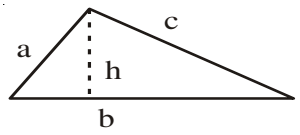
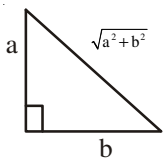
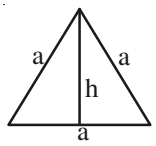
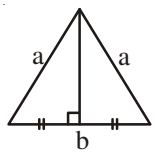
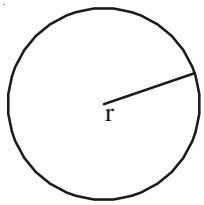
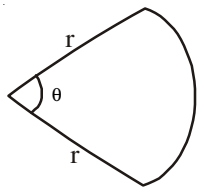
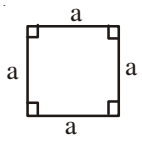
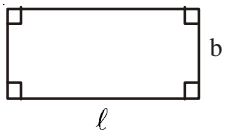
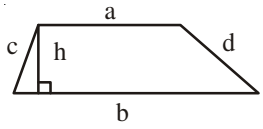
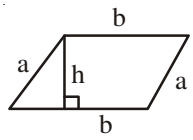
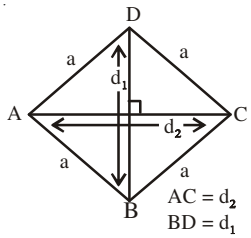
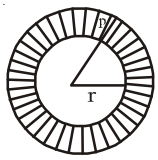
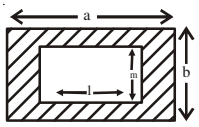
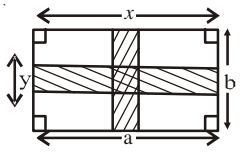
20

PERIMETERS AND AREAS OF PLANE FIGURES

Name of the Figure	Perimeter/ circumference	Area	Figure
Triangle	$a + b + c$	$\sqrt{s(s-a)(s-b)(s-c)}$ where $s = \frac{a+b+c}{2}$ or $\frac{1}{2}bh$	
Right angled triangle	$a+b+\sqrt{a^2+b^2}$	$\frac{1}{2}ab$	
Equilateral triangle	$3a$	$\frac{\sqrt{3}}{4}a^2$	
Isosceles triangle	$2a + b$	$\frac{b}{4}\sqrt{4a^2-b^2}$	
Circle	$2\pi r$	πr^2	
Sector of a circle	$\frac{\pi r\theta}{180}+2r$ (θ is in degrees)	$\frac{\theta}{360}\times\pi r^2$	

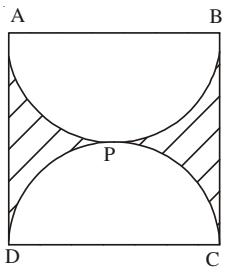
Square	4a	a^2	
Rectangle	$2(\ell + b)$	$\ell \times b$	
Trapezium	a + b + c + d	$\frac{1}{2}(a+b)h$	
Parallelogram	2 (a + b)	bh	
Rhombus	4a	$\frac{1}{2} \times d_1 \times d_2$	
Circular Path	2π (R + r)	$\pi R^2 - \pi r^2$	
Rectangular Path		ab - lm	
		ay + bx - xy	

CHECK YOUR PROGRESS:

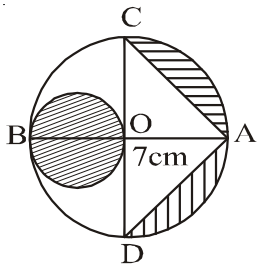
1. The area of a rectangular field is 3630 sq. m and its sides are in the ratio 6:5. The perimeter of the field is :
   (A) 363m (B) 121m (C) 242m (D) 484m
2. The area of a plot in the shape of a quadrilateral, one of whose diagonals is of length 30 m and the lengths of perpendiculars from the opposite vertices are 10 m and 16 m respectively is :
   (A) $480m^2$ (B) $780m^2$ (C) $160m^2$ (D) $300m^2$
3. The difference between the parallel sides of a trapezium of area $390\ cm^2$ is 12 cm. If the distance between the parallel sides is 15cm then lengths of two parallel sides in cm are :
   (A) 26, 14 (B) 27, 15 (C) 36, 24 (D) 32, 20
4. The difference in the circumference and diameter of a circle is 15cm. The radius of the circle is [use $\pi=\frac{22}{7}$] :
   (A) 7cm (B) $\frac{7}{2}$ cm (C) 3cm (D) $\frac{9}{2}$ cm
5. From a cicular cardboard of radius 10.5 cm, a sector of central angle 60^0 is cut out. The area of the remaining part of the cardboard is [use $\pi=\frac{22}{7}$] :
   (A) $228\frac{2}{3}cm^2$ (B) $128\frac{2}{3}cm^2$ (C) $228\frac{1}{3}cm^2$ (D) $128\frac{1}{3}cm^2$
6. Two perpendicular paths of width 5m each run in the middle of a rectangular park of dimension 100 m $\times$ 60m, one parallel to the lenth and the other parallel to the width. Find the cost of constructing these paths at the rate of Rs. 6 per m^2. Also find the cost of cultivating the remaining part at the rate of Rs. 3 per m^2.
7. The side of a rhombus is 10 cm and one of its diagonals is of length 12cm. Find the length of the other diagonal of the rhombus and its area. Also, find the breadth of a rectangle of length 12 cm whose area is equal to area of the rhombus.

STRETCH YOURSELF

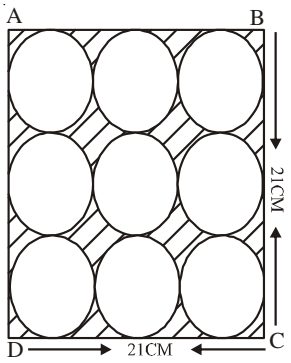
1. In a square ABCD of side 21cm, two semicircles APB and DPC have been drawn. Find the area of i) Unshaded region. ii) Shaded region [use $\pi=\frac{22}{7}$]



2. In the figure AB is diameter of a circle of radius 7cm. If CD is another diameter of the circle. Find the area of the shaded region. [use $\pi=\frac{22}{7}$]



3. ABCD is a square of side 21 cm. Nine congruent circles, each of radius 3.5cm are inscribed in the square, touching all the sides of the square. find the areas of the i) Unshaded region ii) Shaded region.



ANSWERS

CHECK YOUR PROGRESS :

1. C 2. B 3. D 4. B
5. A 6. Rs. 4650, Rs. 15675
7. $d_2 = 16cm$, Area = $96\ cm^2$, Breadth of rectangle = 8cm.

STRETCH YOURSELF :

1. (i) $346.5\ cm^2$ (ii) $94.5 cm^2$
2. $\left(\frac{235}{32}\right) cm^2$
3. (i) $346.5\ cm^2$ (ii) $94.5\ cm^2$