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 3 shapes which could represent each letter in 2 sorting circles. Includes recognising and describing common 2D shapes and basic polygons using the number and length of sides and lines of symmetry.
Expected Draw 4 shapes which could represent each letter in a Venn diagram. Includes recognising and describing common 2D shapes, quadrilaterals and regular polygons using the number and length of sides, lines of symmetry, types of angles and types of lines.
Greater Depth Draw 6 shapes which could represent each letter in a Venn diagram with 3 circles. Includes recognising and describing regular and irregular polygons, including within compound shapes, using the number and length of sides, lines of symmetry, types of angles and types of lines.

Questions 2, 5 and 8 (Reasoning)
Developing Explain and prove whether the statement is always, sometimes or never true. Statements to include shapes fitting the criteria given for Question 1.
Expected Explain and prove whether the statement is always, sometimes or never true. Statements to include shapes fitting the criteria given for Question 4.
Greater Depth Explain and prove whether the statement is always, sometimes or never true. Statements to include shapes fitting the criteria given for Question 7.

Questions 3, 6 and 9 (Reasoning)
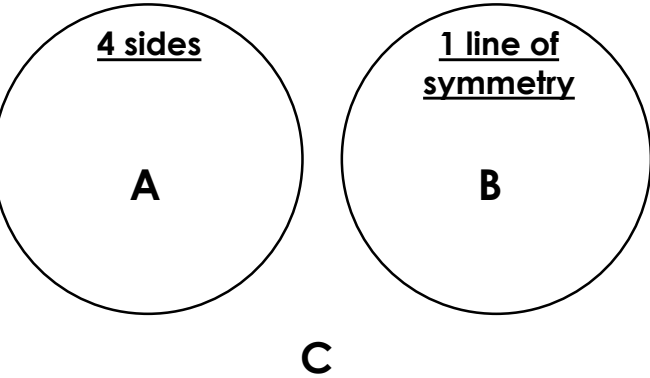**Developing** Explain the similarities between the shapes referenced for Question 1.
Expected Explain the similarities between the shapes referenced for Question 4.
Greater Depth Explain the similarities between the shapes referenced for Question 7.

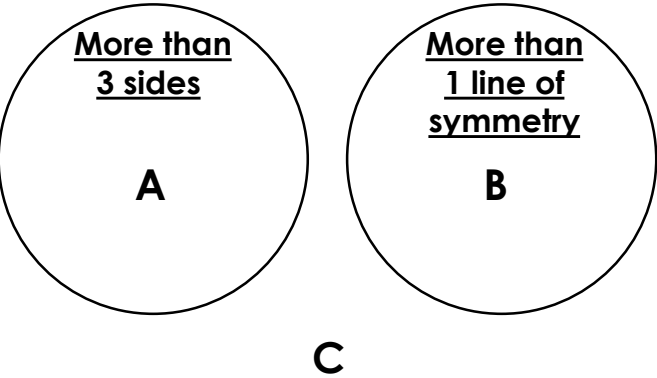## More Year 3 Properties of Shapes resources.

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

Recognise and Describe 2D Shapes

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

4 sides

A

1 line of symmetry

B

C

PS

Recognise and Describe 2D Shapes

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

More than 3 sides

A

More than 1 line of symmetry

B

C

PS

2a. Always, sometimes, never?

Triangles have 3 sides of equal length.

Explain your answer and draw shapes to prove it.

Remember to use a ruler.

R

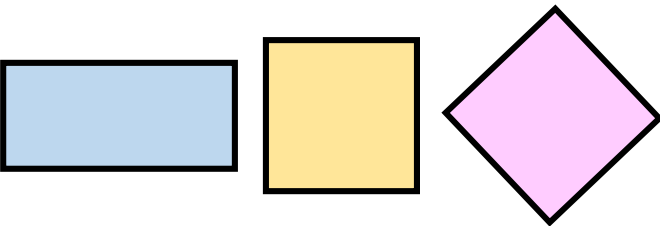**2b.** Always, sometimes, never?

4-sided shapes have 4 lines of symmetry.

Explain your answer and draw shapes to prove it.

Remember to use a ruler.
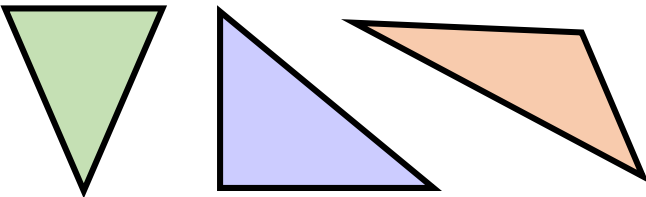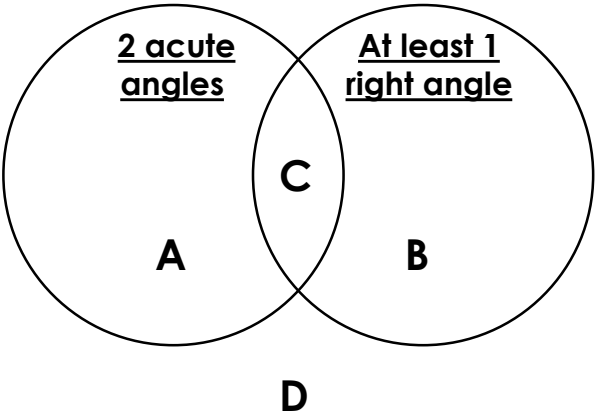
R

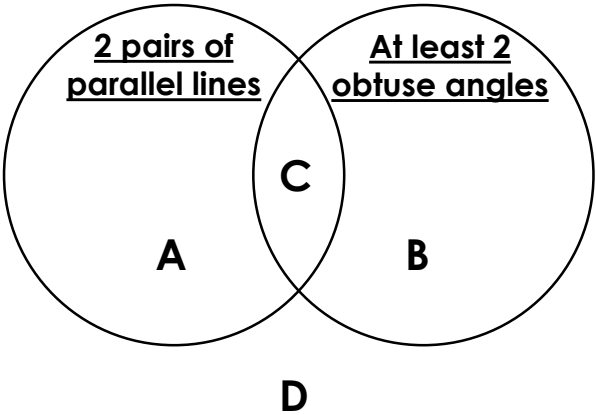**3a.** Explain what is similar about these shapes.

R

3b. Explain what is similar about these shapes.

R

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

2 pairs of parallel lines

At least 2 obtuse angles

C

A

B

D

E

PS

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

2 acute angles

At least 1 right angle

C

A

B

D

E

PS

5a. Always, sometimes, never?

Quadrilaterals have 4 right angles.

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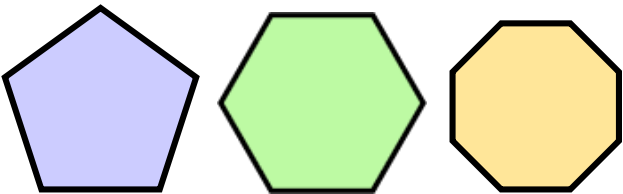
Remember to use a ruler.

E

R

5b. Always, sometimes, never?
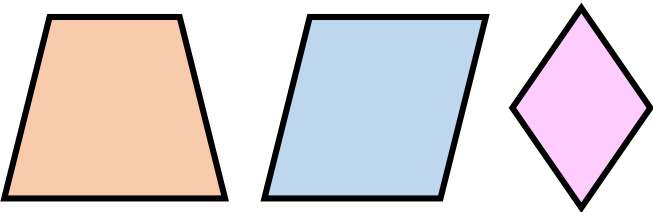
Quadrilaterals have 2 pairs of parallel lines.

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

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

Irregular pentagons

2 pairs of perpendicular lines

A

D E

B

C

1 horizontal line

F

PS

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

1 acute angle

1 pair of parallel lines

A

D E

B

C

Irregular hexagons

F

PS

8a. Always, sometimes, never?

Hexagons have no perpendicular lines.

Explain your answer and draw shapes to prove it.

Remember to use a ruler.

R

8b. Always, sometimes, never?

Octagons have 2 vertical and 2 horizontal lines.

Explain your answer and draw shapes to prove it.

Remember to use a ruler.

R

9a. Explain what is similar about these shapes.
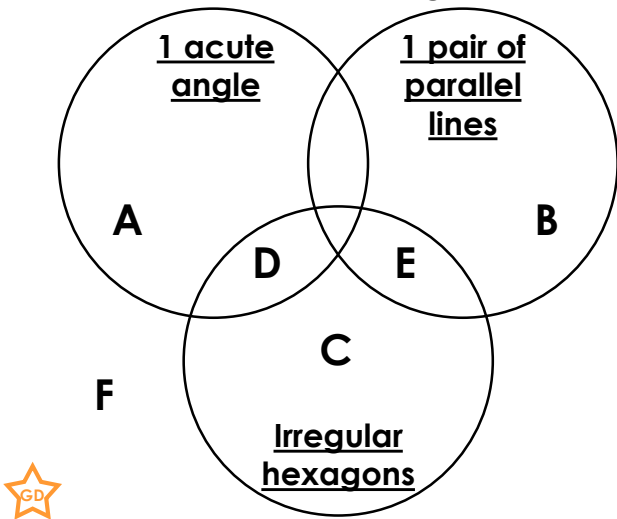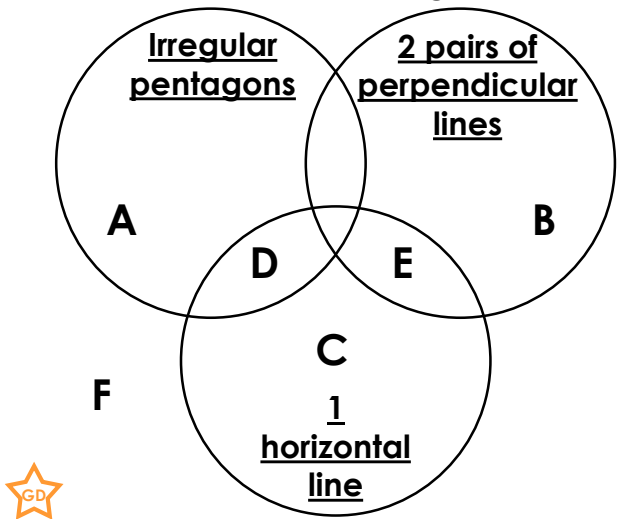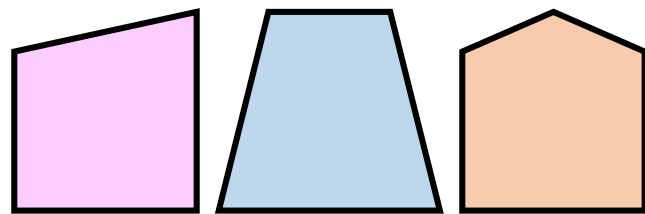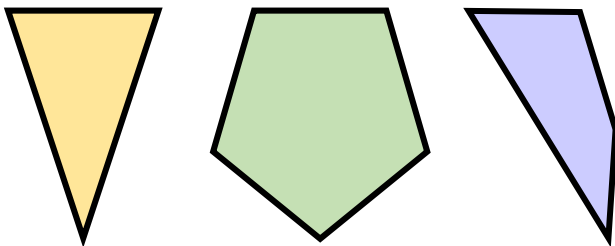
R

9b. Explain what is similar about these shapes.

R

Reasoning and Problem Solving
Recognise and Describe 2D Shapes

Developing

1a. Various possible answers, for example: A – square, B – isosceles triangle, C – circle

2a. Sometimes, because some triangles have 3 sides of equal length, such as equilateral triangles. However some triangles do not have 3 sides of equal length, such as scalene triangles.

3a. They are all rectangles, (including squares). They all have 4 sides, 4 corners and 4 internal angles.

Expected

4a. Various possible answers, for example: A – rectangle, B – pentagon, C – parallelogram, D – right-angle triangle

5a. Sometimes, because some quadrilaterals have 4 right angles, such as a square or rectangle. However some quadrilaterals do not have 4 right angles, such as a trapezium or a parallelogram.

6a. They all have more than 4 sides. They all have sides of equal length. They only have obtuse angles. The number of sides they have matches the number of lines of symmetry they have.

Greater Depth

7a. Various possible answers, for example: A – irregular pentagon without 2 pairs of perpendicular lines, B – irregular hexagon with 2 pairs of perpendicular lines, C – right-angle triangle with a horizontal base, D – irregular pentagon with a horizontal base and without 2 pairs of perpendicular lines, E – irregular heptagon with 2 pairs of perpendicular lines and 1 horizontal line, F – irregular octagon without 2 pairs of perpendicular lines or 1 horizontal line

8a. Sometimes, because a regular hexagon does not have perpendicular lines but an irregular hexagon might have them.

9a. They all have only one pair of parallel lines. They all have a horizontal base in this orientation.

Reasoning and Problem Solving
Recognise and Describe 2D Shapes

Developing

1b. Various possible answers, for example: A – rectangle, B – square, C – right-angle triangle

2b. Sometimes, because some 4-sided shapes have 4 lines of symmetry, such as a square. However some 4-sided shapes do not have 4 lines of symmetry, such as a rectangle.

3b. They are all triangles. They all have 3 sides, 3 corners and 3 internal angles.

Expected

4b. Various possible answers, for example: A – trapezium, B – square, C – right-angle triangle, D – hexagon

5b. Sometimes, because some quadrilaterals have 2 pairs of parallel lines, such as a parallelogram or a rectangle. However some quadrilaterals do not have 2 pairs of parallel lines, such as a trapezium.

6b. They are all quadrilaterals. They all have 2 acute and 2 obtuse angles, and no right angles.

Greater Depth

7b. Various possible answers, for example: A – irregular pentagon without 1 pair of parallel lines, B – trapezium, C – irregular hexagon without 1 acute angle or 1 pair of parallel lines, D – irregular hexagon with 1 acute angle and without 1 pair of parallel lines, E – irregular hexagon with 1 pair of parallel lines and without 1 acute angle, F – heptagon

8b. Sometimes, because a regular or irregular octagon could have 2 vertical and 2 horizontal lines but it depends on the orientation of the shape.

9b. They have no right angles and therefore no perpendicular lines. They also have no parallel lines. They all have a horizontal line at the top in this orientation.