

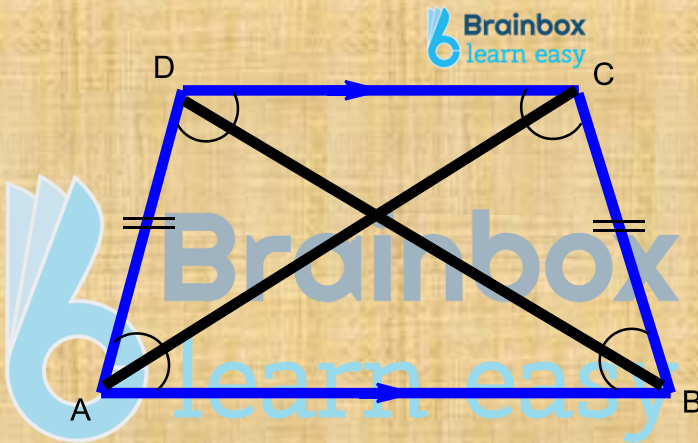
CHAPTER 03

Understanding Quadrilaterals

Isosceles trapezium:

A trapezium with equal non – parallel sides is called an ‘isosceles trapezium’.

In the trapezium ABCD,



$AB \parallel CD$ and $AD = BC$. So, it is an isosceles trapezium.

Properties:

- The base angles are equal and $\angle C = \angle D$.

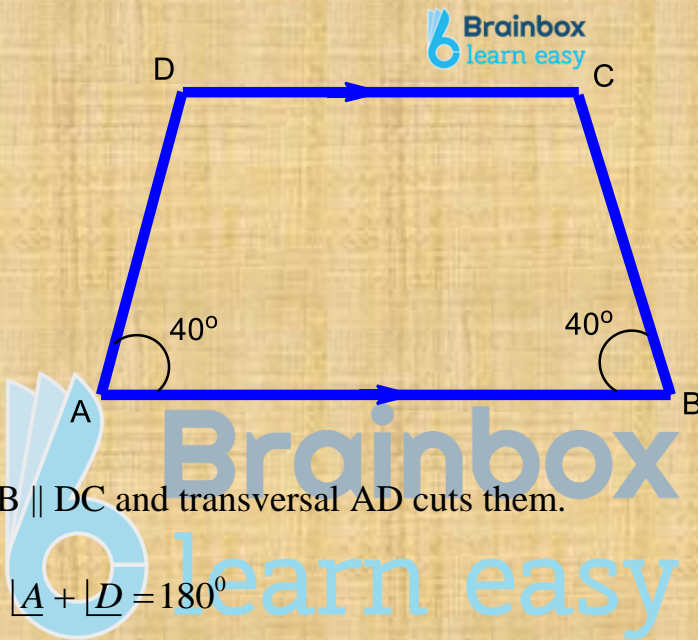
i.e. $\angle A = \angle B$

- Diagonals are equal.

i.e. $AC = BD$

Example:

ABCD is a trapezium in which $AB \parallel DC$ and $\angle A = \angle B = 40^\circ$. Find $\angle C$ and $\angle D$. Are these angles equal?

Sol.

$AB \parallel DC$ and transversal AD cuts them.

$$\therefore \angle A + \angle D = 180^\circ$$

$$\Rightarrow \angle D = 180^\circ - \angle A = 180^\circ - 40^\circ = 140^\circ$$

Similarly, $\angle B + \angle C = 180^\circ$

$$\Rightarrow \angle C = 180^\circ - \angle B = 180^\circ - 40^\circ = 140^\circ$$

$$\therefore \angle C = \angle D = 140^\circ$$

Yes, these angles are equal.

\therefore ABCD is an isosceles trapezium.