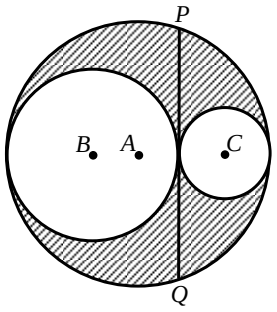
1990 HG10

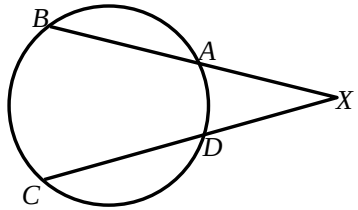
以 A、B 及 C 為圓心的三個圓兩兩相切如圖四。若 A、B 及 C 共綫，且 PQ 是兩個較小圓的公切綫，其中 $PQ = 4$，
試以 π 表陰影面積。



Three circles, with centres A, B and C respectively, touch one another as shown in figure 4. If A, B and C are collinear and PQ is a common tangent to the two smaller circles, where $PQ = 4$,
find the area of the shaded part in terms of π.

1991 HI18

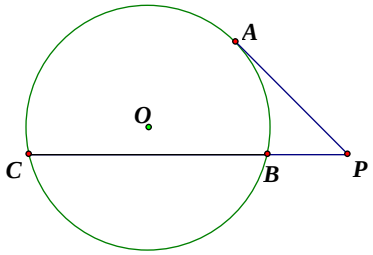
在圖中，$XA = 10$ cm、$AB = 2$cm、$XD = 8$ cm 及 $DC = x$ cm，求 x 的值。



In the figure, $XA = 10$ cm, $AB = 2$ cm, $XD = 8$ cm and $DC = x$ cm. Find the value of x.

2000 FG1.4

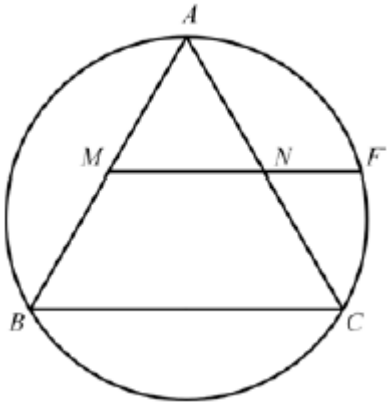
在圖中，PA 切圓於 A，O 為圓心。
如果 $PA = 6$，$BC = 9$，$PB = d$，求 d 的值。



In the figure, PA touches the circle with centre O at A. If $PA = 6$, $BC = 9$, $PB = d$,
find the value of d.

2003 FG4.4

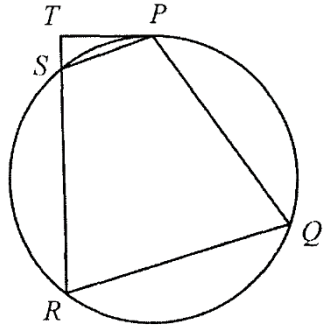
如圖，ΔABC 是等邊三角形，M 及 N 分別是 AB 及 AC 的中點，F 是直綫 MN 與圓 ABC 的交點。若 $d = \dfrac{MF}{MN}$，求 d 的值。



In the figure, ΔABC is an equilateral triangle, points M and N are the midpoints of sides AB and AC respectively, and F is the intersection of the line MN with the circle ABC.
If $d = \dfrac{MF}{MN}$, find the value of d.

2008 FG3.1

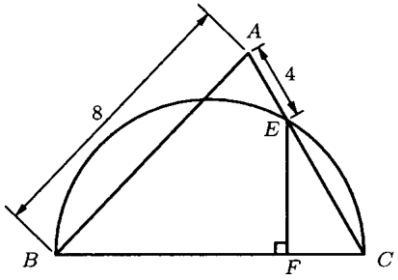
如圖，$PQRS$是一個圓內接四邊形，其中S在直綫RT上且TP為該圓的切綫。
若RS = 8 cm，RT = 11 cm 及$TP = k$ cm，求k 的值。



In the figure, $PQRS$ is a cyclic quadrilateral, where S is on the straight line RT and TP is tangent to the circle. If $RS = 8$ cm, $RT = 11$ cm and $TP = k$ cm, find the value of k.

2010 FG4.4

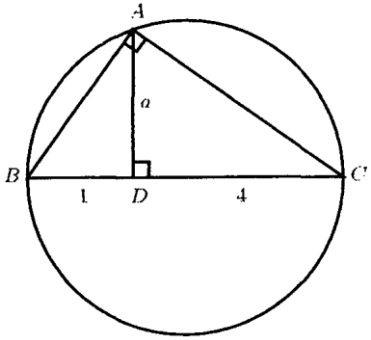
在圖中，BEC 是一半圓形及 F 是直徑 BC 上的一點。已知 $BF : FC = 3 : 1$，$AB = 8$ 及 $AE = 4$。求 EC 的長度。



In the figure, BEC is a semicircle and F is a point on the diameter BC. Given that $BF : FC = 3 : 1$, $AB = 8$ and $AE = 4$. Find the length of EC.

2011 FG1.1

在圖中，BC 為圓的直徑，A 為圓上的一點，AB、AC 及 AD 為綫段，而且 AD 垂直 BC。
若 $BD = 1$，$DC = 4$ 及 $AD = a$，求 a 的值。



In the figure, BC is the diameter of the circle. A is a point on the circle, AB and AC are line segments and AD is a line segment perpendicular to BC.
If $BD = 1$, $DC = 4$ and $AD = a$, find the value of a.

2015 HI10

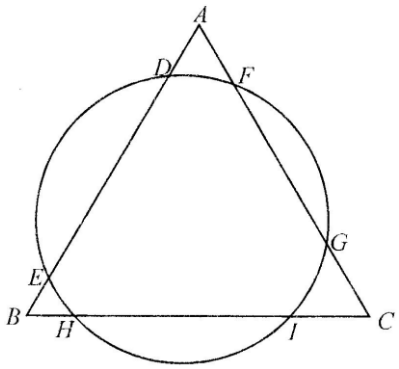
B、H 及 I 為圓上的點。C 是該圓外的一點。BC 是該圓在點 B 的切綫。HC 和 IC 分別通過該圓於點 D 及 G。已知 HDC 是$\angle BCI$ 的角平分綫、$BC = 12$、$DC = 6$ 及 $GC = 9$，求 $\dfrac{\Delta BDH\text{的面積}}{DHIG\text{的面積}}$ 的值。

B, H and I are points on the circle. C is a point outside the circle. BC is tangent to the circle at B. HC and IC cut the circle at D and G respectively. It is given that HDC is the angle bisector of $\angle BCI$, $BC = 12$, $DC = 6$ and $GC = 9$.
Find the value of $\dfrac{\text{area of } \Delta BDH}{\text{area of } DHIG}$.

2015 HG9

已知圖中的 ABC 為等邊三角形，$AF = 2$、$FG = 10$、$GC = 1$ 及 $DE = 5$。求 HI 的值。

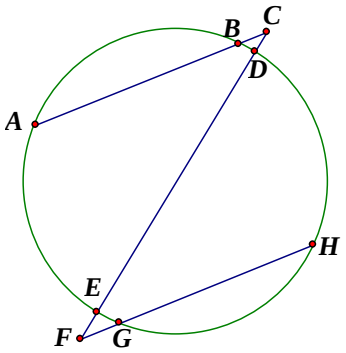
Given that, in the figure, ABC is an equilateral triangle with $AF = 2$, $FG = 10$, $GC = 1$ and $DE = 5$. Find the value of HI .



2016 HI12

如圖所示，ABC，$CDEF$ 及 FGH 皆為直線，且 ABC // FGH。$AB = 42$，$GH = 40$，$EF = 6$ 及 $FG = 8$。已知 ABC 與 FGH 之間的距離為 41，求 BC 的值。

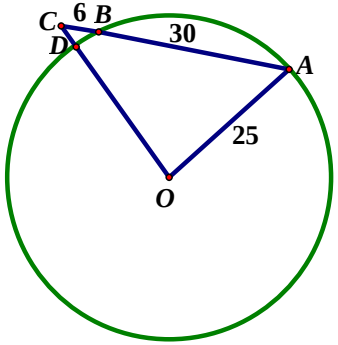
As shown in Figure 2, ABC, $CDEF$ and FGH are straight lines, ABC // FGH, $AB = 42$, $GH = 40$, $EF = 6$ and $FG = 8$. Given that the distance between ABC and FGH is 41, find the value of BC.



2017 HG4

在圖中，O 是圓心。弦 AB 及半徑 OD 的延綫相交於 C。已知 $OA = 25$、$AB = 30$ 及 $BC = 6$。求 CD 的長。

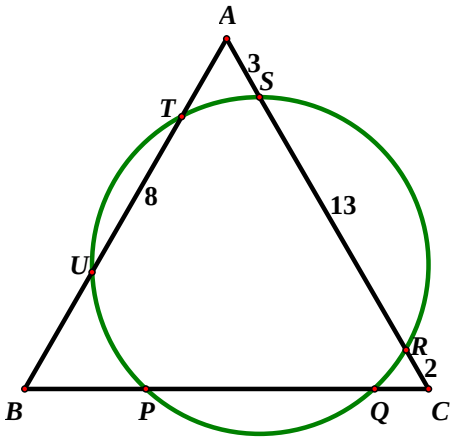
In the figure, O is the centre of the circle. Chord AB and radius OD are produced to meet at C. Given that $OA = 25$, $AB = 30$ and $BC = 6$, find the length of CD .



2017 HG9

在圖中，ABC 是一個等邊三角形且與一圓相交於六點：P、Q、R、S、T 及 U。若 $AS = 3$，$SR = 13$，$RC = 2$ 及 $UT = 8$，求 $BP - QC$ 的值。

In the figure, ABC is an equilateral triangle intersecting the circle at six points P, Q, R, S, T and U. If $AS = 3$, $SR = 13$, $RC = 2$ and $UT = 8$, find the value of $BP - QC$.

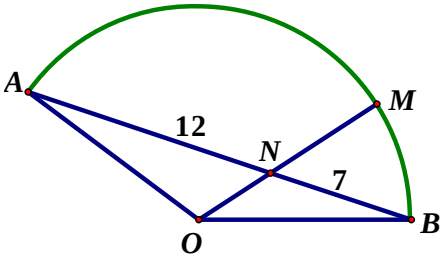


2018 HG3

如圖所示，OAB 是一個以 O 為圓心的扇形。N 為半徑 OM 與 AB 的交點。已知 $AN = 12$ ， $BN = 7$ 及 $3ON = 2MN$ 。求 OM 的長度。

As shown in the figure, OAB is a sector with centre O . N is the intersecting point of radius OM and AB . Given that $AN = 12$, $BN = 7$ and $3ON = 2MN$.

Find the length of OM .

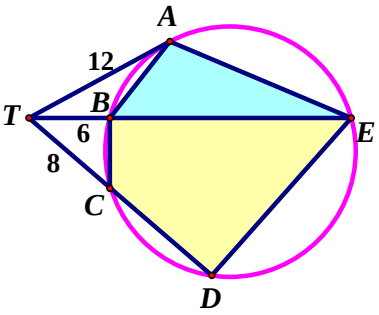


2018 FG7

如圖所示，A、B、C、D 及 E 為圓上的點。T 是該圓外的一點。TA 是該圓在點 A 的切綫，TBE 及 TCD 為直綫。已知 TBE 是 $\angle ATD$ 的角平分綫、$TA = 12$、$TB = 6$ 及 $TC = 8$。求 ΔABE 與四邊形 $BCDE$ 的面積比。

As shown in the figure, A, B, C, D and E are points on the circle. T is a point outside the circle such that TA is a tangent to the circle at A and TBE and TCD are straight lines. It is given that TBE is the angle bisector of $\angle ATD$, $TA = 12$, $TB = 6$ and $TC = 8$.

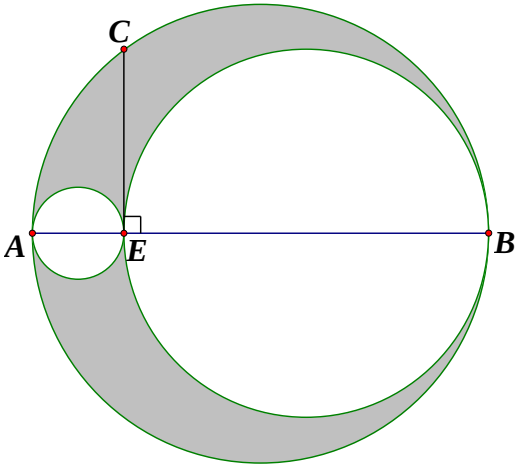
Find the ratio of the area of ΔABE to the area of quadrilateral $BCDE$.



2018 FG1.2

已知兩圓的直徑為 AE 及 BE，內接於直徑為 AB 的圓中。若 $CE \perp AB$，$AB = 10$，$CE = 4$ 及陰影部份總面積為 $w\pi$，求 w 的值。

Given that the two circles, one with diameter AE and the other with diameter BE, are inscribed by a larger circle with diameter AB. If $CE \perp AB$ with $AB = 10$ and $CE = 4$, and the total area of the shaded regions is $w\pi$, determine the value of w.



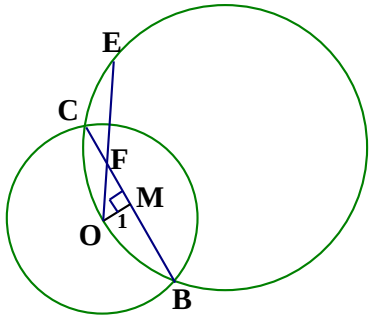
2019 FG4.3

如圖所示，兩圓相交於 B、C 兩點。M 是 BC 的中點。O 在大圓上，使得 $OM \perp BC$。$OM = 1$、$OC = 3$ 及 $OE = 5$。

若 $\gamma = OF$，求 γ 的值。

Two circles intersect at B, C as shown in the figure. M is the mid-point of BC. O is a point on the larger circle, so that $OM \perp BC$. $OM = 1$, $OC = 3$ and $OE = 5$.

If $\gamma = OF$, determine the value of γ.



Answers

1990 HG10 2π	1991 HI18 7	2000 FG1.4 3	2003 FG4.4 $\frac{1+\sqrt{5}}{2}$	2008 FG3.1 $\sqrt{33}$
2010 FG4.4 4	2011 FG1.1 2	2015 HI10 $\frac{36}{55}$	2015 HG9 $2\sqrt{14}$	2016 HI12 $\frac{17}{3}$
2017 HG4 4	2017 HG9 3	2018 HG3 10	2018 FG7 $\frac{9}{16}$	2018 FG1.2 8
2019 FG4.3 1.8				