THIRD SPACE LEARNING

Math Intervention Pack

Classifying quadrilaterals

Grade 4

How To Use This Resource

1. **Title Slide**
   Use this slide to activate prior knowledge needed for lesson. Students should be encouraged to initially attempt the question presented independently.

2. **Let's Learn**
   Use this slide to introduce the concept. Tutors should work with the student to explore the concept together, usually using diagrams to support understanding.

3. **Follow Me + Your Turn**
   The tutor should work through the follow me slide, modeling the process and explaining their thinking out loud.
   Students should use the your turn slide as an opportunity to work through a question similar to the follow me questions. They should apply the method modeled by the tutor in the follow me slide. Students should be encouraged to explain their thinking out loud.

4. **You Do**
   Students should work through a range of questions that build in complexity. Tutors can offer support but students should initially be encouraged to attempt these questions independently.

5. **Go Further**
   Use this slide to allow students to apply their understanding to a more challenging question in an unfamiliar context.

6. **Support for Slides**
   The support slide is used to support students during the lesson. In the tutor notes, there will be guidance as to when to use the support slide.

7. **Check Your Understanding**
   Tutors should use this slide to assess the student's knowledge and whether or not they have mastered the concept within the lesson.

Standard

4.G.A.2 - Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

Key Mathematical Ideas

1. Classify quadrilaterals based on the presence or absence of parallel or perpendicular lines
2. Classify quadrilaterals based on the presence of angles of a specified size.

Overview

Terminology

- **Classify**: to put shapes into groups based on it's different properties.
- **Quadrilateral**: a four sided polygon that has 4 vertices.
- **Parallelogram**: A type of quadrilateral that has two pairs of parallel lines.
- **Perpendicular lines**: a set of lines that cross or intersect at a 90 degree angle.
- **Parallel lines**: a set of lines that do not intersect.
- **Acute angle**: an angle that measures less than 90 degrees.
- **Right angle**: an angle that measures exactly 90 degrees.
- **Obtuse angle**: an angle that measures more than 90 degrees but less than 180 degrees.

Sentence Stems

- The shape _____ is a _____ because of the properties _____.

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Overview

Common Misconceptions

Common Misconceptions	Tutoring Strategies	Checks for Understanding
Students confuse the terms “rhombus” and “square”.	Remind students that there is no geometric shape called “diamond”.	What is the geometric shape that looks similar to a square?
Understanding that there are many “quadrilaterals”, and that these shapes also have other names.	Explain to students that quadrilaterals are a large group of shapes, but that depending on the properties, may have more than one name.	What are the properties of a quadrilateral? Why is a square also a quadrilateral?

Title Slide

If students...

- get both sections correct:
  - start at You do
- miss the learning goal section only:
  - start at Let’s Learn
- miss the prior learning section:
  - start at Prior Learning

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Prior learning

Teaching prompts

- Review the definition of a quadrilateral and parallelogram.
- Review why each shape is either a quadrilateral or a parallelogram.
- Explain that parallelograms are also quadrilaterals because they are 4 sided shapes with 4 angles and vertices.

If stuck

- Use the examples of shapes provided to walk students through each of the properties.
- Review the different types of angles (acute, obtuse, and right) as well as the different types of lines (parallel and perpendicular).

Let's Learn

Teaching prompts

- Explain that squares are a special type of rectangle. (A square meets the definition of a rectangle, but a rectangle does not meet the definition of a square.)
- Explain that a rhombus can look like a square, but the angles will not all be equal.

If stuck

- Use the examples of shapes provided to walk students through each of the properties.
- Review the different types of angles (acute, obtuse, and right) as well as the different types of lines (parallel and perpendicular).

Questions

- Which shape(s) have the properties of a square? (shape C)
- Which shape(s) have the properties of a rhombus? (shape E)

Watch out for

- Students think that a rhombus and a square are the same shape.

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Follow me

Modeling prompts

- Review the definitions of both a kite and a trapezoid.
- Go through each shape and decide if they have the properties of either a kite or a trapezoid.

Your turn

If stuck

- Use the examples of shapes provided to walk students through each of the properties.
- Use of the Support Slide to review the different shapes.

Questions

- Which of the shapes have the properties of a kite? (shape E)
- Which of the shapes have the properties of a trapezoid? (shape D)
- Which of the shapes are neither a kite nor trapezoid? (Shape A - has 5 sides; shape B and C, no parallel sides or equal adjacent sides;)

Watch out for

- Students put more shapes in “not a trapezoid or kite” because they are unsure.

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You do

If stuck

- Use the examples of shapes provided to walk students through each of the properties.
- Use of the Support Slide to review the different shapes.

Questions

- How does knowing the different properties of each quadrilateral help you sort them into the correct category? (Student answers will vary; knowing the different properties not only helps me be able to identify the shapes by name, but give similarities and differences).

Watch out for

- Students that confuse parallel and perpendicular lines.
- Students that confuse the definitions of the different angles.

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Go further

If stuck

- Use the examples of shapes provided to walk students through each of the properties.
- Use of the Support Slide to review the different shapes.

Questions

- Which shapes have all equal sides and all equal angles? (Shape A)
- Which shapes have all equal sides, but not equal angles? (Shape C)
- Which shapes do not have equal sides and have 2 opposite sides that are parallel and equal in length? (Shape B, D)
- Which shapes do not have equal sides but don't have 2 opposite sides that are parallel and equal in length? (Shape E, F)

Watch out for

- Students that jump down to "are all angles equal? Or "does it have two opposite sides..." instead of following the hierarchy.

Support for slide(s): All slides

If stuck

- Use this slide to review the properties of each slide with students.
- Remind students that the markings mean that the lengths of the sides are equivalent.

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Assessment question:

Correct answer:

- Has parallel lines - A, B, E, H
- Has perpendicular lines - A, B, E, H
- Has obtuse angles - A, C, G, H
- Not a quadrilateral - A, D, F, G

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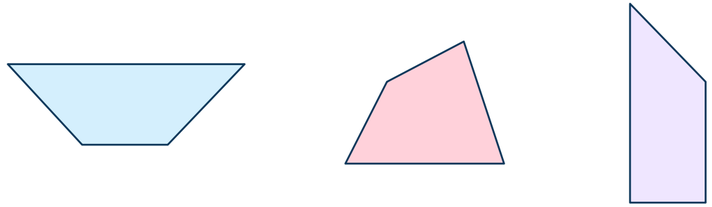
Today you will learn about

Classifying quadrilaterals

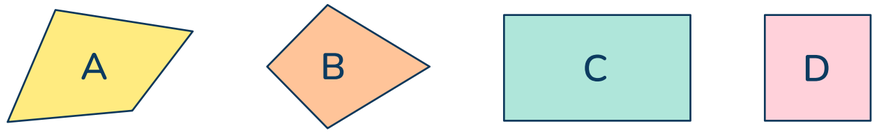
Learning Goal

Circle the quadrilateral below that has perpendicular lines.



Prior Learning

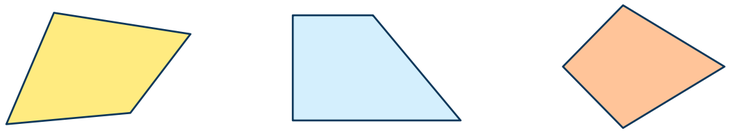
Decide whether each shape is a quadrilateral or parallelogram.



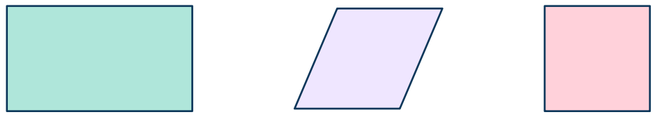
Quadrilateral ..... Parallelogram .....

Prior learning

In order to classify quadrilaterals, you must be able to identify quadrilaterals and parallelograms .



A quadrilateral is any polygon with four sides, angles and vertices.



A parallelogram is a type of quadrilateral that has two pairs of parallel lines.

All parallelograms are also quadrilaterals.

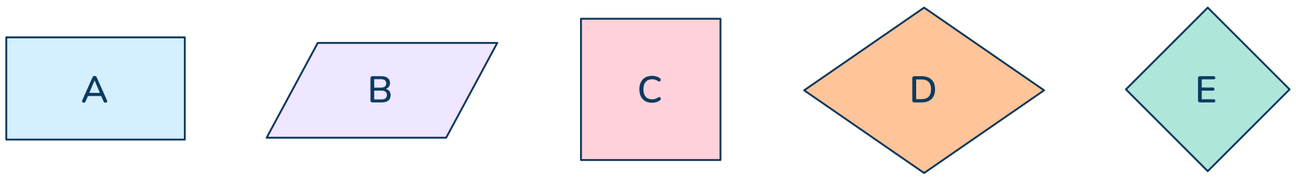
a Draw a shape that is a quadrilateral and a parallelogram.

b Draw a shape that is neither a quadrilateral nor a parallelogram.

Let's learn

We can group quadrilaterals based on whether a shape has parallel or perpendicular lines, or if the shape has acute, obtuse, or right angles.

All the shapes below are both quadrilaterals and parallelograms.



a Write the letters of the shapes in each of the definitions they fit

Rectangle	Opposite sides are parallel and equal in length. All angles are right angles.	A C E .....
Square	All sides are equal in length. All angles are right angles.	.....
Rhombus	4 equal straight sides. Opposites sides are parallel. Opposites angles are equal.	.....

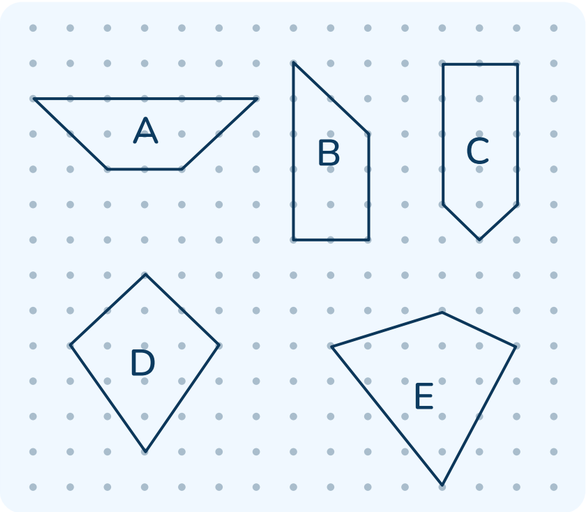
b Which shape is only a parallelogram? .....

A parallelogram is a 4-sided shape with two pairs of parallel sides.

Follow me

The other types of quadrilaterals are kites and trapezoids.

a Sort the shapes by writing the correct letter in the correct place within the table.



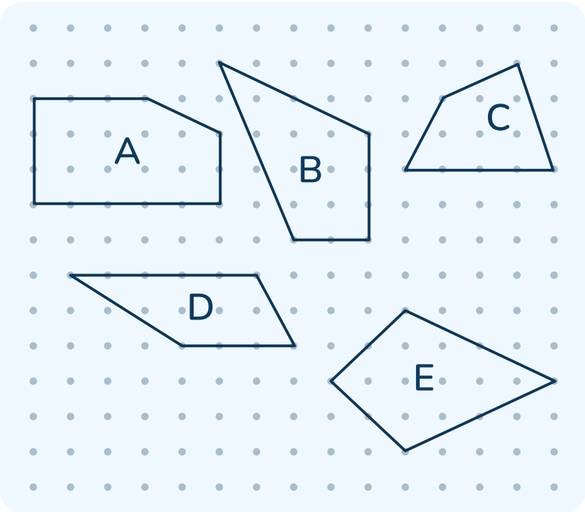
A **kite** is a 4-sided shape with two pairs of **equal**, **adjacent** sides.

A **trapezoid** is a 4-sided shape with one pair of **parallel** sides.

Trapezoid	Kite	Not a Trapezoid or Kite

Your turn

a Sort the shapes by writing the correct letter in the correct place within the table.

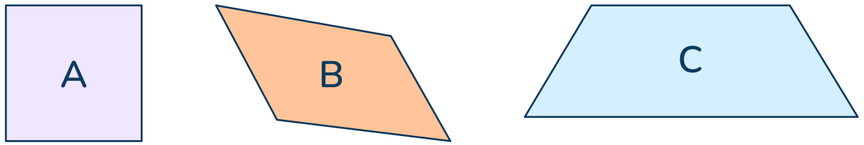


Trapezoid	Kite	Not a Trapezoid or Kite

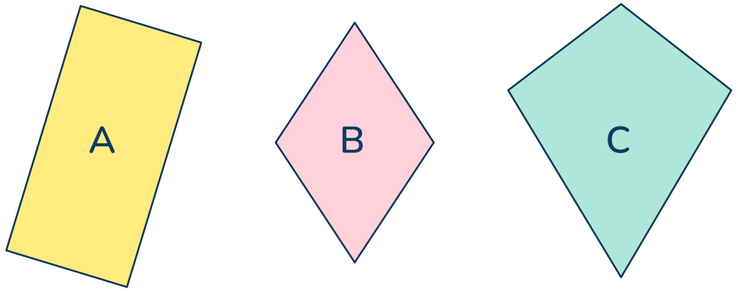
You do

Sort the shapes by writing the correct letter in the correct place within the table.

a



b

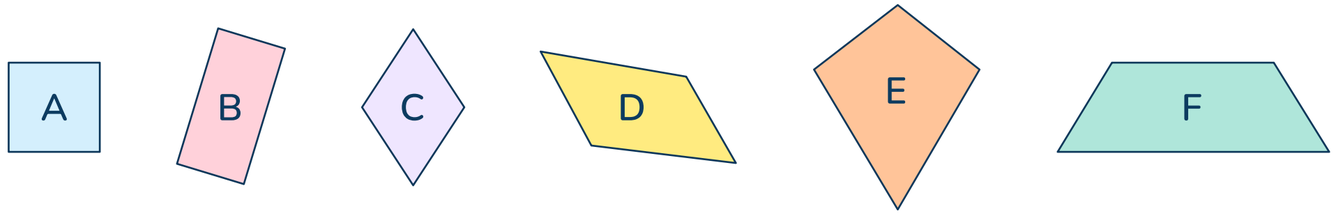


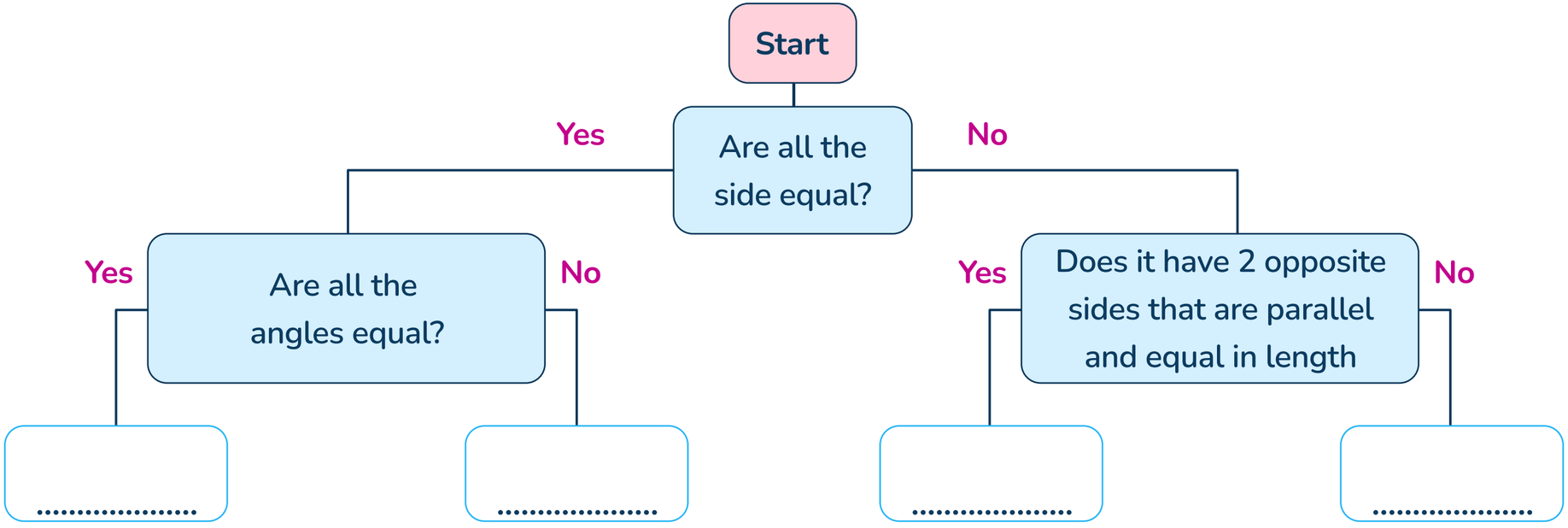
Has parallel lines	No perpendicular lines	Has acute angles

Has parallel lines	No perpendicular lines	Has obtuse angles

Go further

Sort these quadrilaterals into the correct places on the flow diagram below.

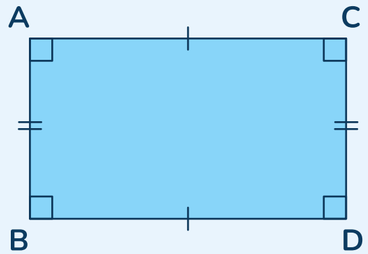




Can you name each shape?

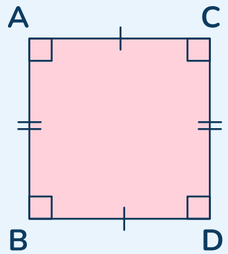
Support

Let's look at all the different types of **quadrilateral** (a four sided shape.)



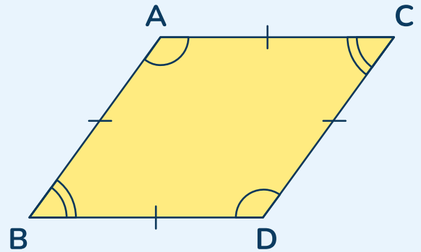
Rectangle

- Opposite sides are equal
- All interior angles are 90°



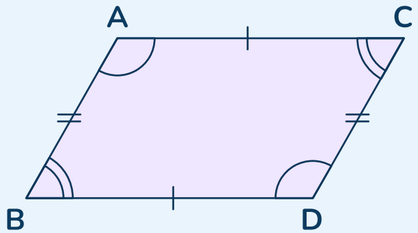
Square

- All four sides are equal
- All interior angles are 90°



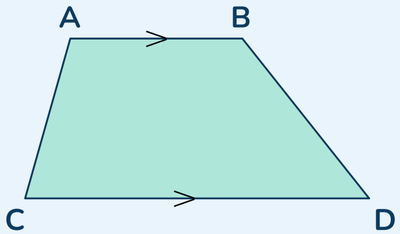
Rhombus

- All four sides are equal
- Opposite interior angles are equal



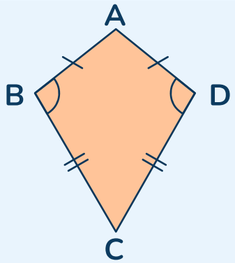
Parallelogram

- Opposite sides are equal and parallel
- Opposite interior angles are equal



Trapezoid

- One pair of opposite sides is parallel



Kite

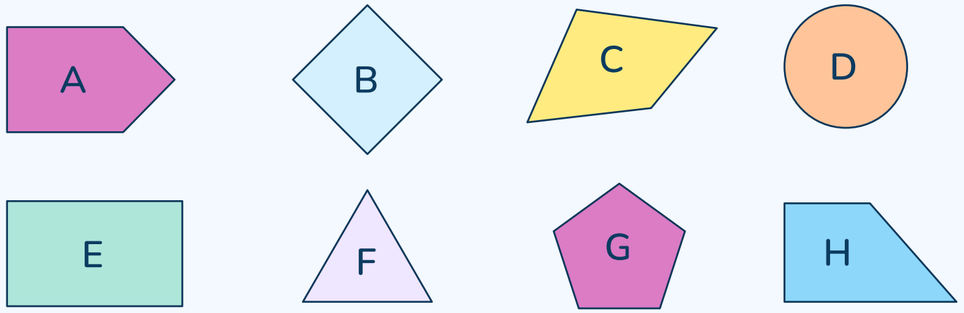
- Two pairs of adjacent sides are equal
- One pair of opposite interior angles are equal

Regular polygons have equal sides and equal angles.

The only **regular** quadrilateral is the square.

Check your understanding

Sort the shapes by writing the correct letter in the correct place within the table.



Has parallel lines	Has perpendicular lines	Has obtuse angles	Not a quadrilateral

Why do I need to try this question on my own first?

-To show your tutor what you understand

-To give you more practice

-To show your teacher how you are doing

Do you have a group of students who need a boost in math?

Each student could receive personalized lessons every week from our specialist one-on-one math tutors.

- Differentiated instruction for each student
- Aligned to your state's standards
- Scaffolded learning to close gaps

"We just had our first session and it went great! The kids really liked it and felt like they were learning! One even said he finally felt like math was making sense."

Michelle Craig, Instructional Coach,
Sherwood Forest Elementary, Washington

Speak to us

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