

Describe Two-dimensional Shapes.

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Describe two-dimensional shapes – triangles, quadrilaterals, pentagons, hexagons, octagons	page 3
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Differentiate and Assess

Not every student will be ready to investigate this concept at this Level and so we will need to differentiate to ensure every student is learning at their leading edge.

Integrate

Every mathematical concept is integrally related to other mathematical concepts. Teaching and learning related concepts simultaneously develops deep relational understanding.

Intervene

Some students may not yet be ready to investigate this concept at any Level, and so we will need to provide some intervention.

DESCRIBE TWO-DIMENSIONAL SHAPES.

EXPLICIT TEACHING PLAN OVERVIEW PAGE

THIS PAGE IS A SUMMARY OF THE EXPLICIT TEACHING PLAN, INCLUDING STRATEGIC QUESTIONS, AND DESCRIBING THE SEQUENCE WHICH WILL OCCUR OVER MULTIPLE LESSONS.

RESOURCES: TWO-DIMENSIONAL SHAPES, PENCIL, PAPER

WHAT COULD WE DO?

Children:

- identify the 2 dimensions on two-dimensional shapes (2 out of up and down / left to right / front to back)
- describe side length, vertex size and parallel lines on triangles, quadrilaterals (including square, rhombus, rectangle, kite)

- select and name shapes from a description of their features.

WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

Children:

- ask one another questions about two-dimensional shapes, for example,
 - What are the 2 dimensions on this shape?
 - How could we describe this shape?
 - Does it have 4 sides?
 - Are the sides the same length?
 - Does it have 4 vertices?
 - Are the vertices the same size?
 - Are any of the sides parallel?
 - Is the shape a quadrilateral?
 - Is the shape a square?

DESCRIBE TWO-DIMENSIONAL SHAPES.

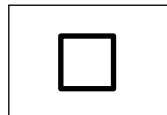
EXPLICIT TEACHING PLAN

FULL EXPLICIT TEACHING PLAN, EMBEDDING DEEP RELATIONAL UNDERSTANDING, METALANGUAGE, AND QUESTIONS THAT MAY BE USED OVER MULTIPLE LESSONS.

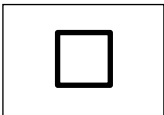
WHAT COULD WE DO?

Children think about, talk and listen to a friend about, then have the opportunity to share what they already know.

Display a picture of a square, for example,



Indicate 2 of the 3 dimensions on the shapes, for example,



up and down, left to right

OR



left to right, front to back

Record, for example, two-dimensional shapes

Record, for example, 2D shapes

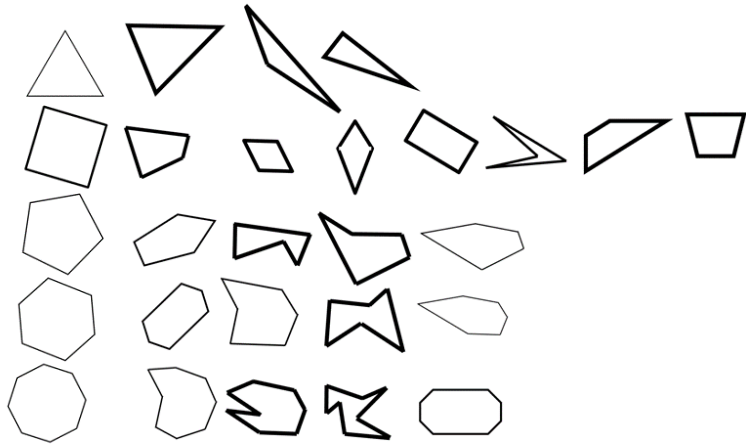
WHAT LANGUAGE COULD WE USE TO EXPLAIN AND ASK QUESTIONS?

- ▶ Today brings an investigation about two-dimensional shapes.
- ▶ What do you know about two-dimensional shapes?
- ▶ Talk about two-dimensional shapes with a friend.
- ▶ Is anyone ready to share what they are thinking about two-dimensional shapes?

- ▶ We've investigated shapes.
- ▶ And we've investigated dimensions.
- ▶ We found that the dimensions are up and down, left to right, and front to back.
- ▶ And we found that shapes have 2 of these dimensions.
- ▶ The shape could go up and down, left to right, or left to right and front to back.
- ▶ So shapes have 2 dimensions.

- ▶ Do you think that's why they're called two-dimensional shapes?
- ▶ Do you think that's why they're called 2D shapes?

Display [triangles](#), [quadrilaterals](#), [pentagons](#), [hexagons](#) and [octagons](#), for example,



Allow children to identify the triangles, for example,



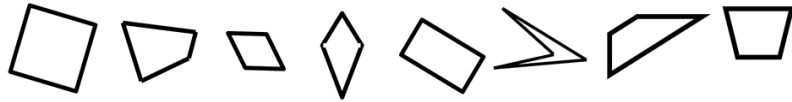
Children identify the triangle whose sides look all the same length.

Children identify the triangles whose sides look like they are not the same length.

- ▶ We've investigated shapes.
- ▶ **And we found that we can name shapes by the number of sides that they have.**
- ▶ We found that a side is straight line on a shape.
- ▶ We found that shapes with 3 sides are triangles, shapes with 4 sides are quadrilaterals, shapes with 5 sides are pentagons, shapes with 6 sides are hexagons and shapes with 8 sides are octagons.

- ▶ Which shapes are triangles?
- ▶ How do you know they are triangles?
- ▶ How many sides?
- ▶ Does a triangle have 3 sides?
- ▶ Do all of these triangles look the same?
- ▶ How are these triangles different?
- ▶ Do the lengths of their sides make them different?
- ▶ Do any of the triangles have sides that are all the same length?
- ▶ Do the other triangles have sides that are different lengths?

Allow children to identify the quadrilaterals, for example,



Children identify the quadrilaterals whose sides look all the same length, the square and the rhombus, for example,

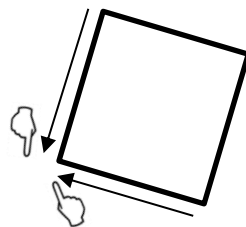


Display the square, for example,



Trace 2 sides to a vertex, for example,

Allow children to suggest the name of the point where 2 sides of a shape meet – some may suggest corner.



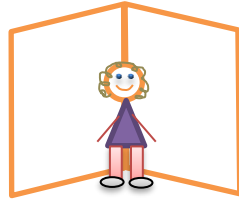
- ▶ Which shapes are quadrilaterals?
- ▶ How do you know they are quadrilaterals?
- ▶ How many sides?
- ▶ Does a quadrilateral have 4 sides?
- ▶ Do all of these quadrilaterals look the same?
- ▶ How are these quadrilaterals different?
- ▶ Do the lengths of their sides make them different?

- ▶ Do any of the quadrilaterals have sides that are all the same length?
- ▶ Quadrilaterals with sides all the same length have special names.
- ▶ Do you know the special name of this quadrilateral?
- ▶ Is this quadrilateral with sides that are the same length, a square?
- ▶ We've investigated lines. And we found that lines can be parallel.
- ▶ We found that parallel means they go in the same direction, like train tracks
- ▶ Are any of the sides of the square parallel?
- ▶ Are the opposite sides parallel?

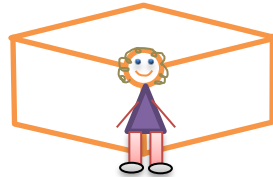
- ▶ Do the sides meet at a point?
- ▶ What do we call the point where 2 sides of a shape meet?

- ▶ Do you think it is a corner?
- ▶ Let's investigate why we can't call this a corner.

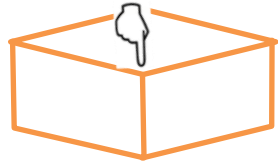
A child stands in the corner of the room, for example,



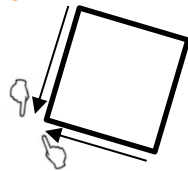
A child stands at the corner of the room, for example,



Point to the corner of the cupboard, for example,



Point to the vertex of the square, for example,
Record, for example, vertex.



Children turn to their friend and say, 'this is a vertex!'

Record, for example, vertexes.

Cross out vertexes, and replace it with vertices, for example, ~~vertexes~~ vertices

- ▶ Could we stand in a corner of this room?
- ▶ We call this the corner of the room – the part of the room where two walls meet.

- ▶ Could we stand at the corner of the cupboard?
- ▶ We call this the corner of the cupboard – the part of the cupboard where two surfaces meet.
- ▶ But we also call this the corner of the cupboard – the point where 3 lines meet.
- ▶ So in real life we call lots of different things corners!

- ▶ We're going to end up getting confused if we call this a corner too!
- ▶ The real name of the point where 2 sides on a shape meet is a vertex.
- ▶ Turn to your friend and say, 'this is a vertex!'

- ▶ When we have 1 vertex, we say vertex.
- ▶ What do you think we say when we have 2?
- ▶ Do you think we say vertexes? That would make a lot of sense!
- ▶ But because English is made up of lots of other languages, we don't!
- ▶ Have you noticed that sometimes when we make a word plural, the word changes?
- ▶ When we have 1 child, we say child.
- ▶ But when we have more than 1 child, we don't say childs we say children!
- ▶ Vertex is the same. We don't say vertexes, we say vertices.

Record, for example, 4 vertices

Display the rhombus, for example,



- ▶ How many vertices does the square have?
- ▶ Does the square have 4 vertices?
- ▶ How could we describe the vertices?
- ▶ Do the vertices all look the same size?
- ▶ How could we describe a square?
- ▶ Is a square a quadrilateral with the same length sides and the same size vertices?

- ▶ What about this quadrilateral with sides that are all the same length?
- ▶ Are the vertices different sizes?
- ▶ Do the vertices that are opposite each other look like they the same size?
- ▶ Are any of the sides parallel?
- ▶ Are the opposite sides parallel?
- ▶ Do you know the special name of this quadrilateral?
- ▶ Is this quadrilateral with sides that are the same length, a rhombus?
- ▶ How could we describe a rhombus?
- ▶ Is a rhombus a quadrilateral with the same length sides, and vertices that are opposite each other the same size, and opposite sides are parallel?

Children identify the quadrilaterals whose sides look like they are not the same length.

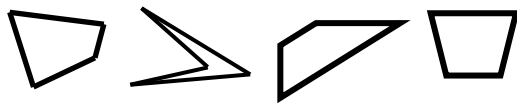
Children identify the rectangle has a special name, for example,



Children identify the kite has a special name, for example,



Display the remaining quadrilaterals, for example,



Children describe the quadrilaterals.

Display the pentagons, for example,

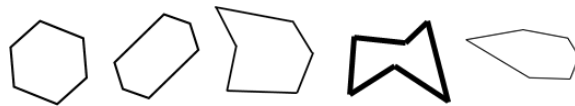


- ▶ Which quadrilaterals have sides that are different lengths?
- ▶ Do any of these quadrilaterals have a special name?
- ▶ Is this quadrilateral a rectangle?
- ▶ Are the opposite sides the same length?
- ▶ Are all of the vertices the same size?
- ▶ Are any of the sides parallel?
- ▶ Are the opposite sides parallel?
- ▶ How could we describe a rectangle?
- ▶ Is a rectangle a quadrilateral with opposite sides the same length, the same size vertices, and opposite sides parallel?

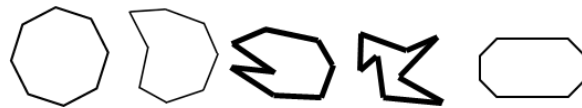
- ▶ Is this quadrilateral a kite?
- ▶ Are the sides that are next to each other the same length?
- ▶ Are 2 of the vertices the same size?
- ▶ Are any of the sides parallel?
- ▶ Are there no sides parallel?
- ▶ How could we describe a kite?
- ▶ Is a kite a quadrilateral with sides next to each other the same length and 2 vertices the same size?

- ▶ What could we call the other quadrilaterals?
- ▶ Could we just call them quadrilaterals?
- ▶ Could we describe them by the lengths of their sides?
- ▶ Could we describe them by the sizes of their vertices?
- ▶ Could we describe whether any sides are parallel?
- ▶ Are all shapes with 4 sides and 4 vertices, quadrilaterals?

Display the hexagon, for example,



Display the octagons, for example,



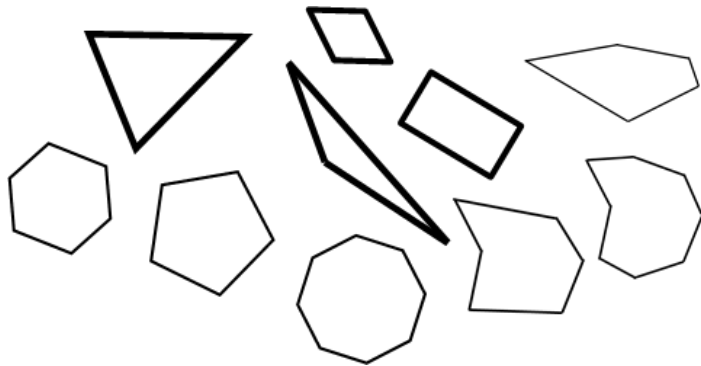
- ▶ Which shapes are pentagons?
- ▶ How do you know they are pentagons?
- ▶ How many sides?
- ▶ Does a pentagon have 5 sides?
- ▶ Do all of these pentagons look the same?
- ▶ How are these pentagons different?
- ▶ Do the lengths of their sides make them different?
- ▶ Could we describe them by the lengths of their sides?
- ▶ Could we describe them by the sizes of their vertices?
- ▶ Could we describe whether any sides are parallel?
- ▶ Are all shapes with 5 sides and 5 vertices, pentagons?

- ▶ Which shapes are hexagons?
- ▶ How do you know they are hexagons?
- ▶ How many sides?
- ▶ Does a hexagon have 6 sides?
- ▶ Do all of these hexagons look the same?
- ▶ How are these hexagons different?
- ▶ Do the lengths of their sides make them different?
- ▶ Could we describe them by the lengths of their sides?
- ▶ Could we describe them by the sizes of their vertices?
- ▶ Could we describe whether any sides are parallel?
- ▶ Are all shapes with 6 sides and 6 vertices, hexagons?

- ▶ Which shapes are octagons?

- ▶ How do you know they are octagons?
- ▶ How many sides?
- ▶ Does an octagon have 8 sides?
- ▶ Do all of these octagons look the same?
- ▶ How are these octagons different?
- ▶ Do the lengths of their sides make them different?
- ▶ Could we describe them by the lengths of their sides?
- ▶ Could we describe them by the sizes of their vertices?
- ▶ Could we describe whether any sides are parallel?
- ▶ Are all shapes with 8 sides and 8 vertices, octagons?

Display a range of shapes, for example,



Describe a shape as children identify the shape you are describing.

▶ **I am going to describe one of these shapes, so you can try to identify which shape I am describing.**

▶ The shape has 4 sides that are not the same length, and 4 vertices that are the same size. It has parallel sides.

▶ Is my shape a quadrilateral?

▶ Does this quadrilateral have a special name?

▶ Is this quadrilateral a rectangle?

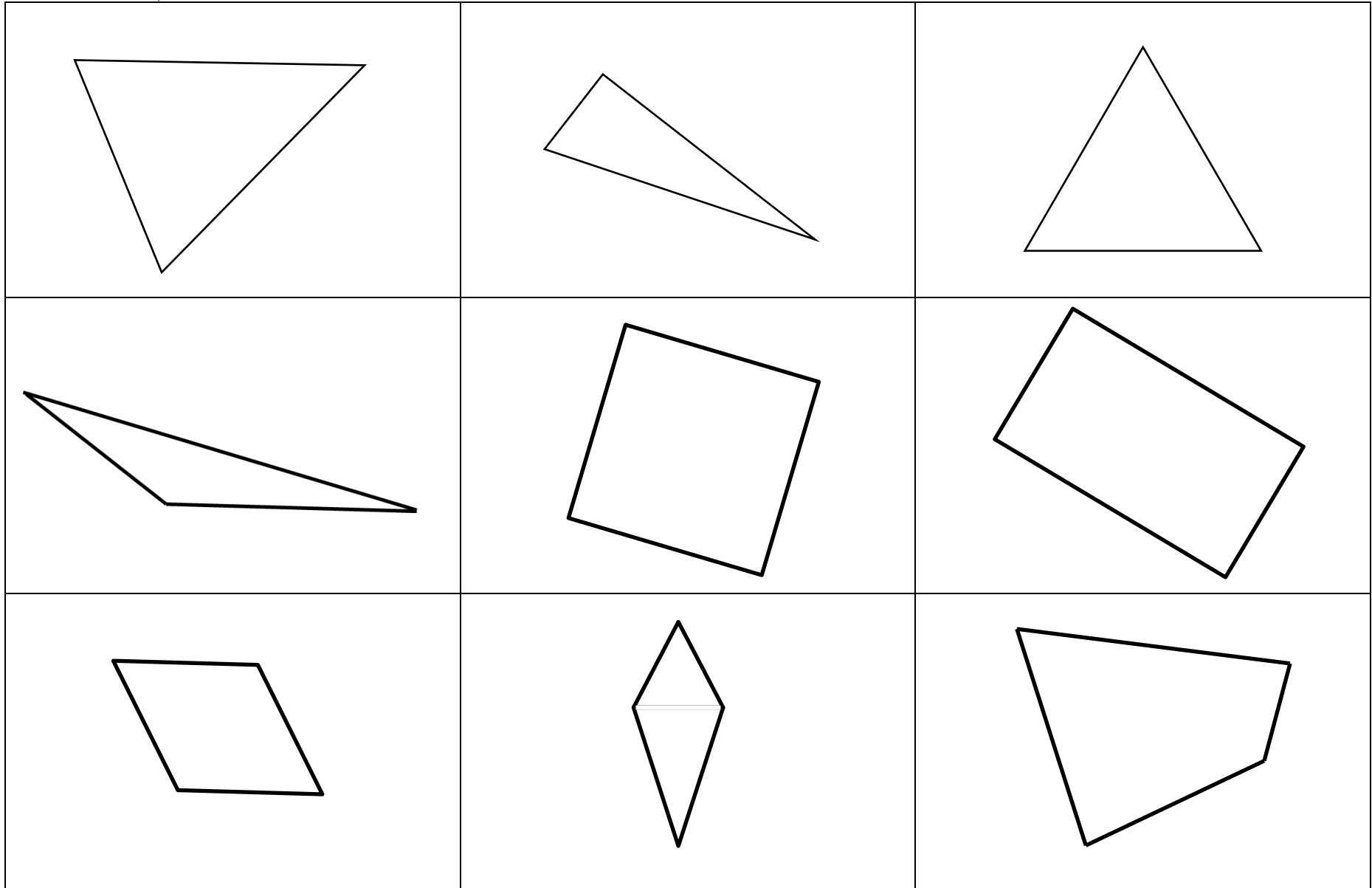
▶ The shape has 5 sides that are not the same length, and 5 vertices that are not the same size. It doesn't have any parallel sides.

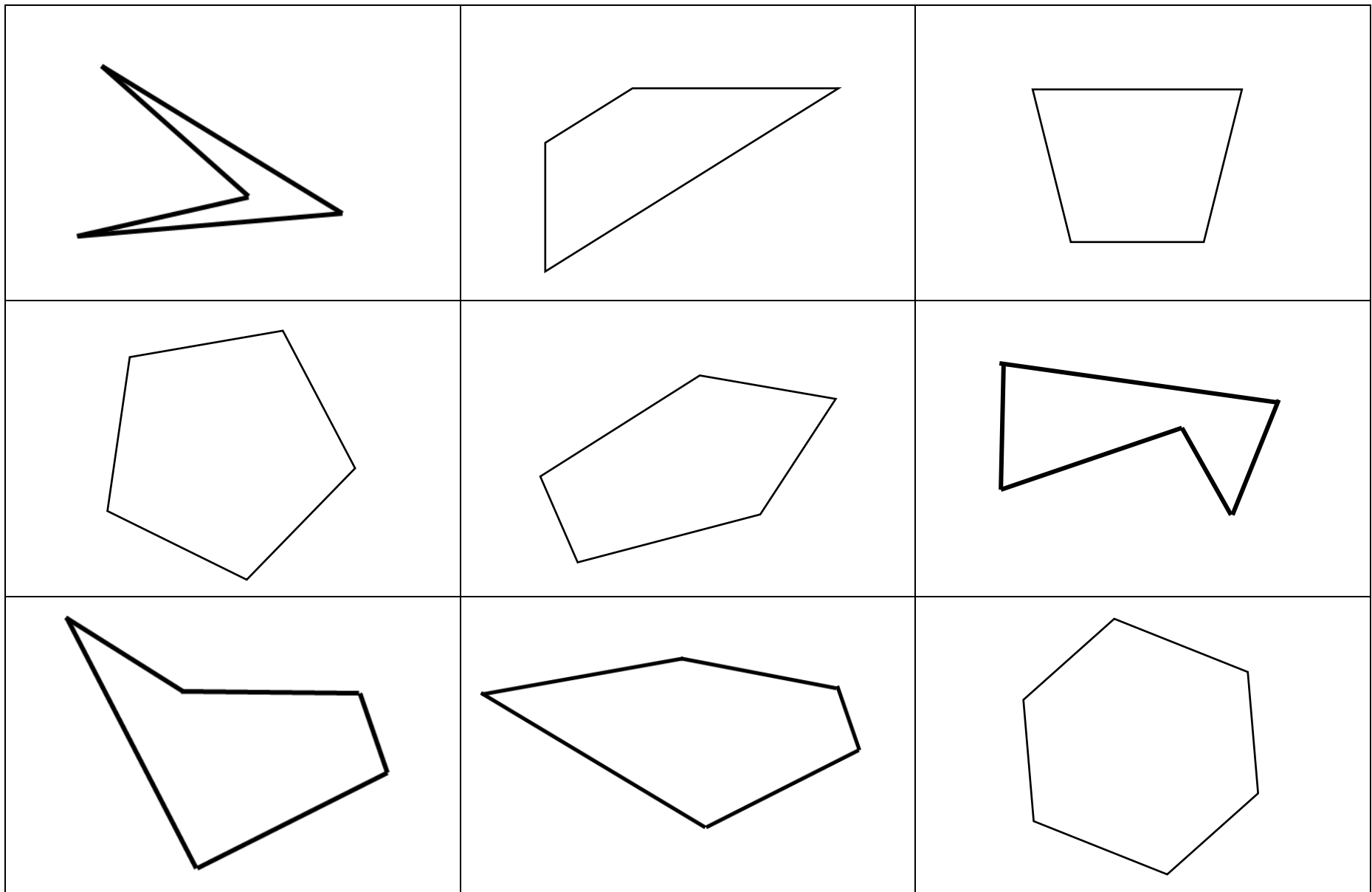
▶ Is my shape a pentagon?

▶ The shape has 6 sides that are not the same length, and 6 vertices that are not the same size. It has opposite sides parallel.

▶ Is my shape a hexagon?

Two-dimensional shapes





Two-dimensional shapes

