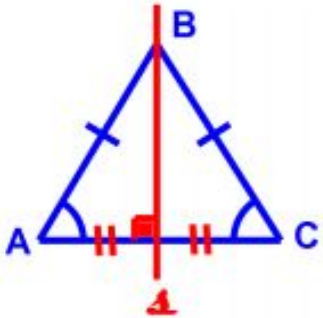
Symmetrical Figures

A figure is said to be **symmetrical** if an **axis of reflection** can be drawn through it.

Take for an example, an **isosceles triangle**. Notice how an axis of reflection can be drawn through vertex B.



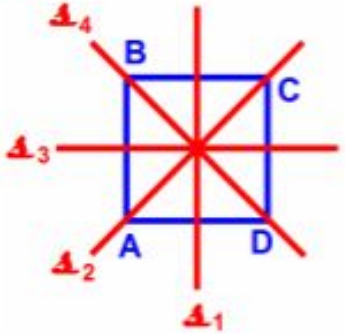
$$\angle A = \angle C \quad m\overline{AB} = m\overline{BC}$$

In ΔABC, line ▲ can be called the **axis of symmetry** because vertex A is the image of vertex C and vice versa.

This means that all **isosceles triangles** are symmetric figures.

Some symmetric figures have more than one axis of symmetry.

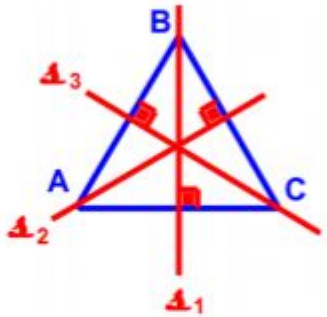
For example, a **square** has **4** different **axes of symmetry**.



Lines $\mathcal{A}_1$, $\mathcal{A}_2$, $\mathcal{A}_3$, and $\mathcal{A}_4$ all make an **axis of symmetry** in the square ABCD.

This means that all **squares** are **symmetric figures**.

Equilateral Triangle

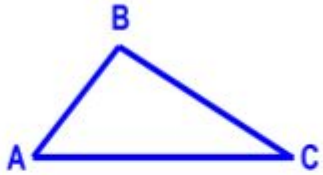


ΔABC is an equilateral triangle

Lines $\blacktriangle_1$, $\blacktriangle_2$, and $\blacktriangle_3$ are axes of symmetry.

All equilateral triangles are symmetrical.

Scalene Triangle



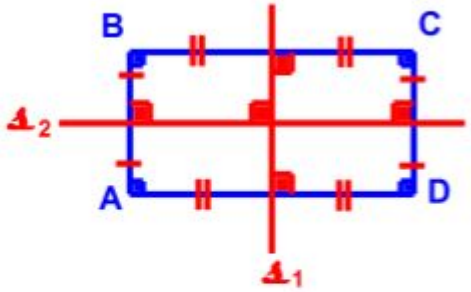
ΔABC is a scalene triangle

$$\angle A \neq \angle B \neq \angle C$$

$$m\overline{AB} \neq m\overline{BC} \neq m\overline{AC}$$

All scalene triangles are not symmetrical since there are no axes of symmetry.

Rectangle

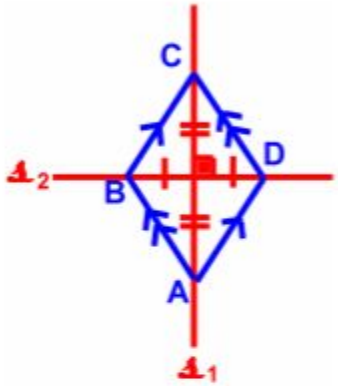


ABCD is a rectangle

Lines l_1, and l_2 are axes of symmetry.

All rectangles are symmetrical

Rhombus



ABCD is a rhombus

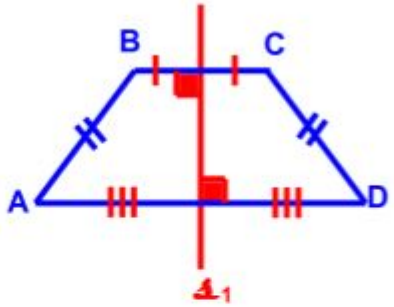
$$m\overline{AB} = m\overline{BC} = m\overline{CD} = m\overline{AD}$$

$$\overline{AB} \parallel \overline{CD} \text{ and } \overline{BC} \parallel \overline{AD}$$

Lines ℓ_1, and ℓ_2 are axes of symmetry.

All rhombus' are symmetrical

Isosceles Trapezoid



ABCD is an isosceles trapezoid

$$\overline{AD} \parallel \overline{BC}$$

$$m\overline{AB} = m\overline{CD}$$

Line ℓ_1 is an axis of symmetry

All isosceles trapezoids are symmetrical