

Reasoning and Problem Solving

Step 4: Quadrilaterals

National Curriculum Objectives:

Mathematics Year 4: (4G2a) Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Describe the similarities and differences between two quadrilaterals. Includes right angles and 3 types of quadrilateral (rectangles, parallelograms and squares). All shapes are in 'standard' orientation.

Expected Describe the similarities and differences of two quadrilaterals. Includes right angles, parallel lines and 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus). All shapes are in 'standard' orientation.

Greater Depth Describe the similarities and differences of two quadrilaterals using understanding of quadrilaterals and their properties. Includes right angles, parallel lines and 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus). Shapes presented in different orientations.

Questions 2, 5 and 8 (Problem Solving)

Developing Work out the shape based on the properties given. Properties relate to 3 types of quadrilateral (rectangles, parallelograms and squares), sides and right angles.

Expected Work out the shape based on the properties given. Properties relate to 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus), parallel lines and right angles.

Greater Depth Work out the shape based on the properties given. Properties relate to 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus), parallel lines and right angles.

Questions 3, 6 and 9 (Reasoning)

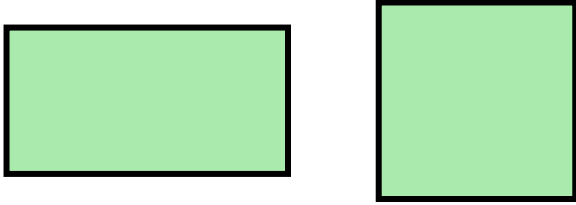
Developing Explain whether a statement describing or identifying a quadrilateral is correct. Includes right angles and 3 types of quadrilateral (rectangles, parallelograms and squares). All shapes are in 'standard' orientation.

Expected Explain whether a statement describing or identifying a quadrilateral is correct. Includes right angles, parallel lines and 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus). All shapes are in 'standard' orientation.

Greater Depth Explain whether a statement describing or identifying a quadrilateral is correct. Includes right angles, parallel lines and 5 types of quadrilateral (rectangles, parallelograms, squares, trapeziums and rhombus). Shapes presented in different orientations.

Quadrilaterals

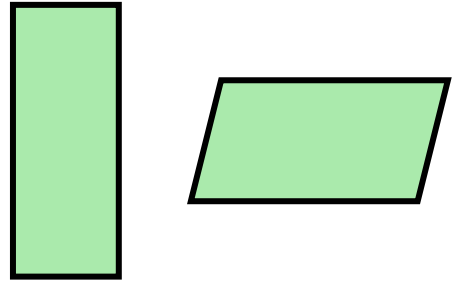
1a. What is the same about these two shapes? What is different?



R

Quadrilaterals

1b. What is the same about these two shapes? What is different?



R

2a. Amy is thinking of a shape. It has:

- 4 sides
- 4 right angles

What shapes could Amy be thinking of?



PS

2b. Terry is thinking of a shape. It has:

- 4 sides
- 2 pairs of parallel sides
- No right angles

What shape could Terry be thinking of?



PS

3a. Halima thinks that the shape matches her statement. Is she correct? Explain your answer.



This quadrilateral has 2 right angles.



R

3b. Yao thinks that the shape matches his statement. Is he correct? Explain your answer.

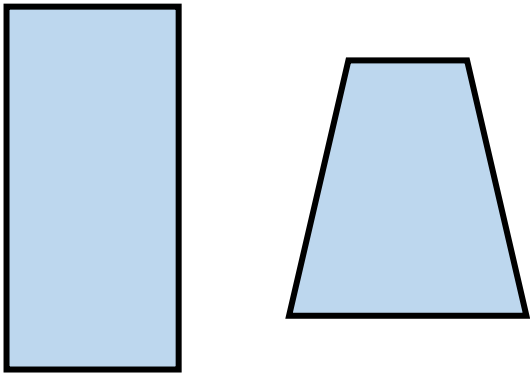
This quadrilateral has all equal length sides and 4 right angles.



R

Quadrilaterals

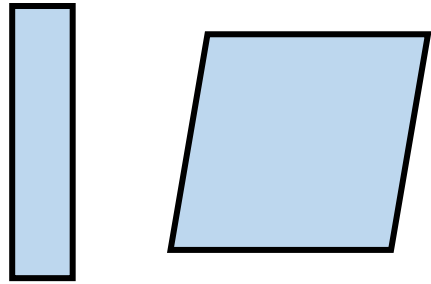
4a. What is the same about these two shapes? What is different?



R

Quadrilaterals

4b. What is the same about these two shapes? What is different?



R

5a. Sunita is thinking of a shape. It has:

- 4 sides
- 2 or more right angles

What shapes could Sunita be thinking of?



PS

5b. Kyle is thinking of a shape. It has:

- 4 sides
- 1 pair of parallel lines
- No right angles

What shape could Kyle be thinking of?



PS

6a. Tilly thinks that the shape matches her statement. Is she correct? Explain your answer.



This quadrilateral is a rhombus.



R

6b. Kaleb thinks that the shape matches his statement. Is he correct? Explain your answer.

This quadrilateral has 1 pair of parallel sides.

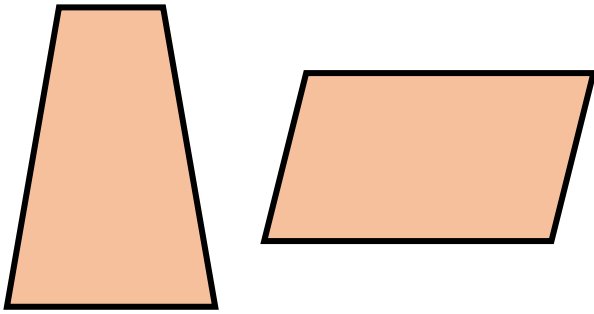


R

Quadrilaterals

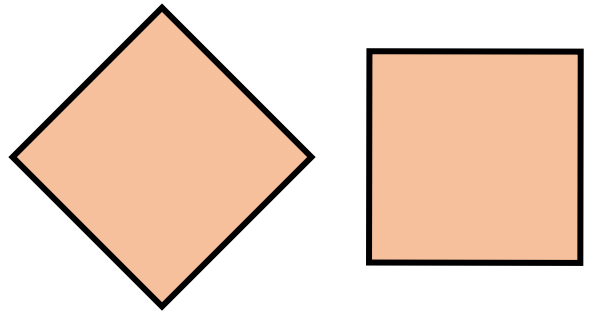
Quadrilaterals

7a. What is the same about these two shapes? What is different?



R

7b. What is the same about these two shapes? What is different?



R

8a. Vicky is thinking of a shape. It has:

- 4 sides
- 1 set of parallel sides

What shape could Vicky be thinking of?



PS

8b. Dev is thinking of a shape. It has:

- 4 sides
- No right angles

What shape could Dev be thinking of?



PS

9a. Sophie thinks that the shape matches her statement. Is she correct? Explain your answer.



This shape is a regular quadrilateral.



R

9b. Robert thinks that the shape matches his statement. Is he correct? Explain your answer.

This shape has 2 pairs of parallel sides.



R

Reasoning and Problem Solving Quadrilaterals

Developing

- 1a. Various answers, for example:
Same: 4 sides; 4 right angles; 2 sets of parallel sides. Different: length of sides.
- 2a. Amy could be thinking of a square or a rectangle.
- 3a. Halima is incorrect. A parallelogram does not have any right angles.

Expected

- 4a. Various answers, for example:
Same: 4 sides; shorter sides are horizontal; at least one set of parallel lines.
Different: amount of right angles; types of angles; number of sets of parallel sides.
- 5a. Sunita could be thinking of a square, a rectangle or a right-angled trapezium.
- 6a. Tilly is incorrect. A rhombus has no right angles. This shape is a square as it has 4 right angles.

Greater Depth

- 7a. Various answers, for example:
Same: 4 sides; no right angles.
Different: amount of pairs of parallel sides; length of sides.
- 8a. Vicky could be thinking of a trapezium.
- 9a. Sophie is incorrect as a regular quadrilateral must have all sides and angles equal and a rectangle does not have all sides equal.

Reasoning and Problem Solving Quadrilaterals

Developing

- 1b. Various answers. for example:
Same: 4 sides; 2 sets of parallel sides.
Different: amount of right angles; types of angles; length of sides.
- 2b. Terry could be thinking of a parallelogram or a rhombus.
- 3b. Yao is correct as a square has all equal length sides and 4 right angles.

Expected

- 4b. Various answers. for example:
Same: 4 sides; 4 angles; 2 sets of parallel sides. Different: length of sides; number of right angles.
- 5b. Kyle could be thinking of a trapezium.
- 6b. Kaleb is correct as it is a trapezium. Trapeziums only have 1 pair of parallel sides.

Greater Depth

- 7b. Various answers, for example:
Same: 4 equal sides; 4 right angles.
Different: orientation.
- 8b. Dev could be thinking of a trapezium, a kite, a rhombus or a parallelogram.
- 9b. Robert is incorrect as a trapezium only has 1 pair of parallel sides.