EB Education Revision Guide

BELIEVE YOU CAN
and you're halfway there

Theodore Roosevelt

How to work with Shapes: Part 1

...helping everybody achieve Even Better

Properties of 2D Shapes

TOP TIP: A 2D shape is symmetrical if a line can be drawn through it so that either side of the line looks exactly the same. The line is called a line of symmetry.

Regular polygons

Equilateral triangle: 3 sides, 3 lines of symmetry, rotational symmetry of order 3

Square: 4 sides, 4 lines of symmetry, rotational symmetry of order 4

Pentagon: 5 sides, 5 lines of symmetry, rotational symmetry of order 5

Hexagon: 6 sides, 6 lines of symmetry, rotational symmetry of order 6

Heptagon: 7 sides, 7 lines of symmetry, rotational symmetry of order 7

Octagon: 8 sides, 8 lines of symmetry, rotational symmetry of order 8

Nonagon: 9 sides, 9 lines of symmetry, rotational symmetry of order 9

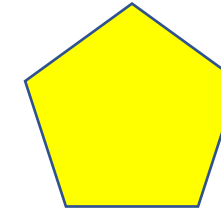**Decagon**: 10 sides, 10 lines of symmetry, rotational symmetry of order 10

In a regular polygon all the sides and angles are the same.
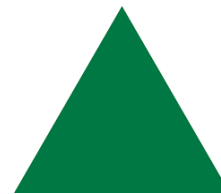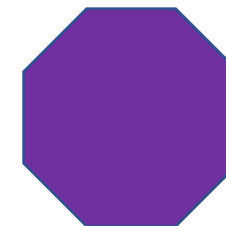
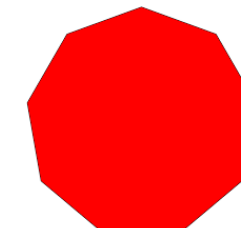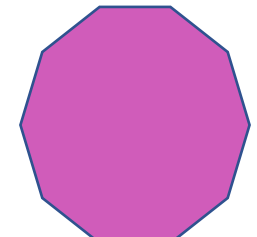| Triangle | Quadrilateral | Pentagon | Hexagon |
| Heptagon | Octagon | Nonagon | Decagon |
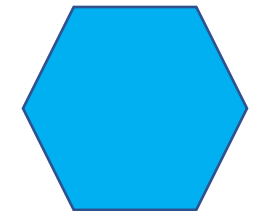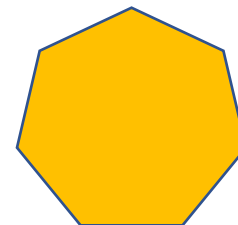
TOP TIP: The order of rotational symmetry of a shape is the number of times it can be rotated around a full circle and still look the same.

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Properties

- **Square**

4 equal sides, 4 equal angles of 90°, 4 lines of symmetry, rotational symmetry order 4.

- **Rectangle**

2 pairs of equal sides, 4 equal angles of 90°, 2 lines of symmetry, rotational symmetry order 2.
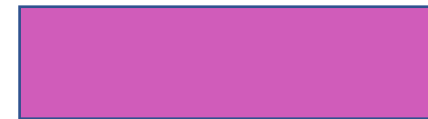
- **Rhombus**

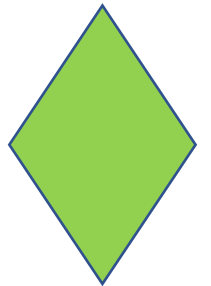4 equal sides, 2 pairs of equal angles. 2 lines of symmetry, rotational symmetry order 2.

A rhombus is like a squashed square and is the same as a diamond. The opposite sides are parallel.

Square   Rectangle   Rhombus

Properties

- **Trapezium**

1 pair of parallel sides, no lines of symmetry, no rotational symmetry.

An isosceles trapezium has 1 line of symmetry. (Isosceles trapezium = both angles coming from a parallel side are equal and the sides that aren't parallel are equal in length)

- **Parallelogram**

2 pairs of equal sides, 2 pairs of equal angles, no lines of symmetry, rotational symmetry order 2.
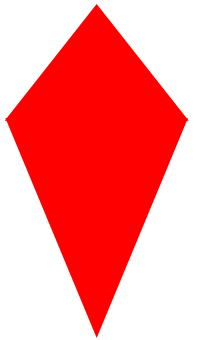
- **Kite**

2 pairs of equal sides, 1 pair of equal angles, 1 line of symmetry, no rotational symmetry.

Trapezium   Parallelogram   Kite

Triangles

Properties

- **Scalene triangle**

All the sides and angles are different. It has no symmetry.

- **Right-angled triangle**

Scalene - One 90° angle. It has no symmetry.

Isosceles – One 90° angle, two 45° angles. It has 1 line of symmetry, no rotational symmetry.

- **Isosceles triangle**

Two sides are the same, two base angles are the same. It has 1 line of symmetry, and no rotational symmetry.
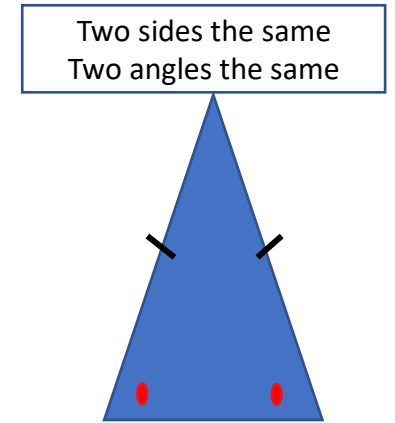
- **Equilateral triangle**

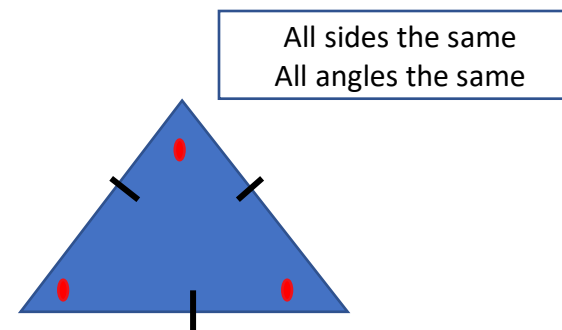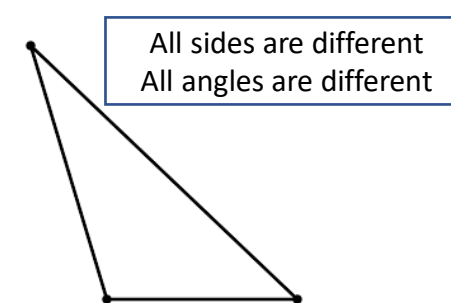All sides and angles are equal. 3 lines of symmetry and rotational symmetry order 3

Contains a 90° angle

Right-angled triangle

Two sides the same
Two angles the same

Isosceles triangle

All sides the same
All angles the same

Equilateral triangle

All sides are different
All angles are different
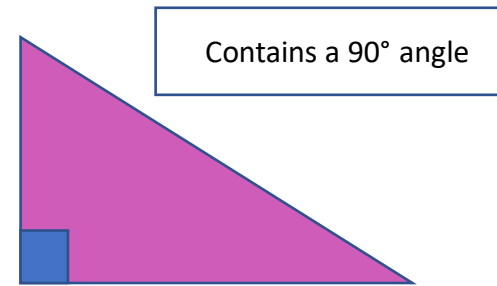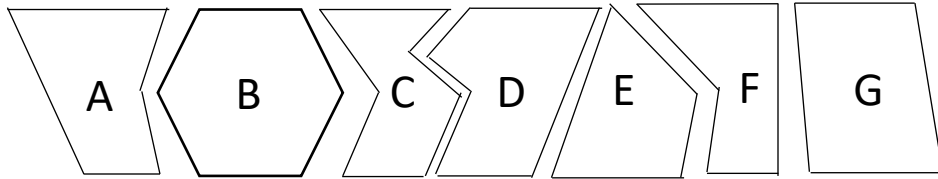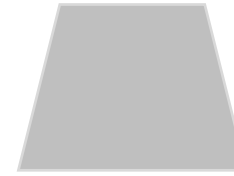
Scalene triangle

Your turn:

1. Write the letters of the two shapes which are pentagons.

2. Match the shapes with the descriptions.

A   B   C   D   E   F   G

2 pairs of sides equal in length, 4 right angles

Only 1 pair of parallel sides

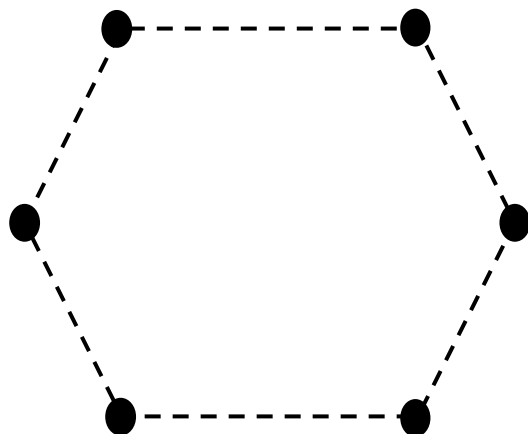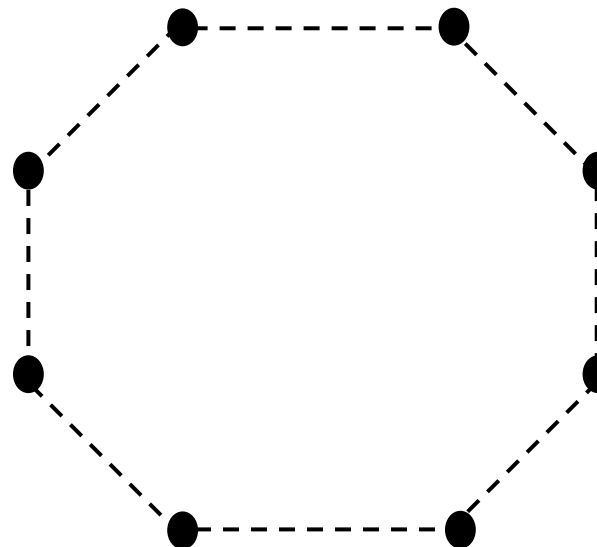Opposite sides are parallel. It has no lines of symmetry

2 pairs of sides equal in length. Opposite angles are equal

3a) Below is a regular hexagon. Join three of the dots to make an equilateral triangle.

b) Below is a regular octagon. Join three of the dots to make an isosceles triangle.
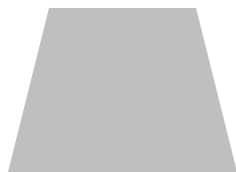
4. Below are six quadrilaterals.
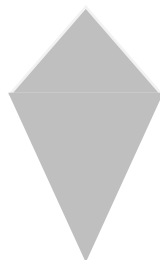
square

parallelogram

trapezium

rhombus

kite

rectangle

a)   Maia chooses one the quadrilaterals.
She says,

" It has two acute angles.
All four sides are the same length"

Which quadrilateral did she choose?

....

b) Danny chooses a different quadrilateral.
He says,

" It has no parallel sides.
It has more than one obtuse angle"

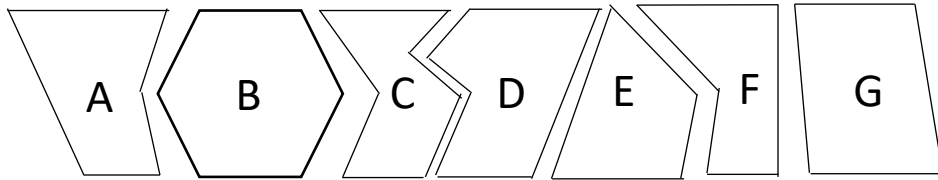Which quadrilateral did he choose?

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5. Below is a square grid.
Two sides of a kite have been drawn on the grid.
Complete the kite by drawing the missing sides.

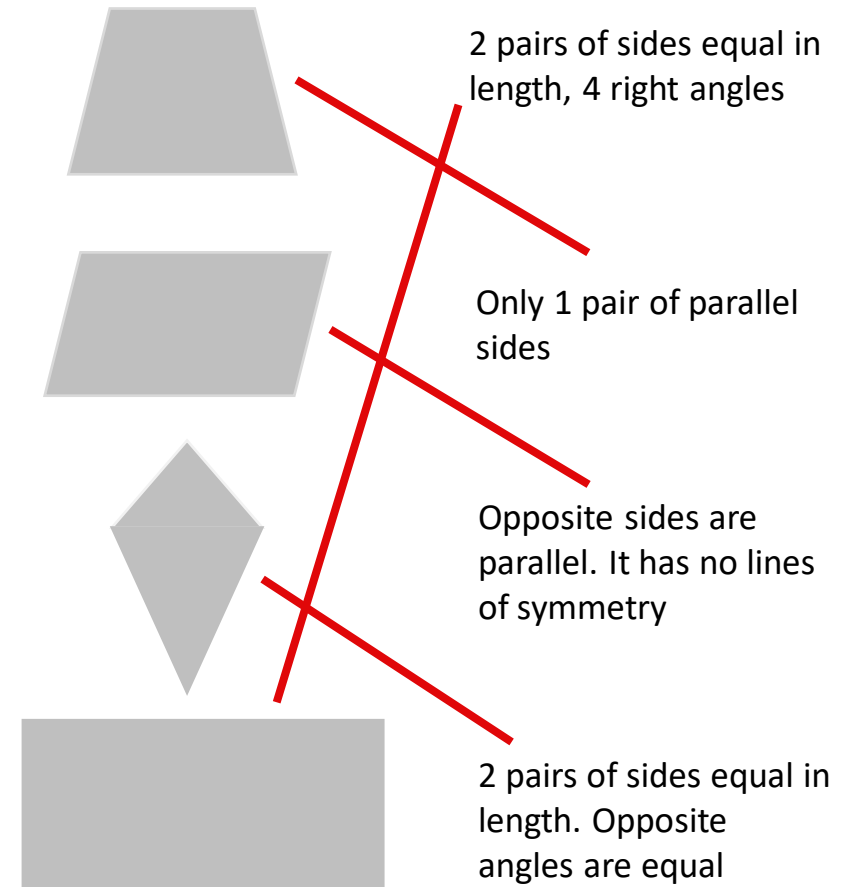1. Write the letters of the two shapes which are pentagons.

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A and F
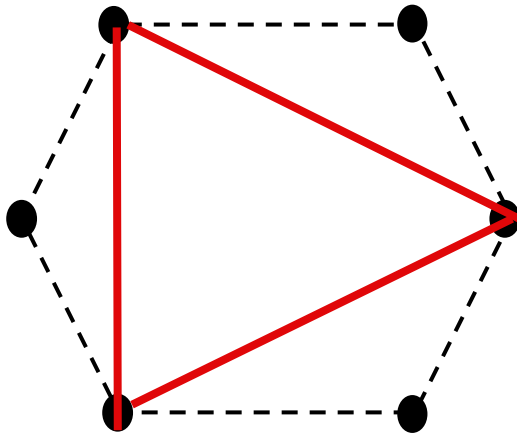
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2 pairs of sides equal in length, 4 right angles

Only 1 pair of parallel sides

Opposite sides are parallel. It has no lines of symmetry
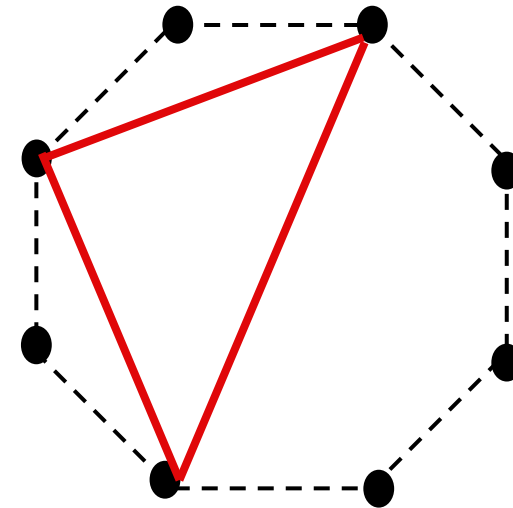
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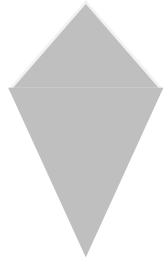
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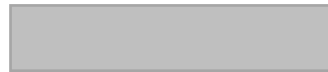

square   parallelogram   trapezium

rhombus   kite   rectangle

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Rhombus
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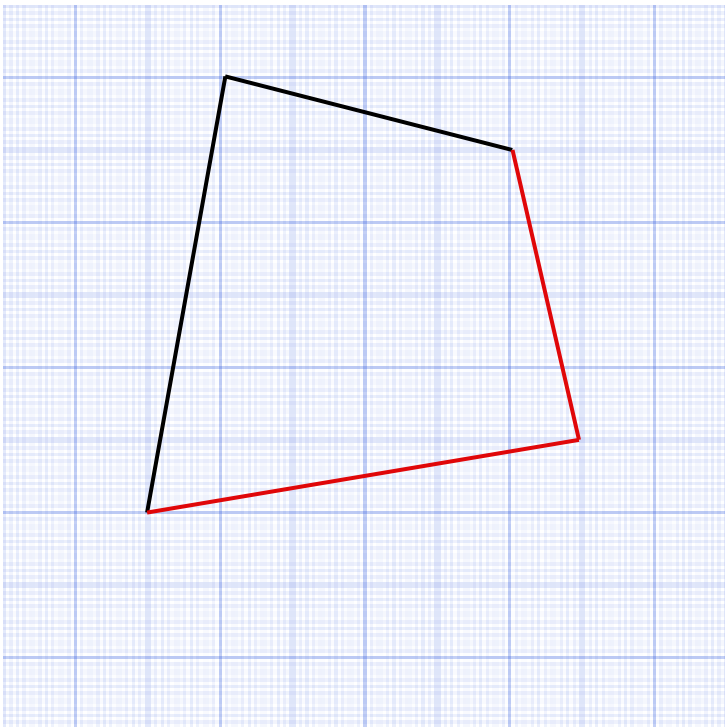
For more help and resources, or to work with us as a tutor, please contact us

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