



Advanced Shape Adventures

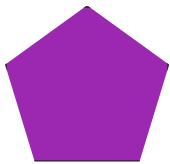


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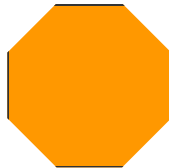
Advanced 2D Shape Explorer

Now that you know the basic shapes, let's explore some more complex 2D shapes!

These shapes have special properties that make them unique and interesting.



Pentagon
5 sides



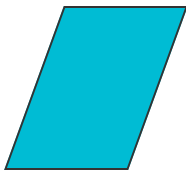
Octagon
8 sides



Trapezoid
4 sides



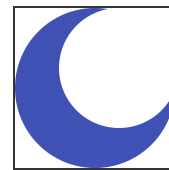
Parallelogram
4 sides



Rhombus
4 equal sides



Semicircle
1 curved side, 1 flat side

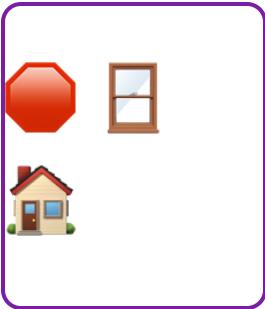


Crescent
2 curved sides

Let's test your shape knowledge! Match each shape with its description:

- | | |
|--|-------------------------|
| 1. Has 5 sides and 5 corners | A. <input type="text"/> |
| 2. Has 8 sides and 8 corners | B. <input type="text"/> |
| 3. Has 4 sides but only 2 sides are parallel | C. <input type="text"/> |
| 4. Has 4 sides with opposite sides parallel | D. <input type="text"/> |
| 5. Has 4 equal sides but is not a square | E. <input type="text"/> |
| 6. Half of a circle | F. <input type="text"/> |

Advanced shapes are all around us! Let's look at some examples:



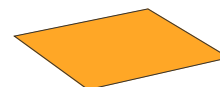
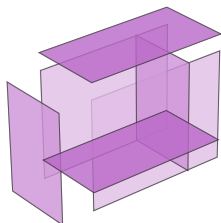
- A stop sign is an octagon
- A pyramid-shaped roof is a triangle from each side
- Some windows are semicircles at the top
- The moon sometimes looks like a crescent

Can you find 3 more advanced shapes in your world? Draw or write them below:

Complex 3D Shape Explorer

3D shapes can be more complex than just cubes and spheres!

Let's discover some interesting 3D shapes and their properties.



Rectangular Prism
6 faces, 12 edges, 8 vertices

Square Pyramid
5 faces, 8 edges, 5 vertices

3D Shape Properties Challenge

Complete this table to show your understanding of 3D shapes:

3D Shape	Faces	Edges	Vertices (Corners)	Can it Roll?
Cube				
Sphere				
Cylinder				
Rectangular Prism				
Square Pyramid				

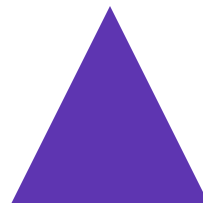
Key Vocabulary:

- **Face:** A flat surface on a 3D shape
- **Edge:** A line where two faces meet
- **Vertex (Vertices):** A corner where edges meet

Shape Symmetry

A shape has symmetry when it can be divided into equal parts that are mirror images of each other.

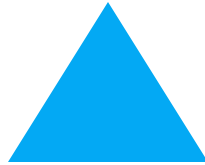
The line that divides the shape is called the line of symmetry.



A circle has infinite lines of symmetry A square has 4 lines of symmetry An equilateral triangle has 3 lines of symmetry

Symmetry Challenge: Draw all the lines of symmetry for these shapes:

Rectangle



Isosceles Triangle

Oval

Octagon

For each shape above, write how many lines of symmetry it has:

Rectangle:

Isosceles Triangle:

Oval:

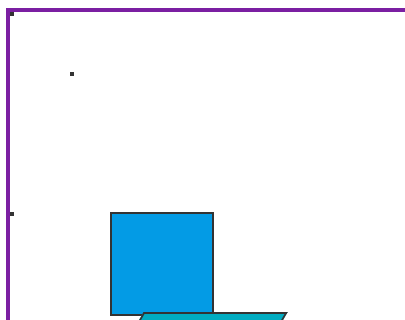
Octagon:

Composing and Decomposing Shapes

We can create new shapes by putting smaller shapes together or breaking larger shapes apart!

This is called composing and decomposing shapes.

Tangram Challenge: A tangram is an ancient Chinese puzzle with 7 pieces that can be arranged to form different shapes.

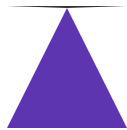
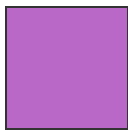




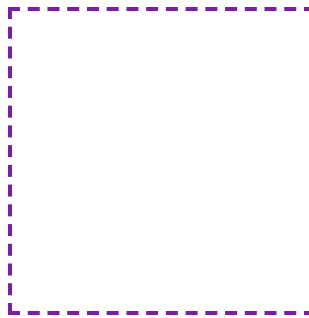
Draw lines to show how you would cut the square below into 7 tangram pieces:



Shape Builder: What shapes can you create by combining these basic shapes?



Create a house using at least 3 shapes:



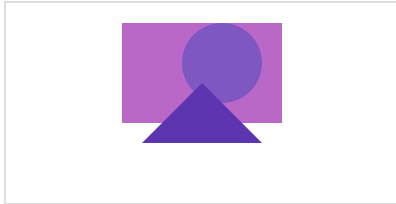
Create a rocket using at least 3 shapes:



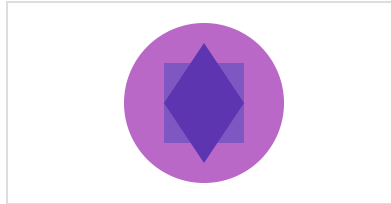
Shape Detective Challenges

Time to use your shape knowledge to solve these tricky challenges!

Hidden Shapes: Can you find all the different shapes hidden in this picture?



Picture 1 has:

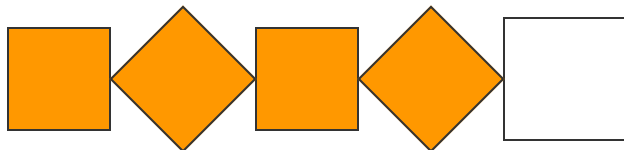
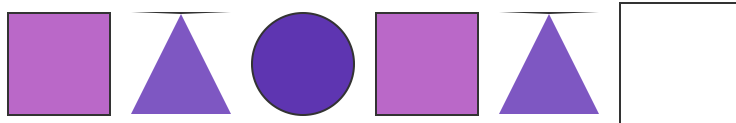


Picture 2 has:

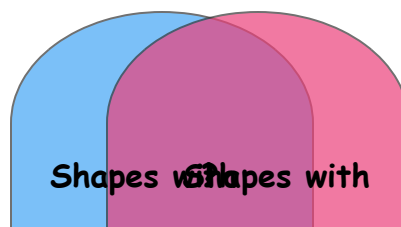


Picture 3 has:

Shape Patterns: What shape comes next in each pattern?



Shape Sorting: Look at this Venn diagram showing different properties of shapes.



4 sides equal sides

What shapes should go in the middle where the circles overlap?

What property do these middle shapes have?

Real-World Shape Applications

Shapes are important in the real world! Let's see how they're used.

Design a Playground: Design a playground using at least 6 different shapes. Label each shape you use.

Shape List:

Shape Scavenger Hunt: Look around your classroom or home. Find and draw at least 5 different shapes you see.

Object	Shape	Draw It



Answer Key

Advanced 2D Shape Explorer

1. Pentagon, 2. Octagon, 3. Trapezoid, 4. Parallelogram, 5. Rhombus, 6. Semicircle

3D Shape Properties

Cube: 6 faces, 12 edges, 8 vertices, No (doesn't roll)

Sphere: 1 face, 0 edges, 0 vertices, Yes

Cylinder: 3 faces, 2 edges, 0 vertices, Yes (on curved surface)

Rectangular Prism: 6 faces, 12 edges, 8 vertices, No

Square Pyramid: 5 faces, 8 edges, 5 vertices, No

Shape Symmetry

Rectangle: 2 lines of symmetry

Isosceles Triangle: 1 line of symmetry

Oval: 2 lines of symmetry

Regular Octagon: 8 lines of symmetry

Hidden Shapes

Picture 1: Rectangle, Circle, Triangle

Picture 2: Circle, Square, Diamond/Rhombus

Picture 3: Square (2), Circle, Outlined Square

Shape Patterns

Pattern 1: Circle (Square, Triangle, Circle pattern repeats)

Pattern 2: Square (regular orientation)

Venn Diagram

Middle shape: Square, Rhombus

Property: Shapes with 4 equal sides

★ **Advanced Shape Master!** ★

Congratulations on completing these challenging shape activities!

You are now a true shape expert!