

1983 FI4.4

把一 3 cm 的鐵綫屈曲成一半徑為 1 cm 的扇形。問扇形的圓心角為何？

A wire of 3 cm is bent to form a sector of radius 1 cm.

What is the angle of the sector in degrees (correct to the nearest degree)?

1986 FI1.1

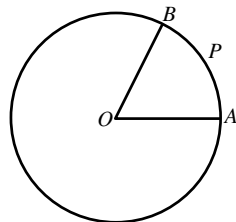
附圖所示的圓之半徑為 18 cm，圓心為 O 。

若 $\angle AOB = \frac{\pi}{3}$ ，且弧 APB 之長為 $a\pi$ cm，求 a 的值。

The given figure shows a circle of radius 18 cm, centre O .

If $\angle AOB = \frac{\pi}{3}$ and the length of arc APB is $a\pi$ cm,

find the value of a .

**1988 FI3.2**

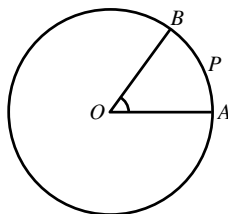
附圖所示圓形的半徑是 $2h$ cm，圓心是 O 。

若 $\angle AOB = \frac{\pi}{3}$ ，且扇形 $AOBP$ 的面積是 $k\pi$ cm²，求 k 的值。

The given figure shows a circle of radius 6 cm, centre O .

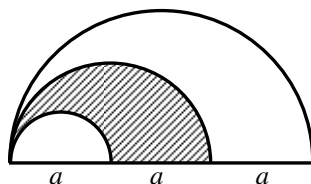
If $\angle AOB = \frac{\pi}{3}$, and the area of sector $AOBP$ is $k\pi$ cm²,

find the value of k .

**1990 HI18**

如圖，三個半圓的直徑分別為 a 、 $2a$ 及 $3a$ 。求陰影部分的面積與沒有陰影部分的面積的比值。

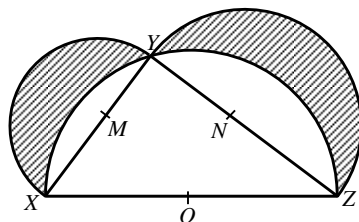
The figure shows 3 semi-circles of diameters a , $2a$ and $3a$ respectively. Find the ratio of the area of the shaded part to that of the unshaded part.

**1994 HI9**

如圖， $XY = 3$ 、 $YZ = 4$ 及 $ZX = 5$ 。現以 M 、 N 、 O 為圓心作半圓，其中 M 、 N 、 O 分別為 XY 、 YZ 、 ZX 的中點。試求陰影部分面積之和。

In the figure, $XY = 3$, $YZ = 4$ and $ZX = 5$. Semi-circles are constructed with M , N , O as centres as shown where M , N , O are

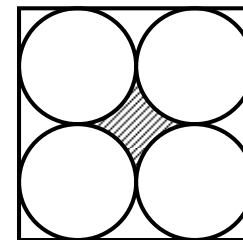
mid-points of XY , YZ and ZX respectively. Find the sum of the shaded areas.

**1998 HG8**

在圖中，四個半徑為 1 的圓緊緊地放在一個正方形內。求陰影部分的面積。(答案準確至最接近之整數)。

In the figure, four circles with radius 1 touch each other inside a square. Find the shaded area.

(Correct your answer to the nearest integer.)

**1998 FG1.1**

若扇形面積 $s = 4$ cm²、扇形半徑 $r = 2$ cm 及扇形的弧長 $A = p$ cm，求 p 的數值。

If the area of a given sector $s = 4$ cm², the radius of this sector $r = 2$ cm and the arc length of this sector $A = p$ cm, find the value of p .

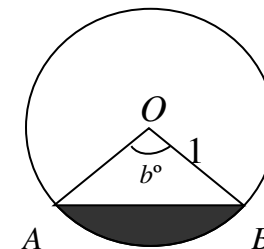
1998 FG4.2

圖中的圓之圓心為 O ，半徑為 1， A 和 B 是圓形上的點。已知 $\frac{\text{陰影部分}}{\text{沒有陰影部分}} = \frac{\pi - 2}{3\pi + 2}$ 且 $\angle AOB = b^\circ$ ，

求 b 的數值。

The circle in the figure has centre O and radius 1, A and B are points on the circle. Given that

$\frac{\text{Area of shaded part}}{\text{Area of unshaded part}} = \frac{\pi - 2}{3\pi + 2}$ and $\angle AOB = b^\circ$, find the value of b .

**1999 HI1**

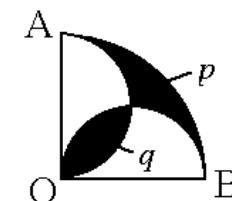
有一圓，其圓周是 14π cm。若一弧所對的圓心角是 $\frac{1}{7}$ 個弧度，設這弧的長度是 X cm，求 X 的數值。

The circumference of a circle is 14π cm. Let X cm be the length of an arc of the circle, which subtends an angle of $\frac{1}{7}$ radian at the centre. Find the value of X .

1999 FI2.3

在圖中， OAB 為四分之一圓，且以 OA 、 OB 為直徑繪出兩個半圓，若 p 、 q 代表陰影部分之面積，其中 $p = 1$ cm² 及 $q = c$ cm²，求 c 之值。

In the figure, OAB is a quadrant of a circle and semi-circles are drawn on OA and OB . If p , q denotes the areas of the shaded regions, where $p = 1$ cm² and $q = c$ cm², find the value of c .



2000 FG4.2

在圖中， $ABCD$ 為長方形， $AB = \sqrt{\frac{8 + \sqrt{64 - \pi^2}}{\pi}}$ ，

$BC = \sqrt{\frac{8 - \sqrt{64 - \pi^2}}{\pi}}$ 。 BE 、 BF 分別是以 C 、 A 為圓心的弧。若 b 是陰影部份之面積，求 b 的值。

In Figure 4, $ABCD$ is a rectangle with

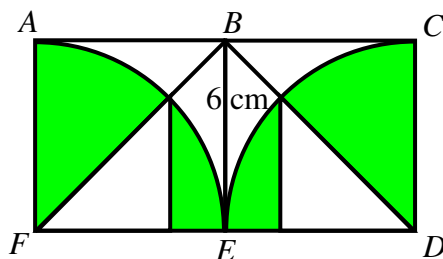
$AB = \sqrt{\frac{8 + \sqrt{64 - \pi^2}}{\pi}}$ and $BC = \sqrt{\frac{8 - \sqrt{64 - \pi^2}}{\pi}}$. BE and BF are the arcs of circles with centres at C and A respectively.

If b is the total area of the shaded parts, find the value of b .

2001 HI10

如圖， $ABEF$ 、 $BCDE$ 為正方形， $BE = 6$ cm， \widehat{AE} 及 \widehat{CE} 是分別以 F 、 D 為圓心畫出來的弧。如果圖中陰影部分的總面積為 S cm²，求 S 的數值。
(取 $\pi = 3$)

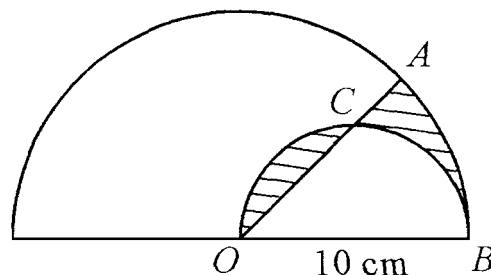
In the figure, $ABEF$, $BCDE$ are two squares, $BE = 6$ cm, and \widehat{AE} and \widehat{CE} are the arcs drawn with centres F and D respectively. If the total area of the shaded parts is S cm², find the value of S . (Assume $\pi = 3$.)

**2004 HI6**

在圖中，大半圓的圓心是 O ，半徑是 10 cm， OB 是小半圓的直徑， C 是弧 OB 的中點且在線段 OA 上。設陰影部分的面積是 K cm²，求 K 的值。(取 $\pi = 3$)

In the figure, O is the centre of the bigger semicircle with radius 10 cm, OB is the diameter of the smaller semicircle and C is the midpoint of arc OB and it lies on the segment OA . Let the area of the shaded region be K cm²,

find the value of K . (Take $\pi = 3$)

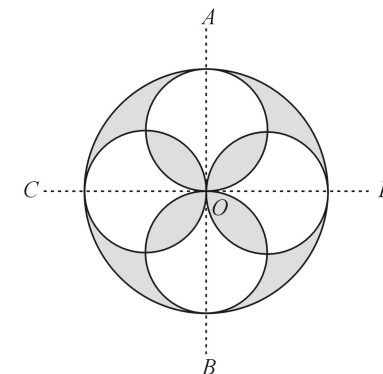
**2005 HI8**

如圖， AB 垂直於 CD ，其交點 O 是大圓的圓心，而四個小圓的圓心分別在 AB 和 CD 上。已知大圓的半徑是 1 cm，四個小圓的半徑是 $\frac{1}{2}$ cm。

若陰影部分的面積是 R cm²，求 R 的值。(取 $\pi = 3$)

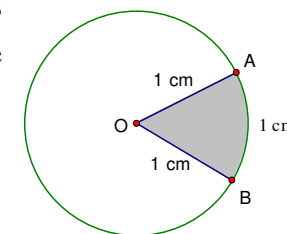
In the figure, AB is perpendicular to CD , their intersection point O is the centre of the large circle and the centres of the four circles lies on either AB or CD . Given also that the radius of the large circle is 1 cm and the radius of each of the four small circles is $\frac{1}{2}$ cm.

If the area of the shaded region is R cm², find the value of R . (take $\pi = 3$)

**2006 FI1.2**

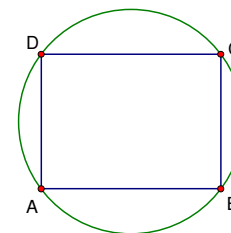
如圖， O 是半徑 1 cm 的圓的圓心。若弧 AB 的長度是 1 cm 及著色部份扇形 OAB 的面積是 b cm²，求 b 的值。(取 $\pi = 3$)

In the figure, O is the centre of the circle with radius 1 cm. If the length of the arc AB is equal to 1 cm and the area of the shaded sector OAB is equal to b cm², find the value of b . (Take $\pi = 3$)

**2006 FI3.2**

如圖， $ABCD$ 是圓內長方形， $AB = 8$ cm 及 $AD = 6$ cm。若圓形的圓周是 R cm，求 R 的值。(取 $\pi = 3$)

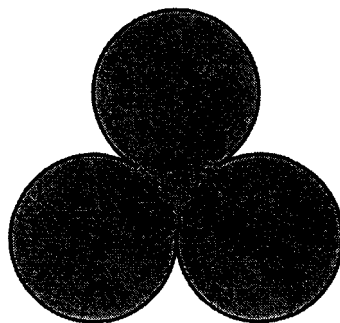
In the figure, $ABCD$ is an inscribed rectangle, $AB = 8$ cm and $AD = 6$ cm. If the circumference of the circle is R cm, find the value of R . (Take $\pi = 3$)



2008 FI3.3

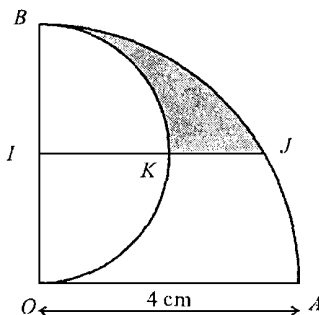
右圖由三個大小相同互切的圓所組成，三個圓的半徑均是3 cm。若陰影部分的周界是 C cm，求 C 的值。(取 $\pi = 3$)

The figure is formed by three identical circles touching one another, the radius of each circle is 3 cm. If the perimeter of the shaded region is C cm, find the value of C . (Take $\pi = 3$)

**2009 FG3.4**

如圖，扇形 OAB 的半徑為 4 cm 及 $\angle AOB$ 為直角。設以 OB 為直徑的半圓，其圓心為 I 且 $IJ \parallel OA$ 及 IJ 與該半圓相交於 K 。若陰影部分的面積為 T cm²，求 T 的值。(取 $\pi = 3$)

In Figure 2, the sector OAB has radius 4 cm and $\angle AOB$ is a right angle. Let the semi-circle with diameter OB be centred at I with $IJ \parallel OA$, and IJ intersects the semi-circle at K . If the area of the shaded region is T cm², find the value of T . ($\pi = 3$)

**2009 FG4.2**

如圖，設 AB 、 AC 及 BC 為相應半圓的直徑。若 $AC = BC = 1$ cm 及陰影部分的面積是 R cm²，求 R 的值。

In the figure, let AB , AC and BC be the diameters of the corresponding three semi-circles. If $AC = BC = 1$ cm and the area of the shaded region is R cm².

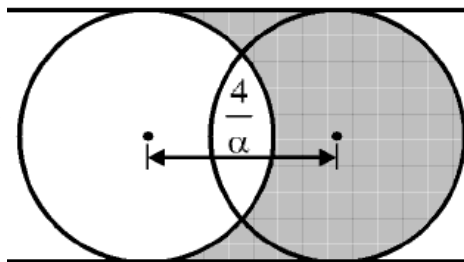
Find the value of R .

2014 FI2.2

右圖為兩個半徑為 4 的圓，其圓心相隔 3。求陰影部分的面積 β 。

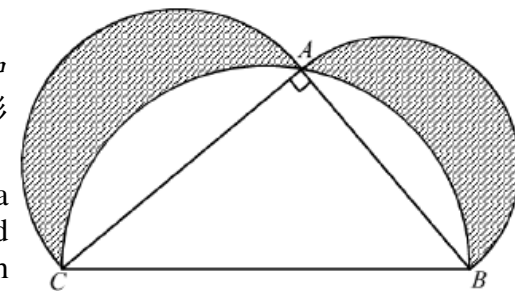
In the figure, two circles of radii 4 with their centres placed apart by 3.

Determine the area β , of the shaded region.

**2019FG4.1**

如圖所示， $\triangle ABC$ 是一直角三角形，其中 $AC = 8$ ， $BC = 10$ 。以 AB 、 AC 和 BC 為直徑分別畫了三個半圓。若陰影部分的總面積是 α ，求 α 的值。

As shown in the figure, $\triangle ABC$ is a right-angled triangle with $AC = 8$ and $BC = 10$. Semi-circles are drawn with AB , AC and BC as diameters. If the total shaded area is α , determine the value of α .



Answer

1983 FI4.4 57°	1986 FI1.1 6	1988 FI3.2 6	1990 HI18 1 : 2	1994 HI9 6
1998 HG8 1	1998 FG1.1 4	1998 FG4.2 90	1999 HI1 1	1999 FI2.3 1
2000 FG4.2 3	2001 HI10 36	2004 HI6 12.5	2005 HI8 1	2006 FI1.2 $\frac{1}{2}$
2006 FI3.2 30	2008 FI3.3 45	2009 FG3.4 $5 - 2\sqrt{3}$	2009 FG4.2 $\frac{1}{2}$	2014 FI2.2 24
2019 FG4.1 24				