

Properties of Parallelogram

- A diagonal of a $\parallel gm$ ^{divides} it into 2 congruent triangles.
- In a $\parallel gm$, ^{opp.} sides are equal.
- In a $\parallel gm$, opp angles are equal.
- In a $\parallel gm$, diagonals bisect each other.

How to prove a quadrilateral as parallelogram?

(i) Draw diagonal & congruent the Δ ✓
or

(ii) Prove $AB=CD$ & $AD=BC$ ✓
or

(iii) Prove $\angle A = \angle C$ & $\angle B = \angle D$ ✓
or

(iv) Prove Diagonals bisect each other ✓
or

(v) IF $AB=CD$ & $AB \parallel CD$
any 1 pair of opp. sides equal & $\parallel$ ✓

Proof :- Property 1

given, $\parallel gm$ $ABCD$, in which BD divides it into 2 triangles

~~AB~~ $AB \parallel DC$ & BD as transversal

$$\therefore \angle ABD = \angle BDC \quad [A.E.A.]$$

$$\angle 3 = \angle 4 \quad [A.E.A.]$$

