DAY-9 FINAL

MAH-CET 2024

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Basic MATHS

BASIC AREAS

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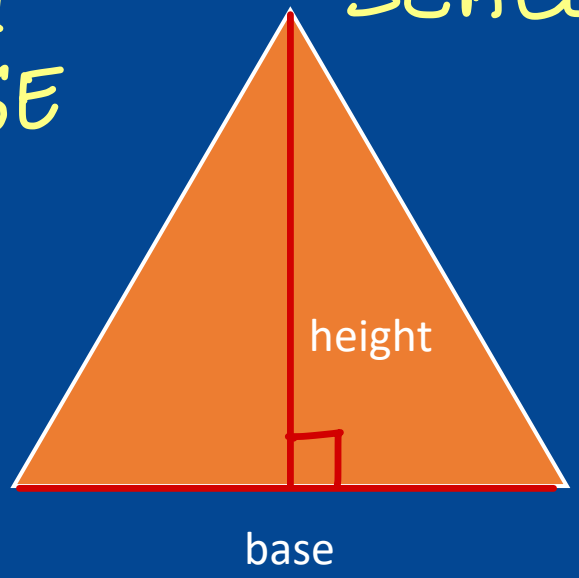
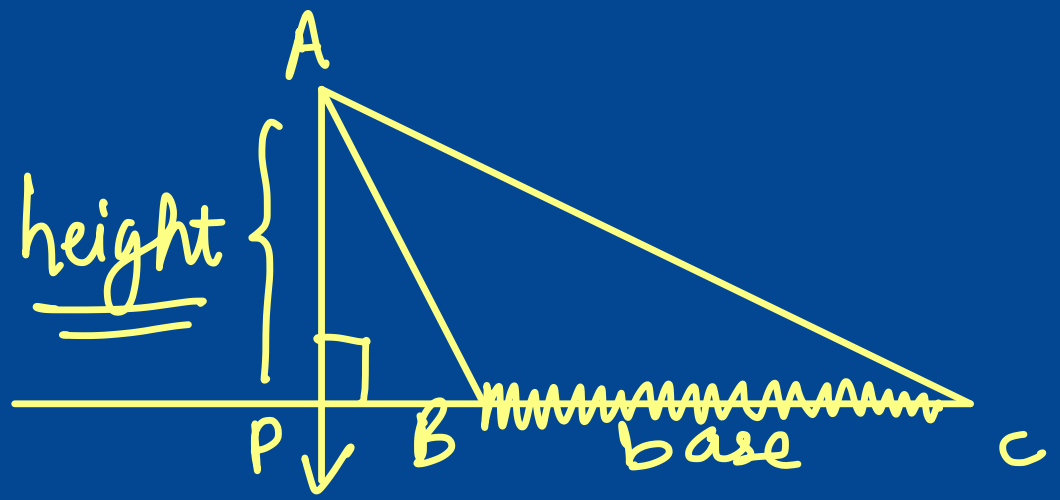
Triangle

3 TYPES → SIDES → EQUILATERAL
ISOSCELES
SCALENE
↳ ANGLES → ACUTE
RIGHT
OBTUSE

Area of triangle = $\frac{1}{2} \times base \times height$

Perimeter of triangle = sum of all sides





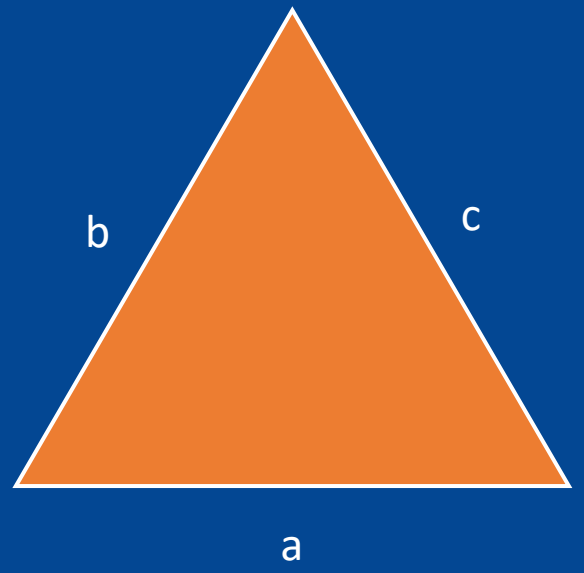
Triangle

HERON'S FORMULA

Area of triangle when all sides are known as a, b, c

SEMIPERIMETER

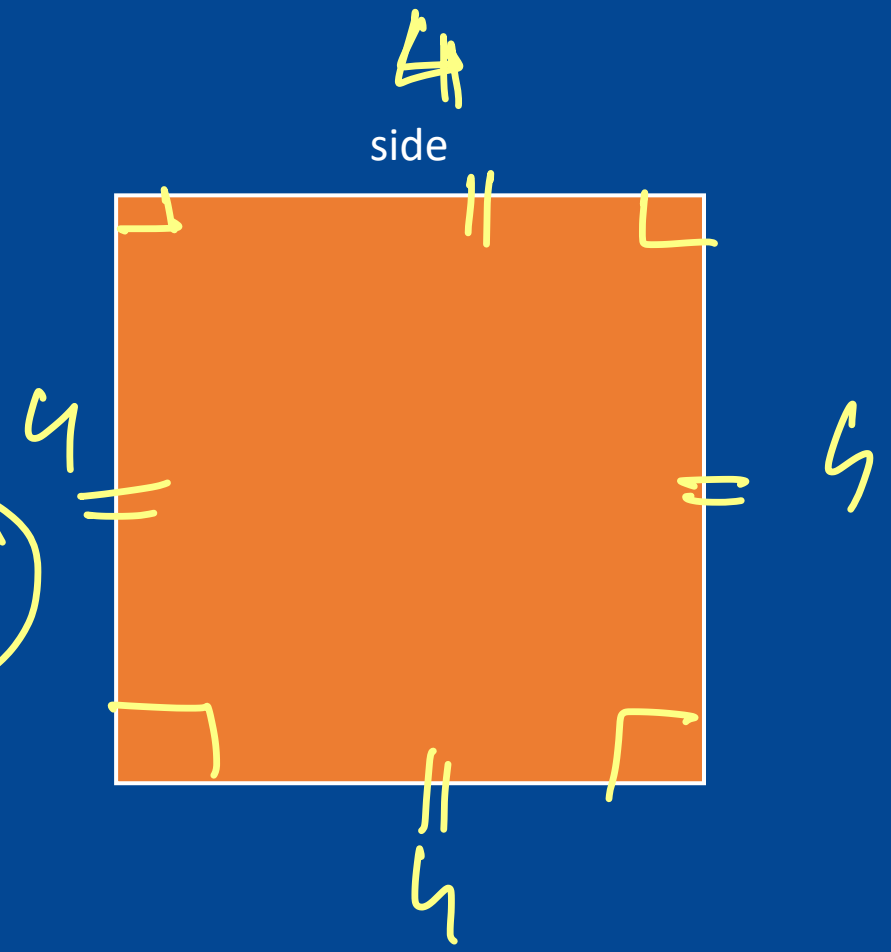
$$s = \frac{a+b+c}{2}$$



$$Area = \sqrt{s(s-a)(s-b)(s-c)}$$

Square

- All sides are equal
- All angles are 90°



Area of square = $(side)^2$

$4^2 = 16$

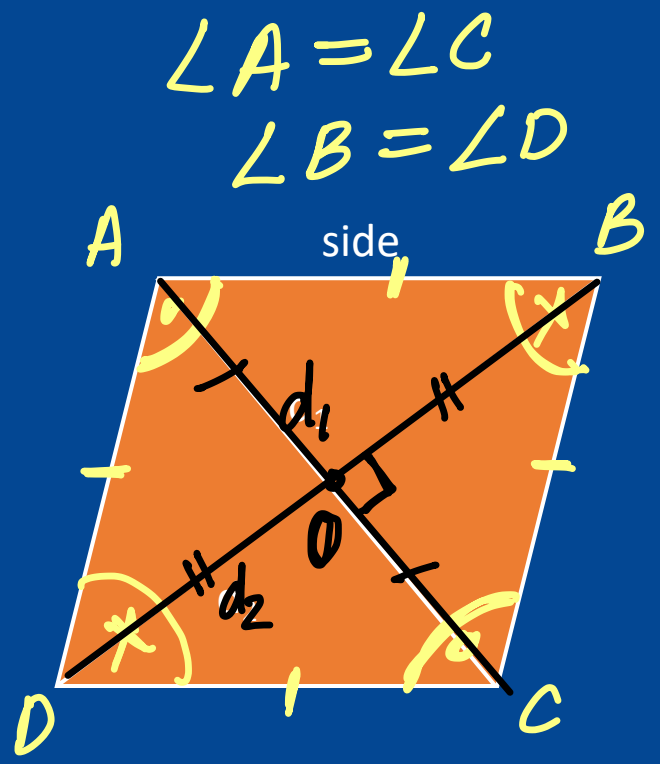
Perimeter of square = 4 x side

Rhombus

- All sides are equal
- Opposite angles are equal

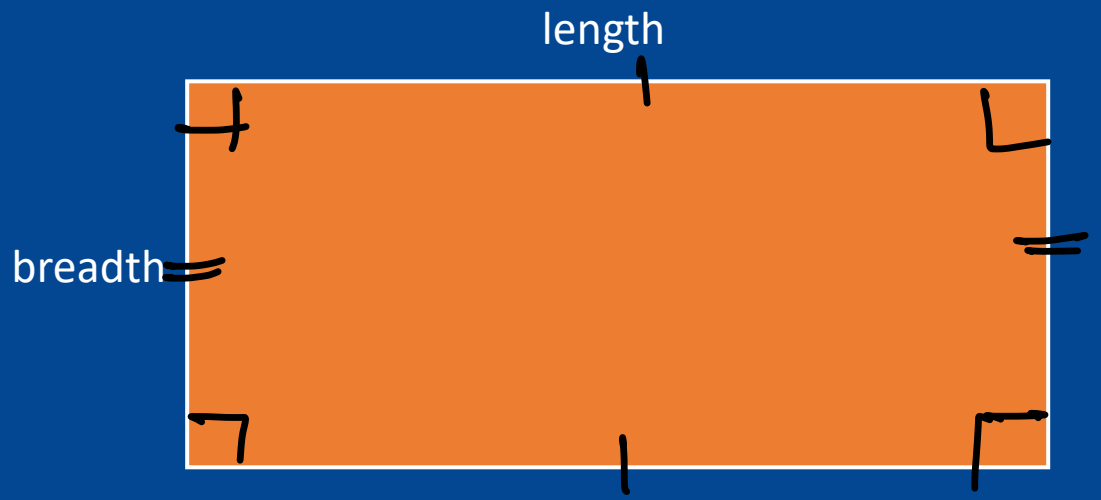
Area of rhombus = ½ x (d_1 x d_2)

Perimeter of rhombus = 4 x side



Rectangle

- Opposite sides are equal
- All angles are 90°



Area of rectangle = l x b

Perimeter of rectangle = 2 (l+b)

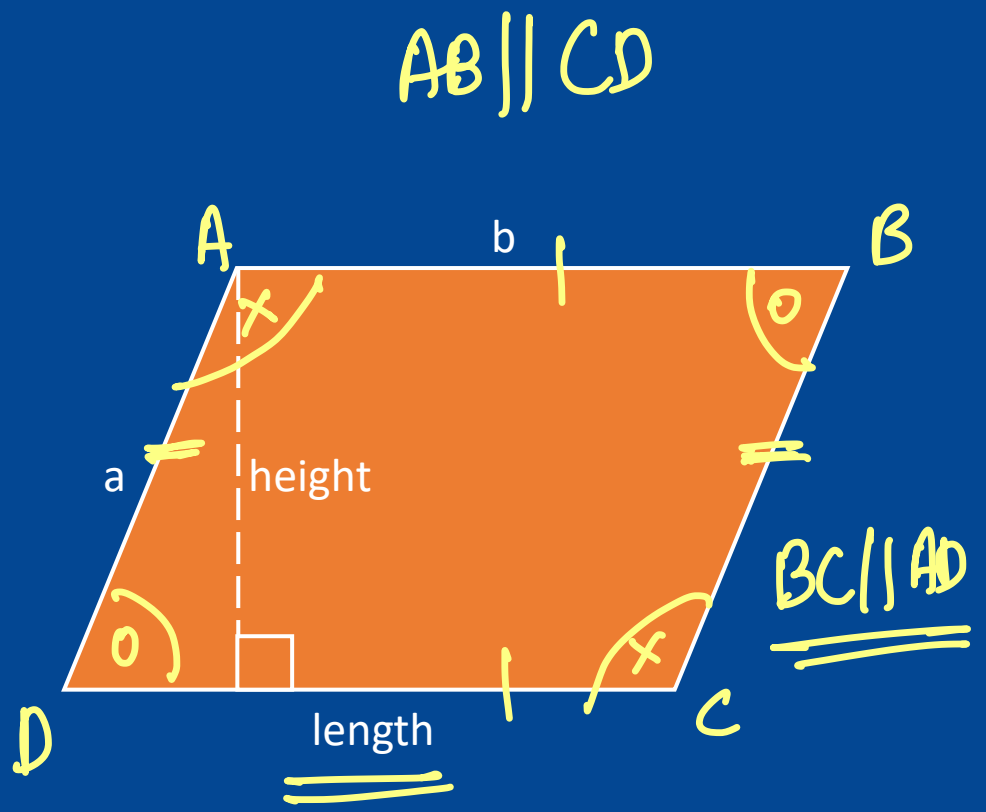
$2b + 2l$

$= 2(b+l)$

$= 2(l+b)$

Parallelogram

- Opposite sides are equal
- Opposite angles are equal



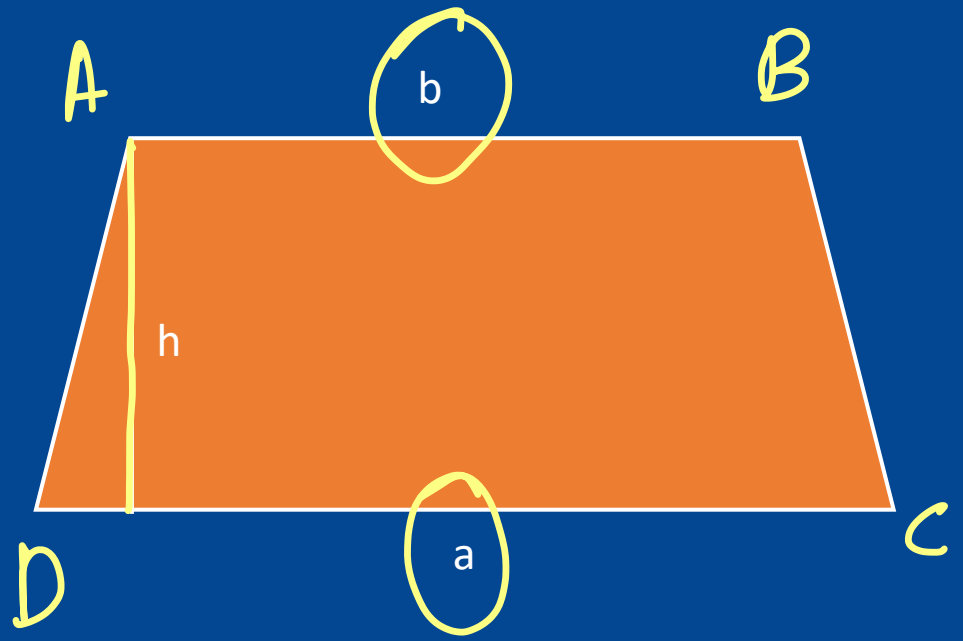
Area of parallelogram = l x h

Perimeter of parallelogram = 2 (a+b)

Trapezium

Area of trapezium = $\frac{1}{2} \times h \times (a + b)$

$= \frac{1}{2} \times h \times (AB + CD)$



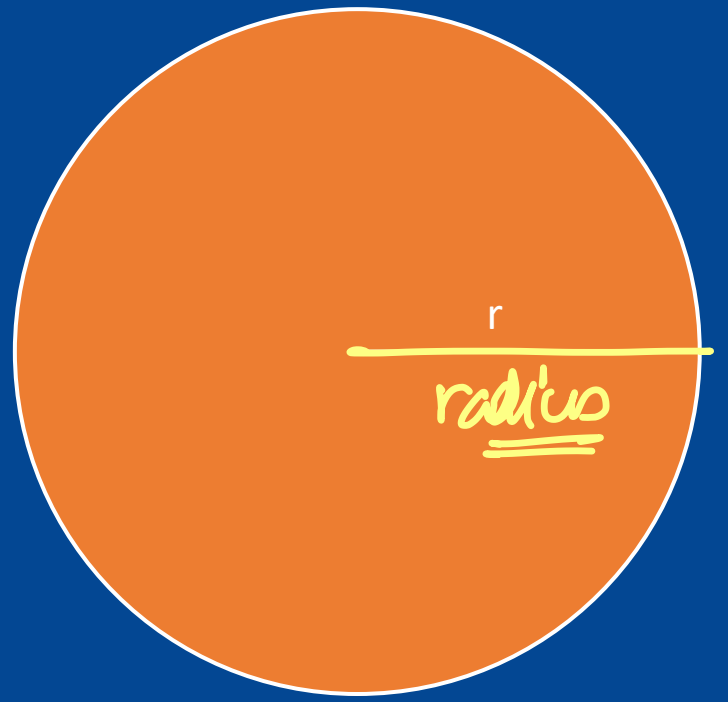
$AB \parallel CD$

Circle

Area of circle = πr^2

Perimeter of circle =

Circumference = $2\pi r$

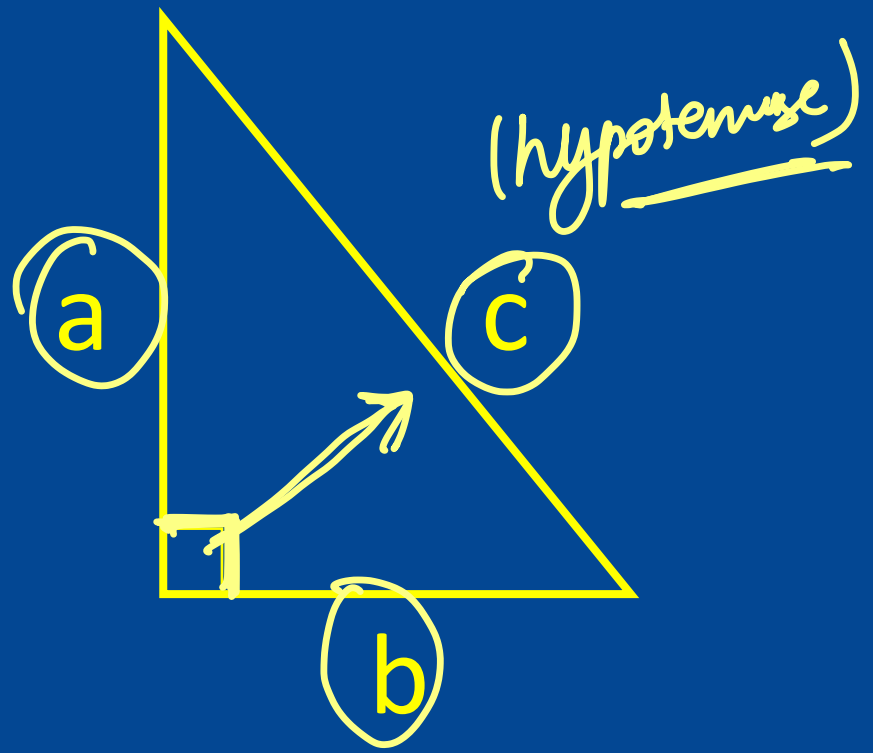


Pythagoras Theorem

Formula

Hypotenuse^2 = (One side)^2 + (Other Side)^2

$$c^2 = a^2 + b^2$$



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If AB = CD and AD = BC

Find the area of the shape?

$$A(\Delta ACD) = \frac{1}{2} \times b \times h$$

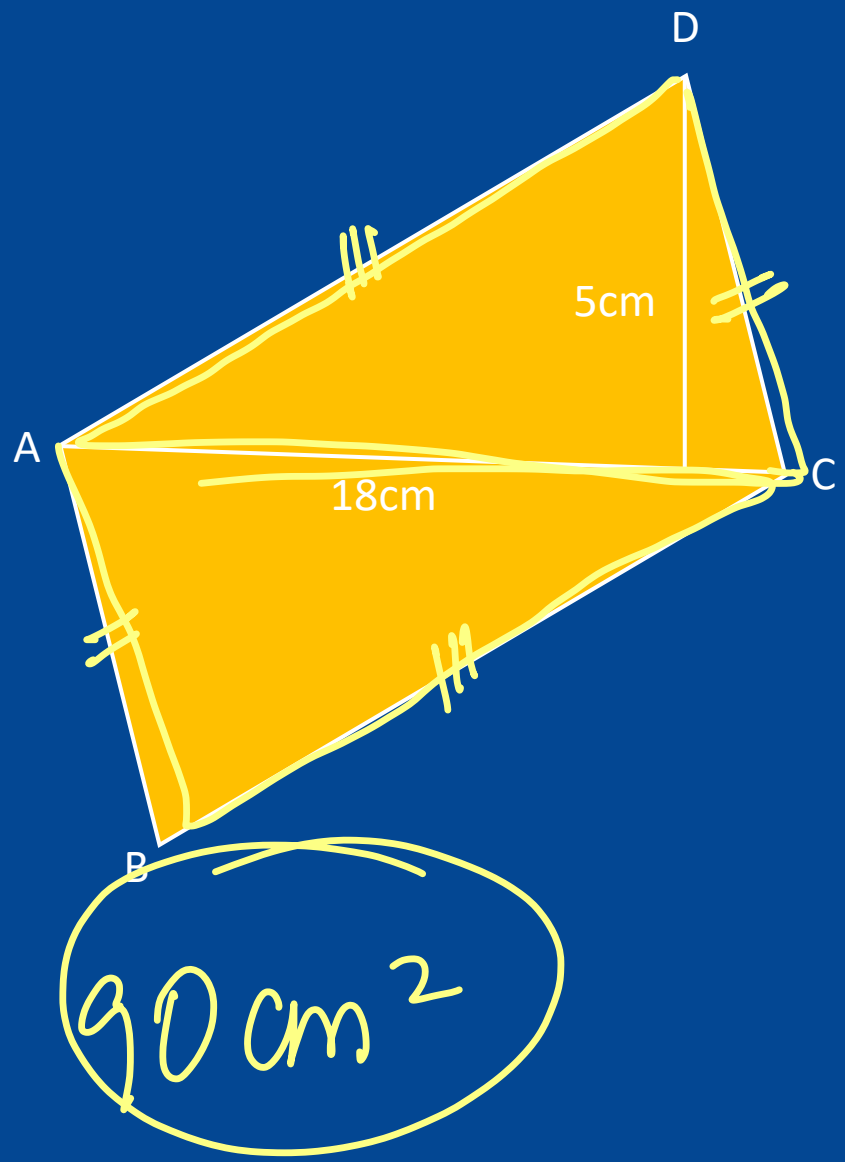
$$= \frac{1}{2} \times 18 \times 5$$

$$A(\Delta ACD) = 45\ cm^2$$

$$A(\Delta ABC) = 45\ cm^2$$

$$+$$

$$90\ cm^2$$

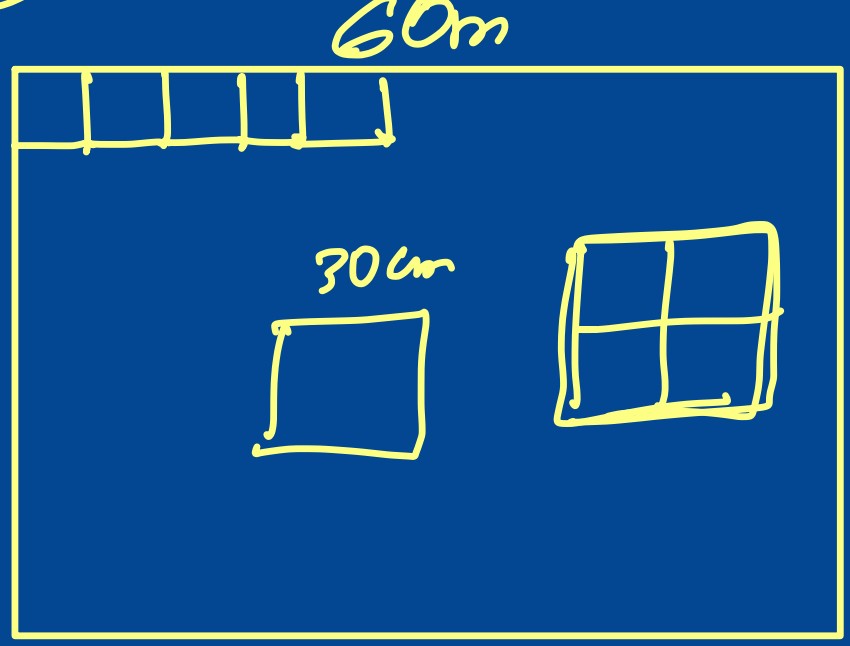


1m = 100 cm

60 × 100 = 6000 cm

3000 cm

A rectangular hall has length 60m and breadth 30m. It is to be covered with square tiles of 30cm. How many tiles will be required?



Area of rectangle = l × b

Area of square = side²

$$\text{No. of tile} = \frac{\text{Area (rect)}}{\text{Area (sq)}}$$

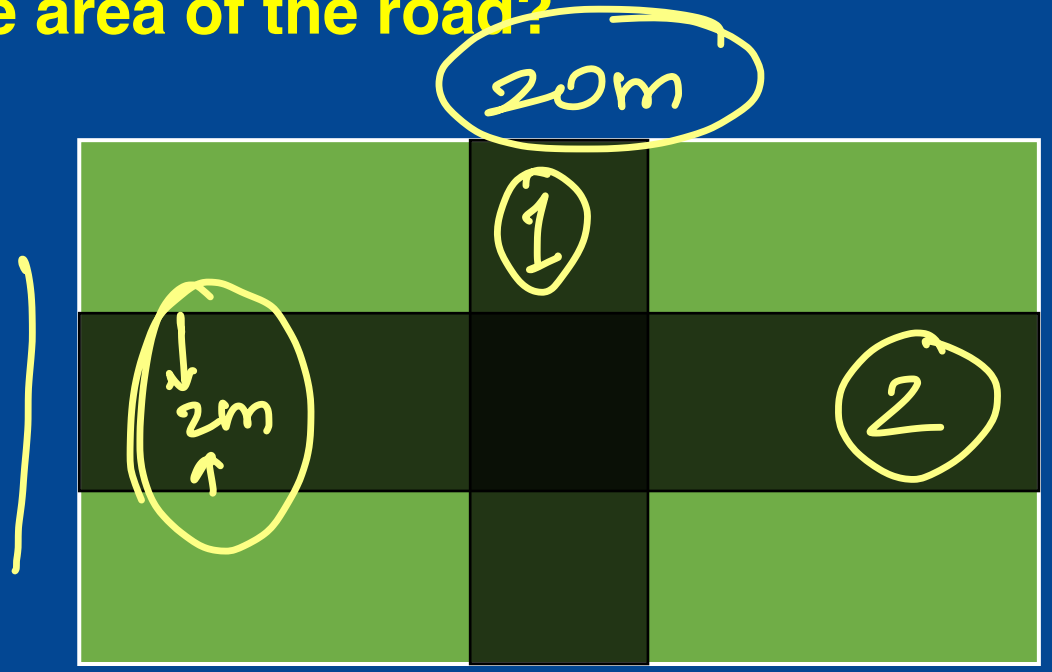
$$= \frac{6000 \times 3000}{30 \times 30} = \frac{2000 \quad 10}{} = 20000$$

A rectangular park has length 20m and breadth 15m. In the center of the park there's a 2m wide road intersecting each other at the center. What is the area of the road?

$R1 = 2 \times 15 = 30\,m^2$

$R2 = 2 \times 20 = 40\,m^2$

$Sq = 2 \times 2 = 4\,m^2$



$R_1 + R_2 - Sq.$

$= 30 + 40 - 4 = \boxed{66\,m^2}$

$\pi = 3.14 = \frac{22}{7}$

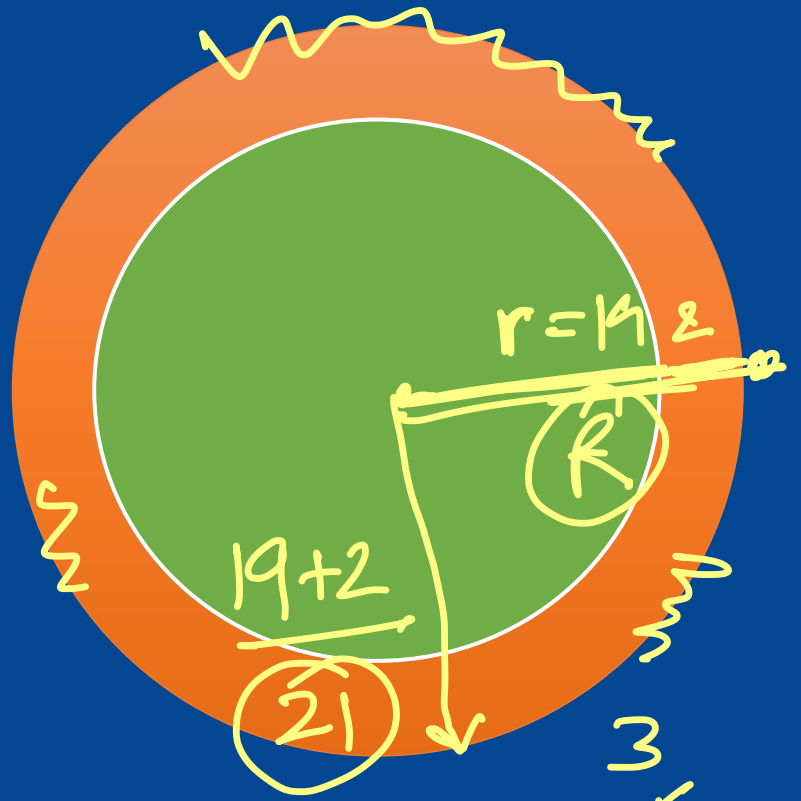
A circular garden has 2 meter road around it. Circumference of the garden in 38π. How much wire will be required to fence the road.

Circumference $= 2\pi r$

$C(G) = 38\pi$

$2\pi r = 38\pi$

$r = \frac{38}{2} = 19$



$2\pi r = 2 \times \frac{22}{7} \times \frac{21}{3}$

$= 44 \times 3$

$= 132$ m

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Find the area of the orange shaded region in the diagram.

A. $(16\pi - 32)\ sq.cm.$

B. $(16\pi - 55)\ sq.cm.$

C. $(16\pi - 10)\ sq.cm.$

D. $(16\pi - 8)\ sq.cm.$

(A)

$r = 4\ cm$

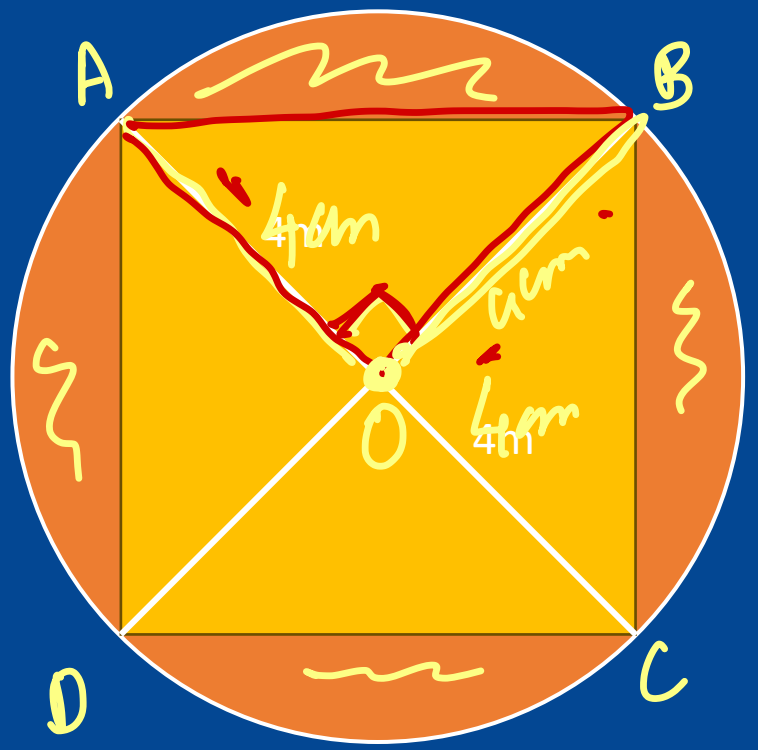
A(circle) − A(sq.)

$\pi r^2 - 8 \times 4$

$\pi (4)^2 - 32$

$16\pi - 32$

$A(\Delta AOB) = \frac{1}{2} \times 4 \times 4 = 8\ cm^2$



Sq. Diagonal.

① $AC = BD$ ② $AC \perp BD$

③ $AO = BO = CO = DO$

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