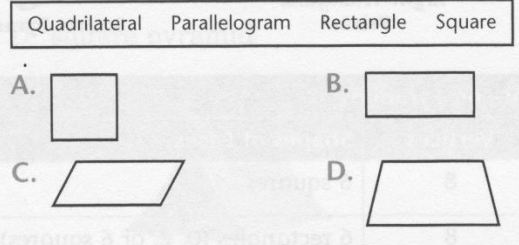
Read each question. Select the correct answer.

1 Which of these quadrilaterals is **NOT** a parallelogram?

A.

B.

C.

D.

2 Which shape can be described with all of these shape names?

| Quadrilateral | Parallelogram | Rectangle | Square |

A.

B.

C.

D.

3 Which word does **NOT** describe this shape?
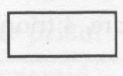
A. parallelogram
B. quadrilateral
C. rectangle
D. square

4 Which is a quadrilateral with exactly 1 pair of parallel sides?

A. trapezoid
B. square
C. rectangle
D. parallelogram

5 Which word describes this shape?
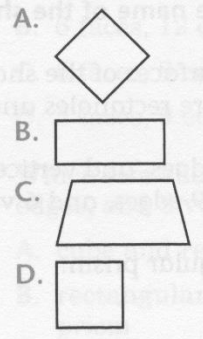
A. square
B. rectangle
C. quadrilateral
D. parallelogram

6 Which describes the shape?

A. 4 right angles and all sides of equal length
B. 2 pairs of parallel opposite sides and all 4 sides of equal length
C. 1 pair of parallel sides
D. 2 pairs of parallel sides and 4 right angles

7 Which quadrilateral has only 1 pair of parallel sides?

A.

B.

C.

D.

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Lesson 43 | **Quadrilaterals**

1. D. The square, rectangle, and rhombus are all parallelograms. The trapezoid is not.

2. A. A square is also a quadrilateral, a parallelogram, and a rectangle.

3. D. The shape is a rectangle. A rectangle is also a parallelogram and a quadrilateral but not a square.

4. A. A trapezoid has exactly 1 pair of parallel sides. The other shapes are all parallelograms, which have 2 pairs of parallel sides.

5. C. The only word that describes the shape is quadrilateral. It does not fit the description for a parallelogram, rectangle, or square.

6. B. The shape is a rhombus, which has 2 pairs of parallel sides and all 4 sides of equal length.

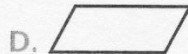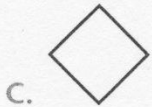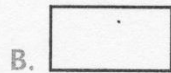7. C. The trapezoid is the only shape with only 1 pair of parallel sides.
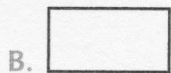
Math-E - Practice 43 – Quadrilaterals

Practice 43 Quadrilaterals

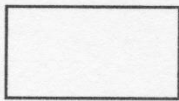**1** Which of these quadrilaterals is **NOT** a rectangle?

A.   B.

C.   D.

2 Which of these shapes can be described as a quadrilateral and a trapezoid?

A.   B.

C.   D.

3 Which three words describe this shape?

A. parallelogram

B. quadrilateral

C. square

D. trapezoid

E. rhombus

F. rectangle

4 Which quadrilateral always has four sides of equal length, four right angles, and both pairs of opposite sides parallel?

A. trapezoid

B. rectangle

C. rhombus

D. square

5 A shape has four sides and four angles but does not have any parallel sides. What must it be?

A. square

B. rectangle

C. trapezoid

D. quadrilateral

6 Which phrase correctly describes this shape?
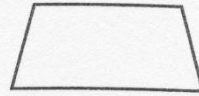
A. one pair of parallel sides

B. two pairs of parallel sides and four right angles

C. four right angles and all sides of equal length

D. two pairs of parallel opposite sides and opposite sides of equal length

7 Based on the attributes that define each type of quadrilateral, which shape **NEVER** has four sides of equal length?

A. square   B. rectangle

C. trapezoid   D. parallelogram

8 The top of a table has two pairs of parallel sides, four sides of equal length, and four right angles. Which shape is it?

A. trapezoid   B. rectangle

C. rhombus   D. square

9 A wall has four right angles. Which shape **CANNOT** describe the wall?

A. parallelogram

B. quadrilateral

C. rectangle

D. trapezoid

10 A decorative tile in a floor has this shape.

Which word describes the shape?

A. quadrilateral   B. parallelogram

C. trapezoid   D. rhombus

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11 A cross section of a metal component of a locomotive engine has a four-sided shape with both pairs of opposite sides parallel. Without knowing any information about the lengths of the sides or the angles, which shape must it be?

A. parallelogram

B. rectangle

C. rhombus

D. trapezoid

12 An artist draws one part of a roof with four sides and no right angles because of the perspective. Which word does **NOT** describe the shape the artist draws?
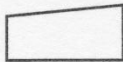
A. parallelogram

B. rectangle

C. rhombus

D. trapezoid

13 Which shape is a rectangle?

A.

B.

C.

D.
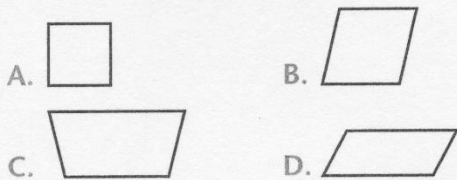
14 A city block has four sides. One pair of opposite sides are 660 feet long and the other pair of opposite sides are 330 feet long. The block has four right angles. Which shape does **NOT** describe this city block?

A. parallelogram   B. rectangle

C. rhombus   D. quadrilateral

15 A section of a farm has this shape.

Which two words describe the shape?

A. parallelogram

B. quadrilateral

C. rectangle

D. trapezoid

E. rhombus

F. square

16 A decorative plate has two pairs of parallel sides, four sides of equal length, and no right angles. Which shape is the plate?
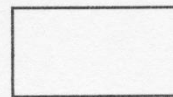
A. trapezoid

B. rectangle

C. rhombus

D. square

17 A flag has a design with a quadrilateral with exactly one pair of parallel sides. Which shape could be the design?

A.   B.

C.   D.

18 A shape has four sides and no parallel sides. Which word describes the shape?

A. parallelogram

B. quadrilateral

C. rectangle

D. rhombus

19 A wooden beam has a side that looks like this shape.

Which word does **NOT** describe the shape?

A. quadrilateral

B. parallelogram

C. rectangle

D. rhombus

20 A television screen has two pairs of parallel sides, opposite sides of equal length, four right angles, and a height that is $\frac{2}{3}$ the length. Which does **NOT** describe the screen?

A. square

B. rectangle

C. quadrilateral

D. parallelogram

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Practice 43 | Quadrilaterals

p. 28–29   (3.G.1)

1. D. A rectangle has four right angles, and this parallelogram does not.

2. C. This shape has four sides and exactly one pair of parallel sides.

3. A, B, F. This shape has four sides, which makes it a quadrilateral. It has two pairs of parallel sides, which make it a parallelogram. It has opposite sides of equal length and four right angles, which make it a rectangle.

4. D. A square always has four sides of equal length, four right angles, and both pairs of opposite sides parallel.

5. D. A quadrilateral has four sides and four angles. The sides do not need to be parallel.

6. A. The shape is a trapezoid, which has one pair of parallel sides.

7. C. A trapezoid cannot have four sides of equal length because it cannot have two pairs of parallel sides.

8. D. Only a square has two pairs of parallel sides, four sides of equal length, and four right angles.

9. D. A trapezoid is the only special quadrilateral that cannot have four right angles.

10. A. Because the shape has four sides but no parallel sides, it can only be described as a quadrilateral.

11. A. The shape with two pairs of parallel sides cannot be a trapezoid. It could be a rectangle or rhombus, but it must be a parallelogram.

12. B. The shape has no right angles, so it is not a rectangle.

13. A. The only shape that is a rectangle is the square. The others do not have right angles.

14. C. The city block is not a rhombus because it does not have all sides of equal length.

15. B, D. The section of farm has four sides and four angles, so it is a quadrilateral. It has exactly one pair of parallel sides, so it is a trapezoid.

16. C. A rhombus is the only shape that can have two pairs of parallel sides, four sides of equal length, and no right angles.

17. C. The trapezoid is the only quadrilateral that has exactly one pair of parallel sides.

18. B. A quadrilateral is the only word that describes a four-sided shape with no parallel sides.

19. D. The shape is not a rhombus because it does not have four sides of equal length.

20. A. The shape is not a square because it does not have four sides of equal length.