Reasoning and Problem Solving
Step 7: Recognise and Describe 2D Shapes

National Curriculum Objectives:

Mathematics Year 3: (3G3a) Draw 2-D shapes
Mathematics Year 3: (3G4a) Recognise angles as a property of shape or a description of a turn
Mathematics Year 3: (3G4b) Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
Mathematics Year 3: (3G2) Identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Differentiation:

Questions 1, 4 and 7 (Problem Solving)
Developing Draw a shape which could represent each letter in the Venn diagram. 3 shapes to draw. 2 separate sorting circles.
Expected Draw a shape which could represent each letter in the Venn diagram. 4 shapes to draw. 2 overlapping sorting circles.
Greater Depth Draw a shape which could represent each letter in the Venn diagram. 6 shapes to draw. 3 overlapping sorting circles.

Questions 2, 5 and 8 (Reasoning)
Developing Explain and prove whether the statement is always, sometimes or never true. Statements use the language of symmetry and sides.
Expected Explain and prove whether the statement is always, sometimes or never true. Statements use the language of angles.
Greater Depth Explain and prove whether the statements are always, sometimes or never true. Statements refer to types of lines.

Questions 3, 6 and 9 (Reasoning)
Developing Explain how the shapes are the same. Shapes lead children to use the language of sides, symmetry, triangles, squares and rectangles.
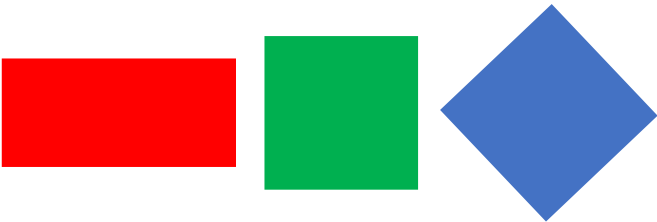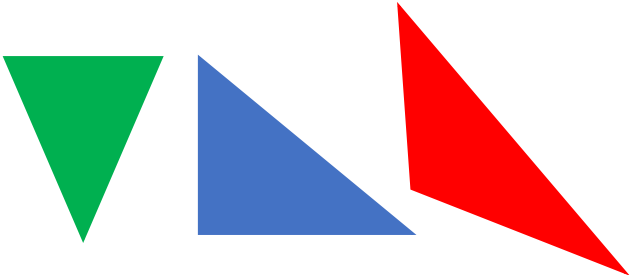**Expected** Explain how the shapes are the same. Shapes lead children to use the language of angles.
Greater Depth Explain how the shapes are the same. Shapes lead children to use the language of line types.

More resources which follow the same small steps as White Rose.

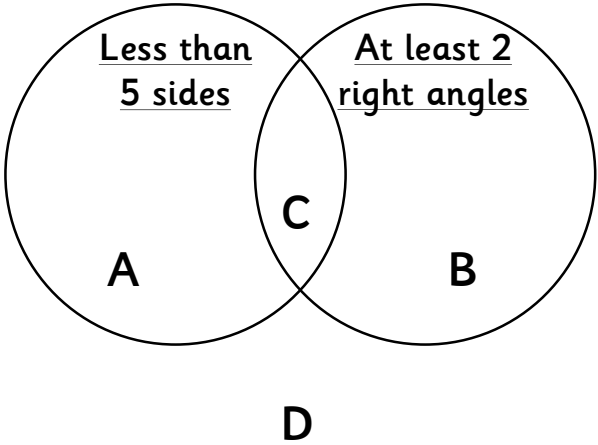Did you like this resource? Don't forget to review it on our website.

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1a. Draw a shape which could represent each letter in the Venn diagram.

4 sides

A

1 line of symmetry

B

C

1b. Draw a shape which could represent each letter in the Venn diagram.

Less than 4 sides

A

More than 1 line of symmetry

B

C

2a. Always, sometimes, never?

Quadrilaterals have 4 lines of symmetry.

Explain your answer and draw shapes to prove it.
Remember to use a ruler.

2b. Always, sometimes, never?

Quadrilaterals have 4 sides.

Explain your answer and draw shapes to prove it.
Remember to use a ruler.

3a. Explain what is similar about these shapes.

3b. Explain what is similar about these shapes.

Reasoning and Problem Solving – Recognise and Describe 2D Shapes

4a. Draw a shape which could represent each letter in the Venn diagram.

Less than 5 sides

At least 2 right angles

C

A

B

D

E

PS

4b. Draw a shape which could represent each letter in the Venn diagram.

2 acute angles

No right angles

C

A

B

D

E

PS

5a. Always, sometimes, never?

Quadrilaterals have 4 right angles.

Explain your answer and draw shapes to prove it.
Remember to use a ruler.

E

R

5b. Always, sometimes, never?

Triangles have an acute angle.

Explain your answer and draw shapes to prove it.
Remember to use a ruler.

E

R

6a. Explain what is similar about these shapes.

E

R

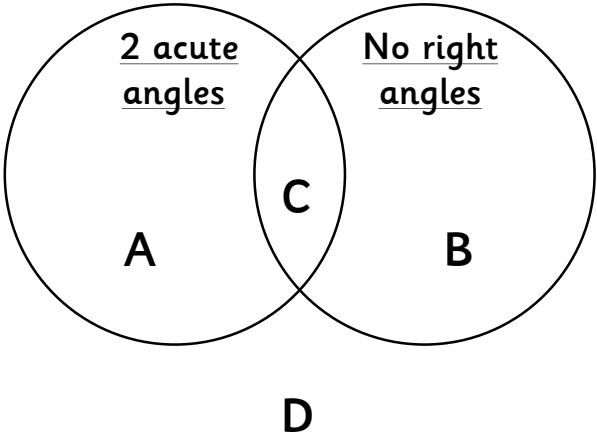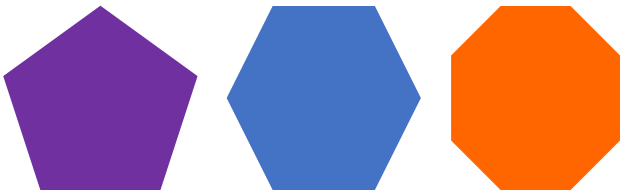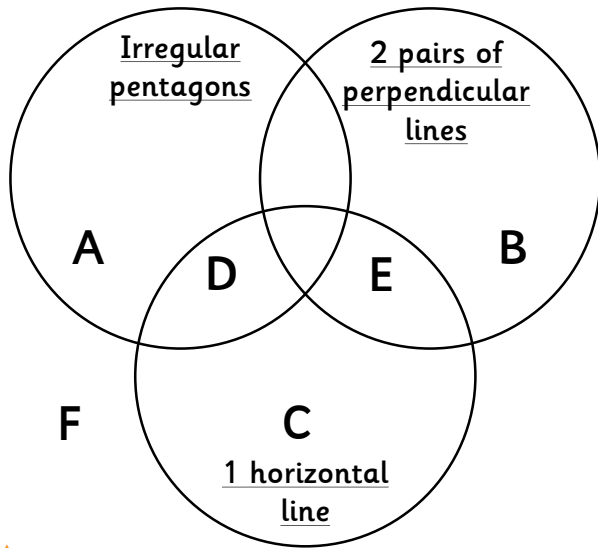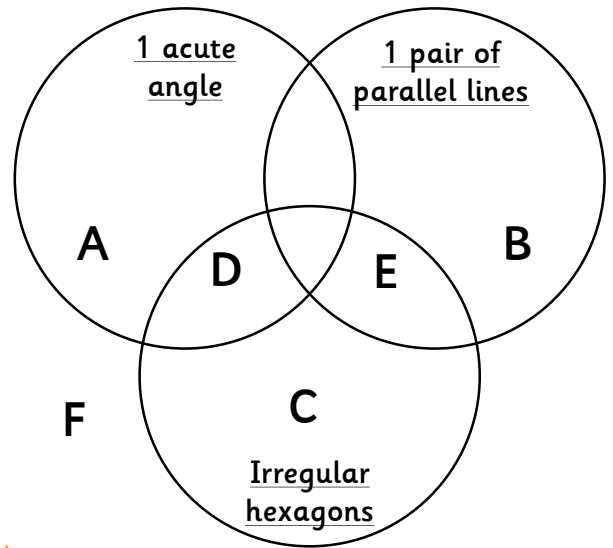**6b.** Explain what is similar about these shapes.

E

R

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7a. Draw the shape which could represent each letter in the Venn diagram.

Irregular pentagons

2 pairs of perpendicular lines

A

D E

B

F

C

1 horizontal line

PS

7b. Draw the shape which could represent each letter in the Venn diagram.

1 acute angle

1 pair of parallel lines

A

D E

B

F

C

Irregular hexagons

PS

8a. Always, sometimes, never?

Quadrilaterals have 2 horizontal and 2 vertical lines.

Explain your answer and draw shapes to prove it.
Remember to use a ruler.
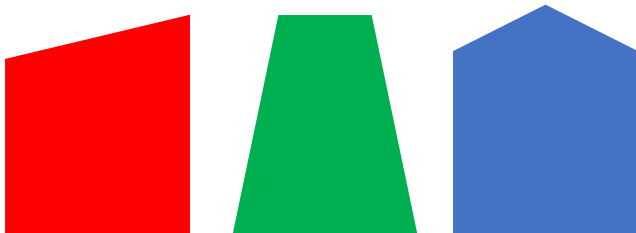
R

8b. Always, sometimes, never?

Triangles have no perpendicular lines.

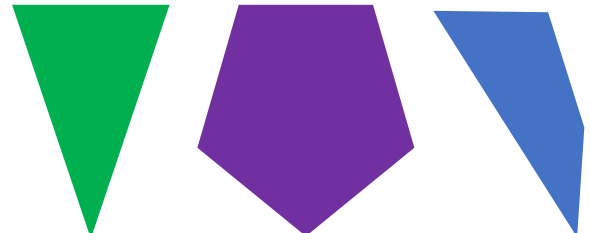Explain your answer and draw shapes to prove it.
Remember to use a ruler.

R

9a. Explain what is similar about these shapes.

R

9b. Explain what is similar about these shapes.

R

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Reasoning and Problem Solving – Recognise and Describe 2D Shapes

Developing
1a. Answers will vary. Examples could be A = square, B = isosceles triangle, C = circle.
1b. Answers will vary. Examples could be A = triangle, B = rectangle, C = quadrilateral with 1 or 0 lines of symmetry such as a trapezium.
2a. Sometimes because a square has 4 sides so is a quadrilateral and has 4 lines of symmetry. But a rectangle is a quadrilateral and only has 2 lines of symmetry. Shapes should also be drawn and lines of symmetry marked as proof of answer.
2b. Always because quad means 4 so quadrilaterals always have 4 sides. For example a square, rectangle and diamond shape. Shapes should also be drawn as proof of answer. Other quadrilaterals may also be drawn but not necessarily named.
3a. They are all quadrilaterals as they all have 4 sides. They all also have 4 corners (or right angles). They are all rectangles as squares are also a type of rectangle.
3b. They are all triangles. They all have 3 sides and 3 corners (or angles). They all have 1 line of symmetry.

Expected
4a. Answers will very. Examples could be A = triangle, B = irregular pentagon, C = rectangle, D = regular hexagon.
4b. Answers will vary. Examples could be A = triangle, B = regular pentagon, C = triangle, D = square
5a. Sometimes because a square and rectangle are quadrilaterals and have 4 right angles. However, other quadrilaterals do not always have 4 right angles. Shapes will be drawn to show this, for example, a trapezium or rhombus but may not necessarily be named.
5b. Always because triangles cannot have 2 right angles or 2 obtuse angles, or a right angle and an obtuse angle because then the 3 sides would not meet up at a corner. Examples should be drawn to prove this. They must always contain an acute angle. Examples should be drawn.
6a. They all have more than 4 sides. They all have no right angles. They are all made up of obtuse angles.
6b. They all have 4 sides so are therefore quadrilaterals. They all have no right angles. They all have 2 acute and 2 obtuse angles.

Greater Depth
7a. Answers will vary. Shapes should match the given criteria.
7b. Answers will vary. Shapes should match the given criteria.
8a. Sometimes quadrilaterals have 2 horizontal and 2 vertical lines such as in a square or rectangle. But in other quadrilaterals this is not the case. Examples should be drawn and named where possible. The orientation of the shape is also important. A rotated square may not always have 2 horizontal and 2 vertical lines. An example should be drawn.
8b. Sometimes triangles have no perpendicular lines. An example should be drawn. But a right-angled triangle will have 1 pair of perpendicular lines. An example should be drawn. But a triangle can't have 2 pairs of perpendicular lines. An example should be drawn.
9a. They all have only 1 pair of parallel lines. The red quadrilateral has a vertical pair of parallel lines. The green trapezium has a horizontal pair of parallel lines and the blue pentagon has a vertical pair of parallel lines. They also all have a horizontal line across the bottom.
9b. There are no right angles and therefore no perpendicular lines. There are also no lines which are equal distance apart all along the line therefore there are no parallel lines. They also all have a horizontal line at the top.

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