

Reasoning and Problem Solving

Step 8: Angles in Quadrilaterals

National Curriculum Objectives:

Mathematics Year 6: (6G3a) [Draw 2-D shapes using given dimensions and angles](#)

Mathematics Year 6: (6G2a) [Compare and classify geometric shapes based on their properties and sizes](#)

Mathematics Year 6: (6G4a) [Find unknown angles in any triangles, quadrilaterals, and regular polygons](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Use knowledge of quadrilaterals to create a square and a rectangle on a given geoboard.

Expected Use knowledge of quadrilaterals to create a square, rhombus, trapezium, rectangle or parallelogram on a given geoboard.

Greater Depth Use knowledge of quadrilaterals to create compound shapes using a square, rhombus, trapezium, rectangle or parallelogram on a given geoboard.

Questions 2, 5 and 8 (Reasoning)

Developing Answer simple true or false statements, regarding squares and rhombuses.

Expected Answer simple true or false statements, regarding squares, rhombuses, trapeziums, rectangles or parallelograms.

Greater Depth Answer more true or false statements, regarding compound shapes made up of squares, rhombuses, trapeziums, rectangles or parallelograms.

Questions 3, 6 and 9 (Problem Solving)

Developing Use a clear description to identify a shape from a choice of 2 given shapes. Calculate 2 missing angles, supplementary angles are given. Includes squares and rhombuses.

Expected Use a clear description to identify a shape from a choice of 3 given shapes. Calculate 3 missing angles, supplementary angles are given. Includes squares, rhombuses, trapeziums, rectangles or parallelograms.

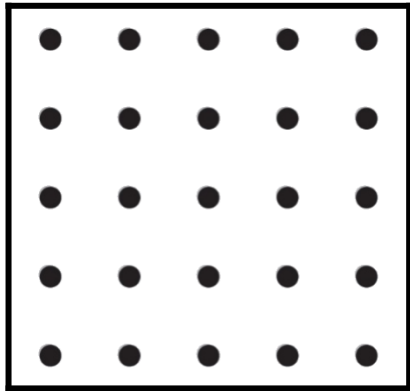
Greater Depth Use a clear description to identify a shape from a choice of 3 given shapes. Calculate a number of missing angles, supplementary and unhelpful angles given. Includes compound shapes.

More [Year 6 Properties of Shapes](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Angles in Quadrilaterals

1a. Draw and label a square and a rectangle on the geoboard below.



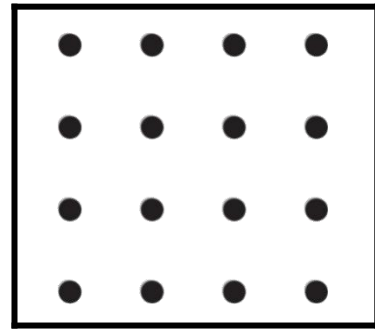
Shapes may share pegs but sides should not cross.



PS

Angles in Quadrilaterals

1b. Draw and label a different sized square and rectangle on the geoboard below.



Shapes may share pegs but sides should not cross.



PS

2a. True or false?



A square has four sides of equal length, two pairs of parallel sides and four angles that each measure 60° .

Explain your answer.



R

2b. True or false?



All four angles in a rhombus are acute.

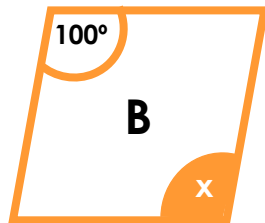
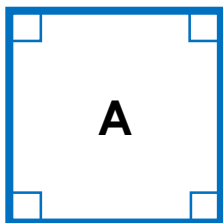
Explain your answer.



R

3a. Find the shape being described.

The opposite angles of the shape are equal and have a sum of 180° .



Calculate angle x.

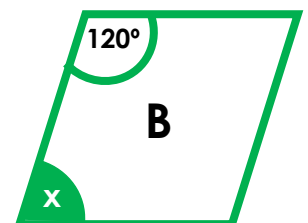
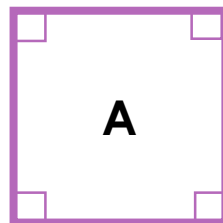


Quadrilaterals not drawn to scale.

PS

3b. Find the shape being described.

All four sides are the same length and two of the angles are acute.



Calculate angle x.

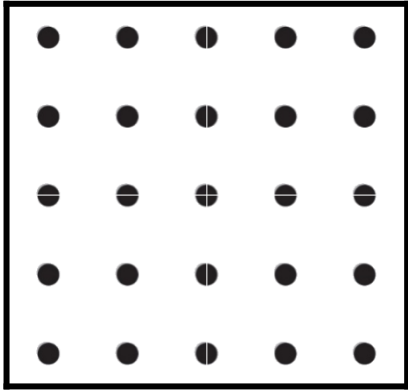


Quadrilaterals not drawn to scale.

PS

Angles in Quadrilaterals

4a. Draw and label two quadrilaterals on the geoboard below.



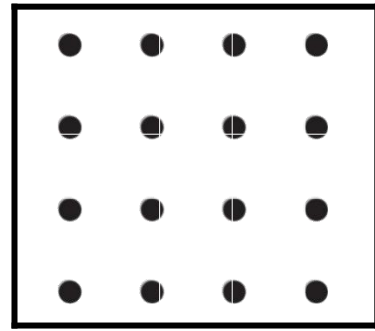
Shapes may share pegs but sides should not cross.



PS

Angles in Quadrilaterals

4b. Draw and label two different quadrilaterals on the geoboard below.



Shapes may share pegs but sides should not cross.



PS

5a. True or false?



Parallelograms have four sides of equal length.

Explain your answer.



R

5b. True or false?



A rectangle has two long sides and two short sides, so one pair of angles are a different size.

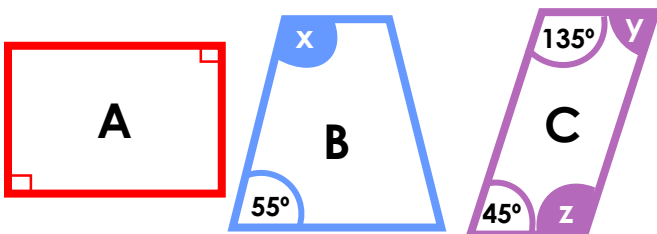
Explain your answer.



R

6a. Find the shape being described.

The missing angles of this shape will equal 305° . The shape can be split into 3 equal isosceles triangles.



Calculate the angles marked x , y and z .

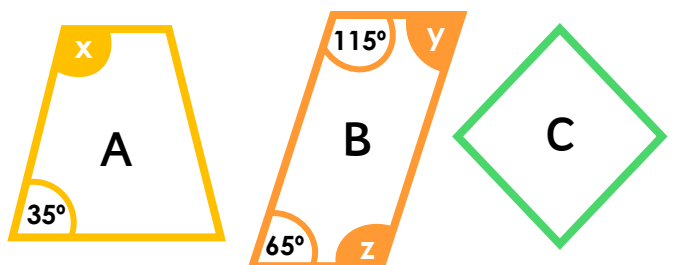


Quadrilaterals not drawn to scale.

PS

6b. Find the shape being described.

The shape has two acute angles. Only two sides of the shape are parallel.



Calculate the angles marked x , y and z .

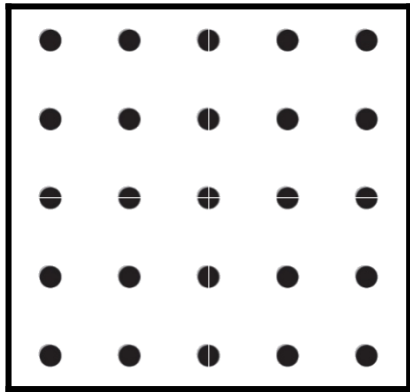


Quadrilaterals not drawn to scale.

PS

Angles in Quadrilaterals

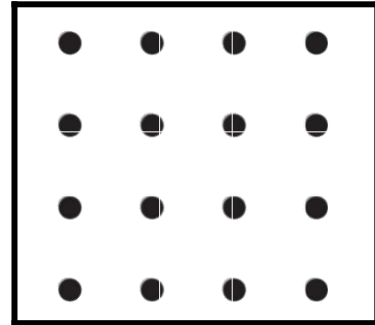
7a. Draw and label a compound shape made up of two squares, rhombuses, trapeziums, rectangles or parallelograms.



PS

Angles in Quadrilaterals

7b. Draw and label a compound shape made up of two squares, rhombuses, trapeziums, rectangles or parallelograms.



PS

8a. True or false?



Two rhombuses together will create a rectangle.

Explain your answer.

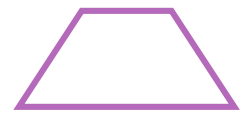


R

8b. True or false?



When I combine two trapeziums together like the one below, I can only make six sided shapes.



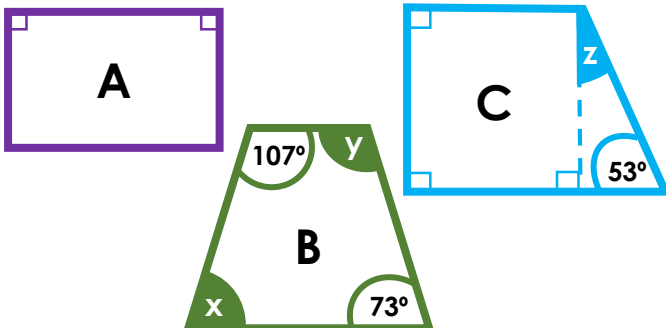
Explain your answer.



R

9a. Find the shape being described.

Identify the shape with the most lines of symmetry.



Calculate the angles marked x , y and z .

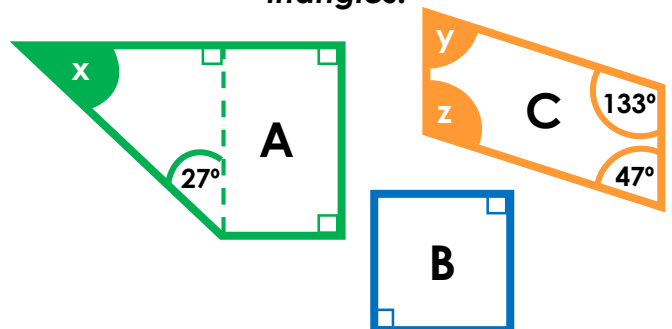


Quadrilaterals not drawn to scale.

PS

9b. Find the shape being described.

This shape can be split into 4 equal triangles.



Calculate the angles marked x , y and z .



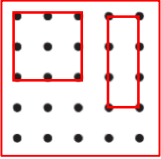
Quadrilaterals not drawn to scale.

PS

Reasoning and Problem Solving Angles in Quadrilaterals

Developing

1a. Various possible answers, including:



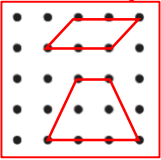
2a. False because a square has four right angles that each measure 90° .

3a. Shape A is being described.

Angle $x = 100^\circ$.

Expected

4a. Various possible answers, including:



5a. False as only opposite sides are equal length.

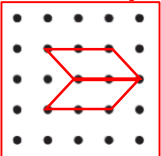
6a. Shape B is being described.

Angle $x = 125^\circ$, Angle $y = 45^\circ$,

Angle $z = 135^\circ$

Greater Depth

7a. Various possible answers, including:



8a. False because two rhombuses together will create a parallelogram.

9a. Shape A is being described.

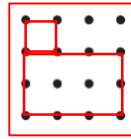
Angle $x = 73^\circ$, Angle $y = 107^\circ$,

Angle $z = 37^\circ$

Reasoning and Problem Solving Angles in Quadrilaterals

Developing

1b. Various possible answers, including:



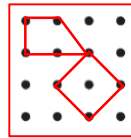
2b. False because two angles are acute and two angles are obtuse.

3b. Shape B is being described.

Angle $x = 60^\circ$.

Expected

4b. Various possible answers, including:



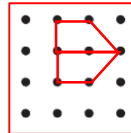
5b. False because a rectangle has four right angles that each measure 90° .

6b. Shape A is being described.

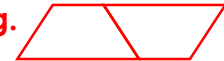
Angle $x = 145^\circ$, Angle $y = 65^\circ$, Angle $z = 115^\circ$

Greater Depth

7b. Various possible answers, including:



8b. False, as he can also make a four sided shape e.g.



9b. Shape B is being described.

Angle $x = 63^\circ$, Angle $y = 47^\circ$,

Angle $z = 133^\circ$