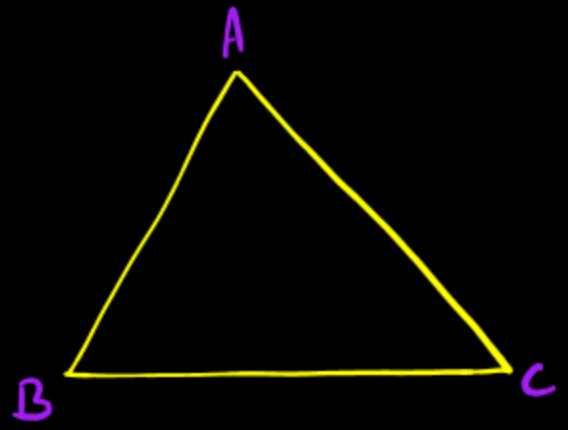
2-Dimensional Shapes

Grade 4: Geometry

Triangles

⇒ 3 sides

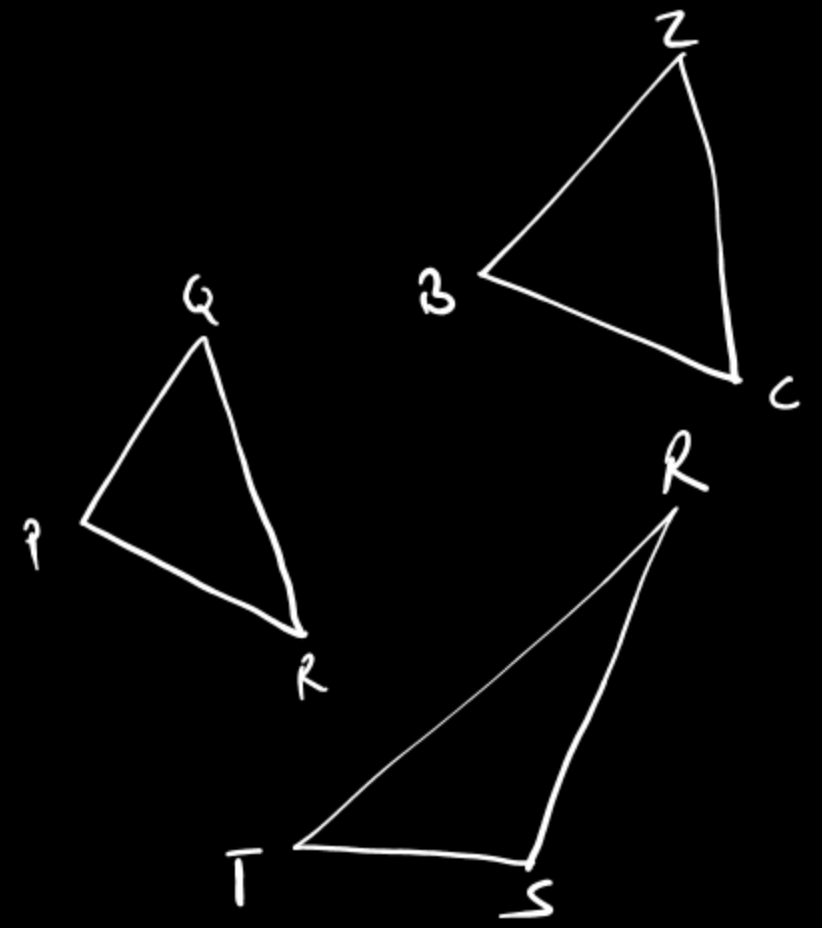
⇒ 3 vertices

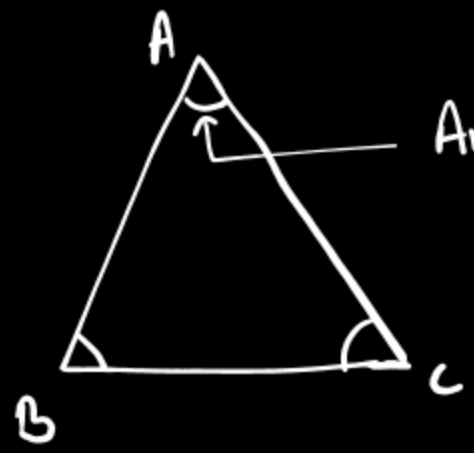


→ Symbol for triangle Δ

triangle ABC = ΔABC

Q. Draw $\left.\begin{matrix}\Delta PQR \\ \Delta BZC \\ \Delta RST\end{matrix}\right]$ of different measures. | H.W.





Angles of triangles

$\Rightarrow$ A triangle has 3 angles

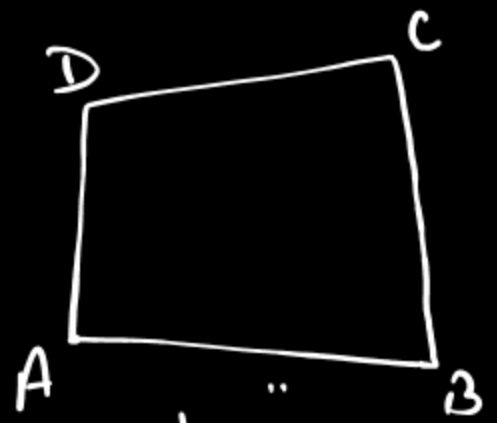
Quadrilateral

⇒ A simple closed figure with 4 sides. (4 line segments).

⇒ ABCD is a quadrilateral

⇒ 4 vertices, A , B , C , D

⇒ 4 sides , AB , BC , CD , DA



Adjacent Sides : "The sides having a common vertex.

For eg : → AB and AD are adjacent sides.

→ BA & BC
→ CD & CB
→ DA and DC

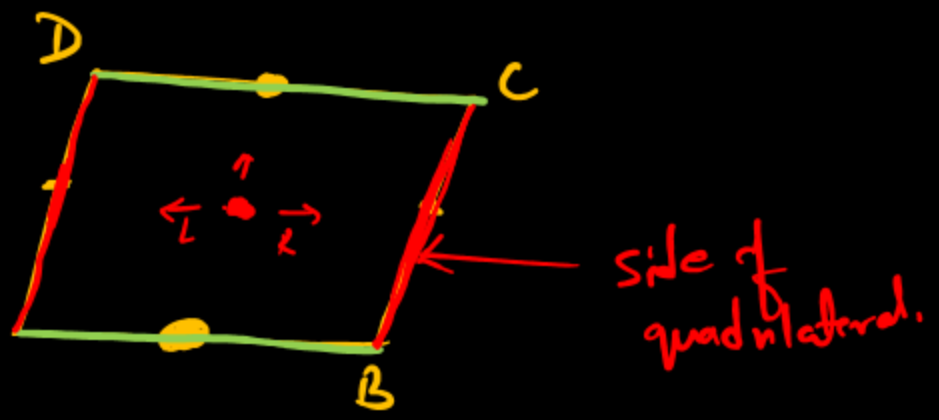
} adjacent sides.

Opposite sides: Sides facing each other

for eg: ⇒ AD and BC make one pair of opposite sides

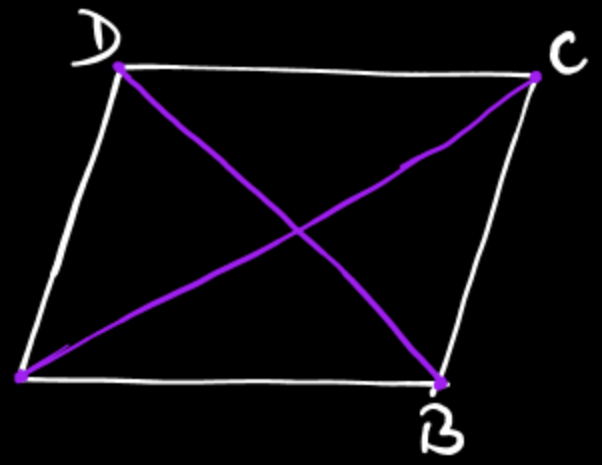
⇒ AB and DC are opposite sides.

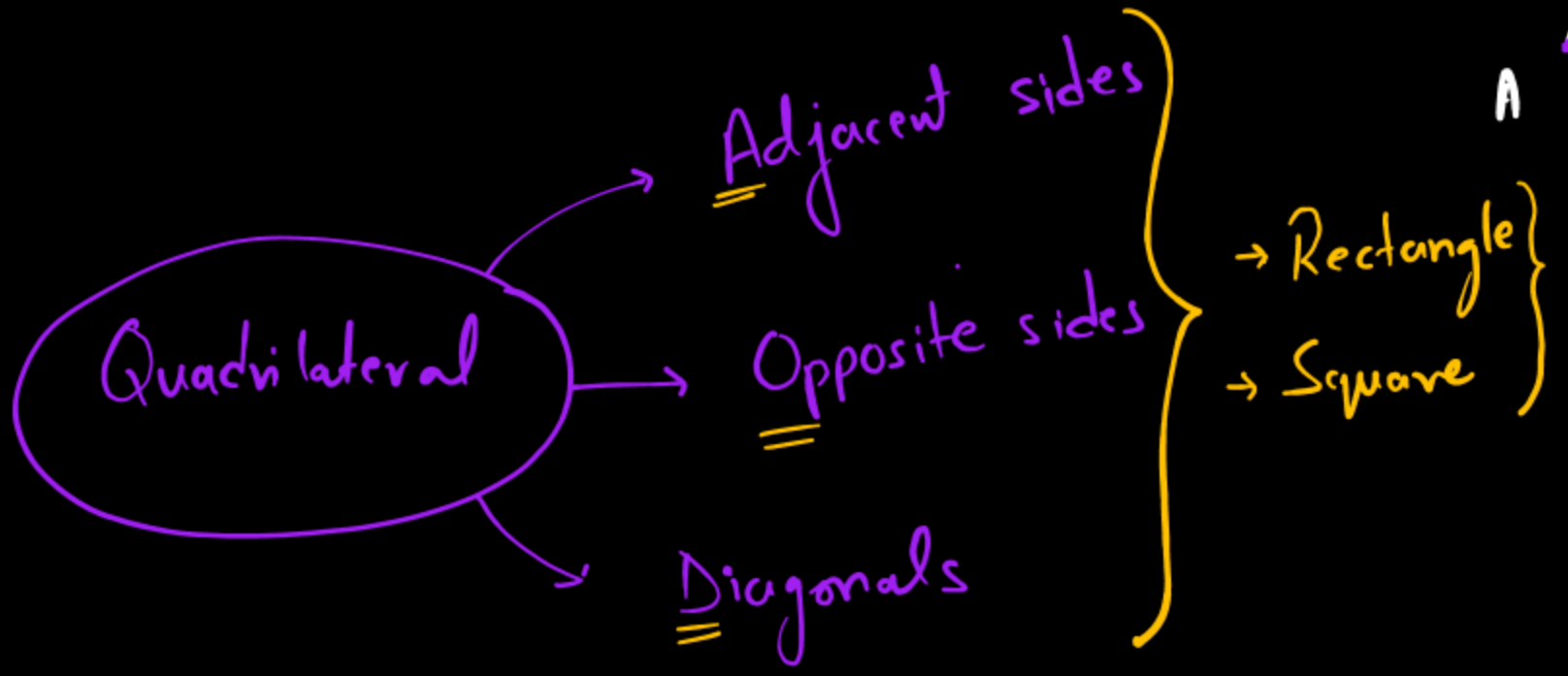
⇒ A Quadrilateral can have 2-pair of opposite.



Diagonals : The ~~big~~ line segments joining the opposite vertices of a quadrilateral are called its diagonals.

eg. AC and BD are the diagonals of Quadrilateral ABCD.



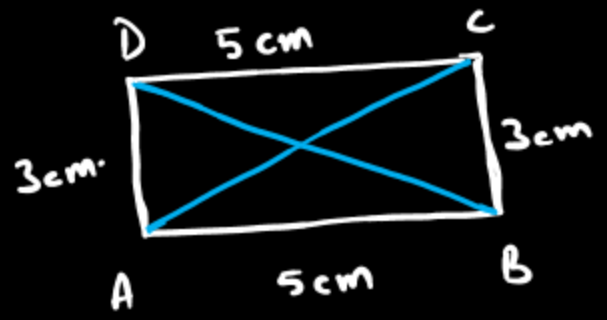


Rectangle :

A rectangle is a special type of quadrilateral, in which -

(a) opposite sides are equal., and

(b) diagonals are equal.

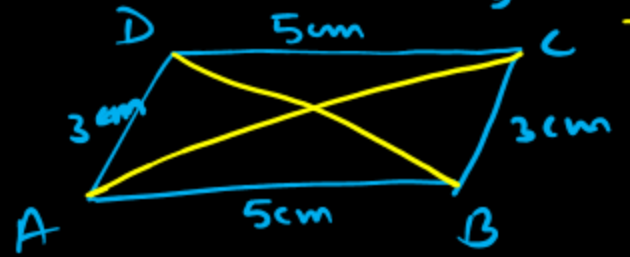


eg. In quadrilateral ABCD,

(a) $AB = CD$ and $AD = BC$

(b) $AC = BC$

Therefore, quadrilateral ABCD is a rectangle.



Not a rectangle

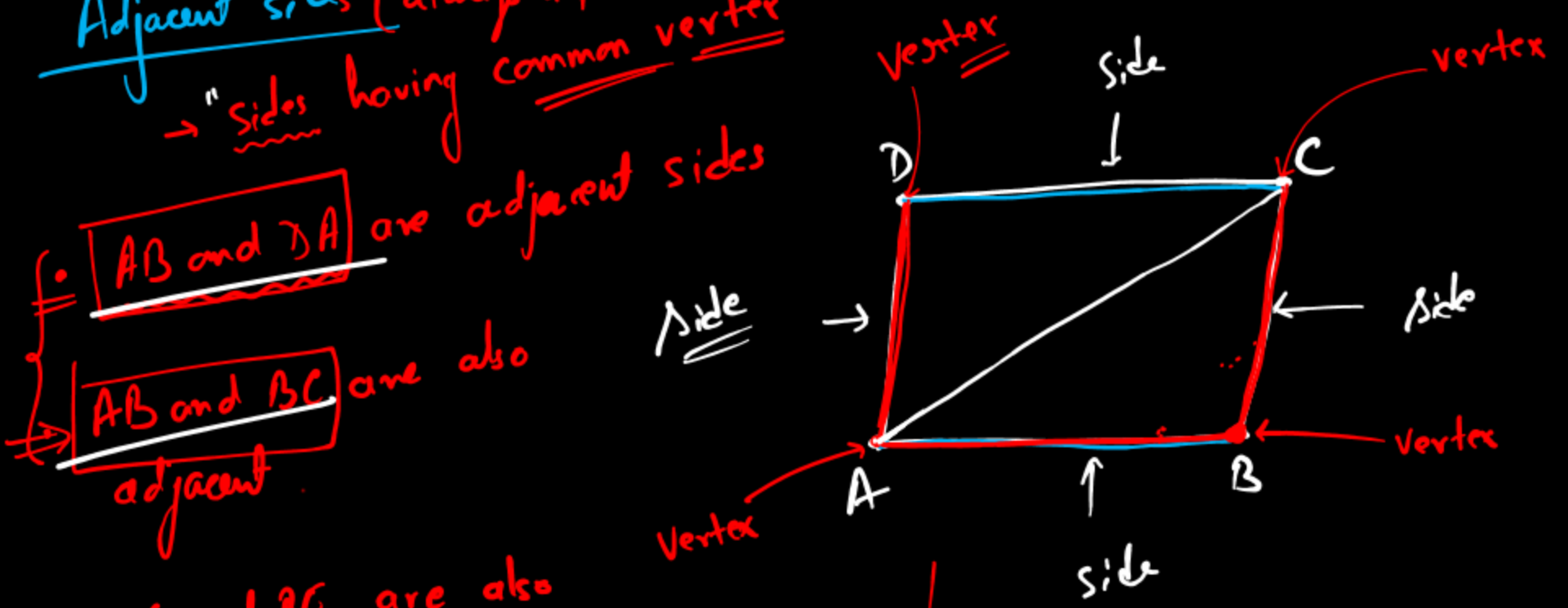
Square :

A special type of a quadrilateral, in which -

a) all four sides are equal
b) diagonals are also equal

Adjacent sides (always in pair)

→ "Sides having common vertex"



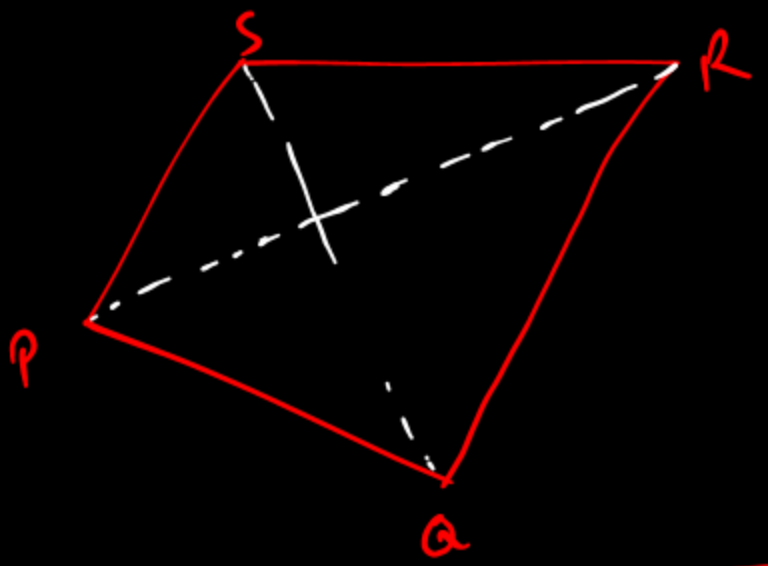
- AB and DA are adjacent sides
- AB and BC are also adjacent
- DC and BC are also adjacent, because C is the common vertex.
- DA and DC are also adjacent sides

AB ⇒ line segment → a side of quadrilateral.

Opposite sides | DA ∥ BC, DC ∥ AB

Diagonals: → AC → joining opposite vertex.
→ DB

PQRS is a quadrilateral.



List (i) all of its sides |⇒ QR, RS, SP, PQ.

(ii) all of its vertices |⇒ Q, R, S and P.

(iii) all the pairs of adjacent sides

~~SP & QR~~

- SR and SP
- PQ and PS
- RS and RQ
- QR and QP

(iv) Opposite sides :
- SR and PQ
- PS and QR

(v) Diagonals : → PR.
→ SQ.

Adjacent

pent = 5
hex = 6
hept = 7
oct = 8

① Rectangle:

→ Opposite sides are equal

→ Diagonals are equal

② Square

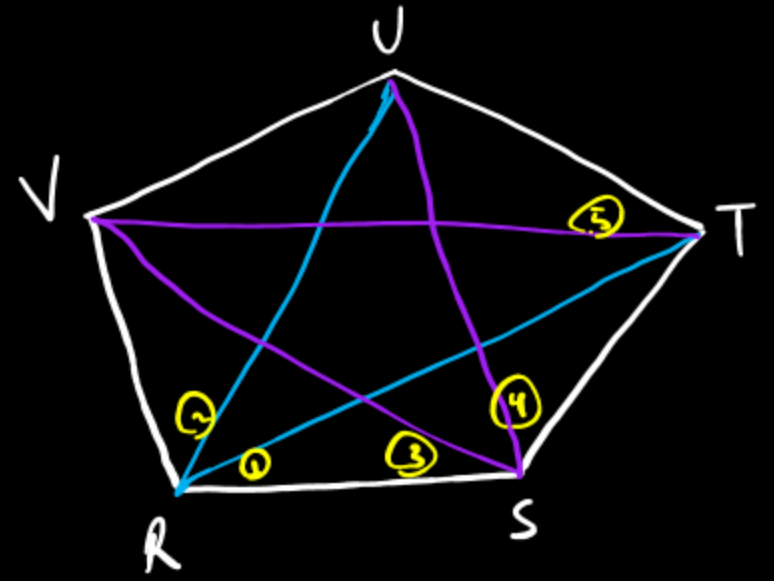
→ all sides are equal

→ diagonals are equal

Pentagon

Vertices : 5 (R, S, T, U, V)

Sides : 5 (RS, ST, TU, UV, and VR)



Adjacent Sides :

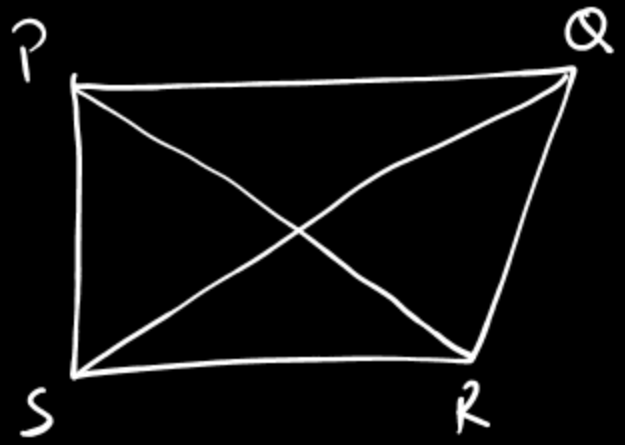
- ⇒ RS & VR
- ⇒ ST & SR
- ⇒ TU & TS
- ⇒ UV & UT
- ⇒ VU & VR

} 5 pair of adjacent side

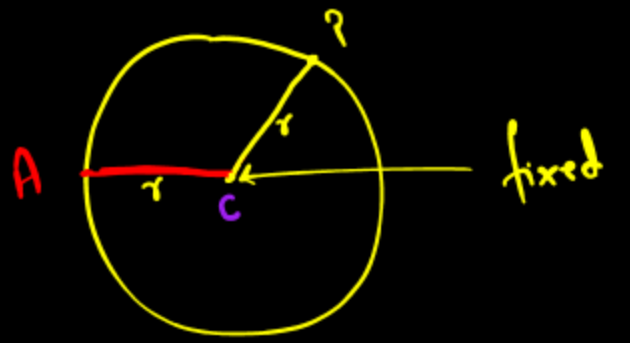
Diagonal: 5 diagonal :

H.W. Names of diagonals

Q. Draw a quadrilateral PQRS. Write the name of the four sides and two diagonals.



Circle



⇒ A circle is a closed figure made up of infinite points which are at equal distance from a fixed central point.

→ a.k.a. (also known as) centre of the circle

⇒ In the above diagram:
C represents centre of the circle.

⇒ A and P are the points on the circle.

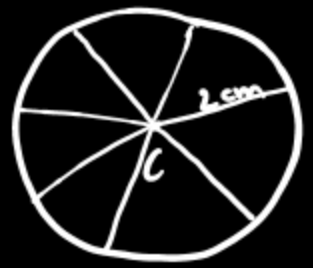
⇒ Distance of A from C = distance of point P from C. = Radius

Radius : The distance between the centre of a circle and any point on it is called **radius**.

[⇒ A line segment joining centre of a circle and any point on the circle.]

* A circle has infinite radii :

Singular → Radius , Plural → Radii .



Chord

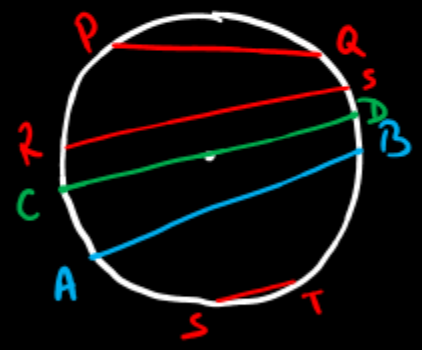
"A line segment that joins two points on a circle" is called a chord of the circle.

Eg. AB is a chord.

"CD is a special type of chord."

↓

as it is passing through the centre of the circle.



⇒ Infinite chords can be drawn in a circle.

Diameter :

→ A chord which passes through the centre of the circle is called a diameter of the circle.

* "Diameter is the longest chord of the circle"

⇒ CD is a diameter

$CD = OC + OD$; and OC, OD are radii ($OC = r$ and $OD = r$)

$CD = r + r$

$CD = 2 \times r$

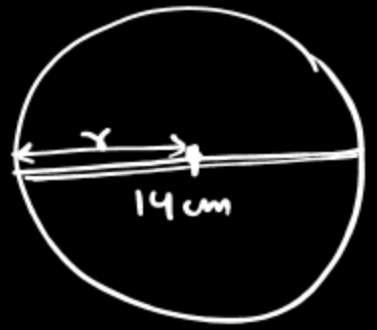
Diameter = 2 × Radius or **Radius = Diameter / 2**

Q. If diameter of a circle is 14 cm, find its radius.

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

$$= \frac{14}{2}$$

$$= 7 \text{ cm}$$



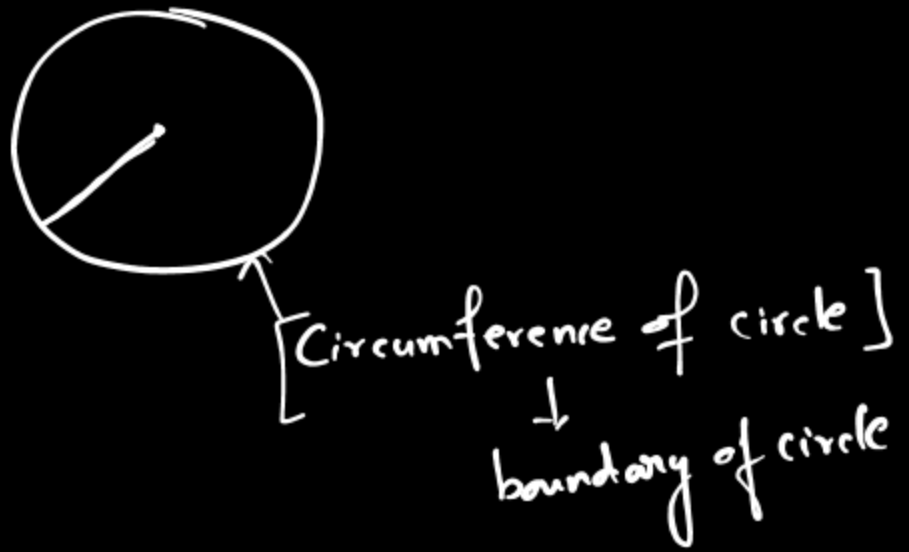
Q. Find the radius of a circle whose longest chord is 12 cm.

Diameter = 12 cm.

$$\text{Radius} = \frac{1}{2}(\text{Diameter})$$

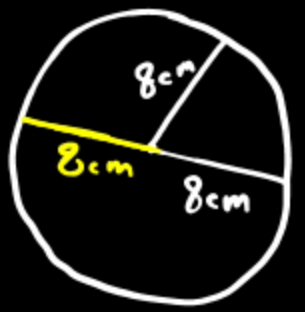
$$= \frac{1}{2} \times 12 \text{ cm}$$

Radius = 6 cm



Q. Find the diameter of a circle whose radius is 8 cms.

Diameter = 2 x Radius



$= 2 \times 8 = 16$ cm

End of the chapter