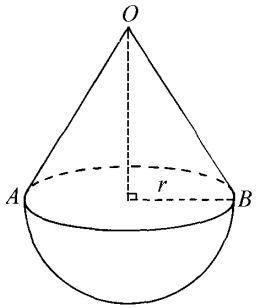
1982 FG7.1

右圖顯示一圓錐體及一半球體。$OB = 12$ cm，$r = 10$ cm，以 π 表示該立體的表面面積。

The figure shows a cone and a hemisphere.
$OB = 12$ cm, $r = 10$ cm.
Express the surface area of the solid in terms of π .



1982 FG7.2

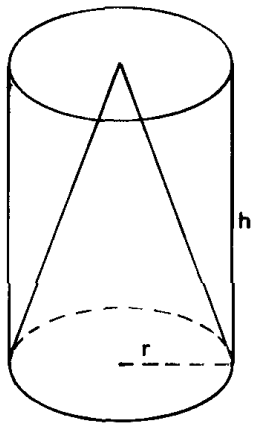
以 π 表示上圖立體的體積。

What is the volume of the hemisphere shown in the above figure ?
Give your answer in terms of π .

1982 FG7.3

右圖顯示一圓錐體放置在一個半徑相等(r)、高度相同(h)的圓柱體內，以 r 及 h 表示兩者之間的空間的體積。

In the figure, a right circular cone stands inside a right cylinder of same base radius r and height h. Express the volume of the space between them in terms of r and h .



1982 FG7.4

求圓柱體與圓錐體體積之比。

Find the ratio of the volume of the cylinder to that of the cone .

1984 FI3.2

若 b cm^2 為一邊長 1 cm 的立方體之總表面積，求 b 的值。

If b cm^2 is the total surface area of a cube of side 1 cm, find the value of b .

1984 FG9.2

一長方體之長、闊、高依次為 2、3 及 4。若其總面積為 A，求 A 的值。

The length, width and height of a rectangular block are 2, 3 and 4 respectively. Its total surface area is A, find the value of A .

1985 FSI.2

若一邊長 3 cm 之正方體之總表面積為 b cm^2，求 b 的值。

If b cm^2 is the total surface area of a cube of side 3 cm, find the value of b .

1986 FI2.2

若一圓柱體之高增加一倍，且新半徑為原來之 4 倍，則新體積為原來之 k 倍，求 k 的值。

If the height of a cylinder is doubled and the new radius is 4 times the original, then the new volume is k times the original. Find the value of k .

1986 FI5.4

一角錐體之底為三角形，其邊長分別為 3 cm，4 cm 及 5 cm。若該角錐體之高及體積依次為 q cm 及 12 cm^3，求 q 的值。

The base of a pyramid is a triangle with sides 3 cm, 4 cm and 5 cm. If the height and volume of the pyramid are q cm and 12 cm^3 respectively, find the value of q .

1987 FI2.1

某球體之半徑為 r，體積為 36π，求 r 的值。

The volume of a sphere with radius r is 36π, find the value of r .

1989 FG9.2

一長方體闊 y cm，長 6 cm，高 5 cm。它的表面積是 126 cm^2，求 y 的值。

A cuboid is y cm wide, 6 cm long and 5 cm high. Its surface area is 126 cm^2. Find the value of y .

1991 FI3.2

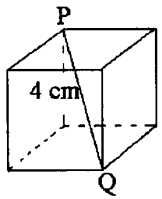
一個邊長 7 cm 之正方體在全部面上都塗上紅色後，再被分割為邊長 1 cm 之正方體。若所有面都未有被塗上顏色之正方體數目為 b，求 b 的值。

A cube with edge 7 cm long is painted red on all faces. It is then cut into cubes with edge 1 cm long. If the number of cubes with all the faces not painted is b, find the value of b .

1992 HI14

在圖中，PQ 為一正方體的對角綫。若 $PQ = 4$ cm，且這正方體的總表面面積為 x cm^2，求 x 的值。

In the figure, PQ is a diagonal of the cube. If $PQ = 4$ cm and the total surface area of the cube is x cm^2, find the value of x .



1992 FG8.4

某三角錐體之底為一邊長 6 cm 之等邊三角形。

若該三角錐體之高為 $\sqrt{27}$ cm，且其體積為 d cm^3，求 d 的值。

The base of a triangular pyramid is an equilateral triangle of side 6 cm .

If the height of the pyramid is $\sqrt{27}$ cm, and its volume is d cm^3, find the value of d .

1993 HI5

一長方形盒子的三塊不同面的面積分別為 120、72 和 60。求該盒子的體積。

The areas of three different faces of a rectangular box are 120, 72 and 60 respectively. Find its volume.

1994 HG2

一實心正方體邊長 9 cm。現將這正方體表面全部塗上顏色，然後分割為 27 個邊長為 3 cm 的全等小正方體。求這些小正方體沒有塗上顏色的面的總面積。

A solid cube with edges of length 9 cm is painted completely on the outside. It is then cut into 27 congruent little cubes with edges 3 cm .

Find the total area of the unpainted faces of these cubes .

1994 FI5.2

若 B 條內直徑為 1 厘米的圓形水管的輸水量與一內直徑為 6 厘米的圓形水管相等，求 B 的值。

If B circular pipes each with an internal diameter of 1 cm carry the same amount of water as a pipe with an internal diameter 6 cm , find the value of B .

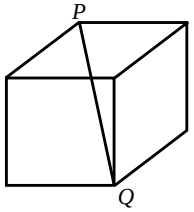
1995 FI5.2

如圖示，PQ 是正方體的一條對角綫，且 $PQ = 1$。

若 b 為此正方體的總表面積，求 b 的值。

In the figure, PQ is a diagonal of the cube and $PQ = 1$.

Find the value of b, if b is the total surface area of the cube .

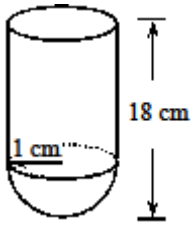


1996 FI1.3

圖中為一圓柱體和半球體組成的無蓋空心物體。半球體和圓柱體的半徑均為 1 cm。若這物體的長度為 1 cm，且表面面積為 $c\pi$ cm^2，求 c 的值。

The figure shows an open cylindrical tube (radius = 1 cm) with a hemispherical bottom of radius 1 cm. The height of the tube is 18 cm and the external surface area of the tube is $c\pi$ cm^2.

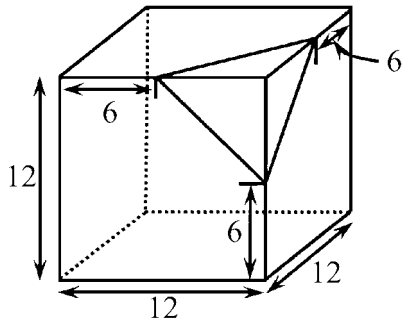
Find the value of c .



1997 FI2.2

如圖所示，從邊長為 12 cm 的正立方體的一角割出一個三角錐體。若三角錐體的體積為 b cm^3，求 b 的值。

A triangular pyramid is cut from a corner of a cube with side length 12 cm as the figure shown. If the volume of the pyramid is b cm^3 , find the value of b .



1997 FI5.1

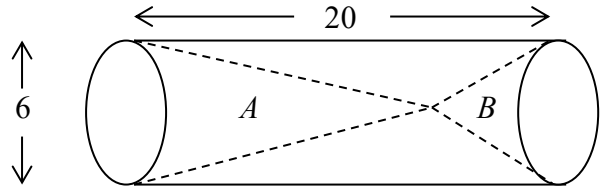
一直徑為 a 的半球體的體積為 18π cm^3，求 a 的值。

The volume of a hemisphere with diameter a cm is 18π cm^3, find the value of a.

2000 FG3.2

在圖中，圓管的長為 20 及直徑為 6，內有兩個圓錐體 A 和 B。A 及 B 的體積比例為 3 : 1。如果 b 是 B 的高度，求 b 的值。

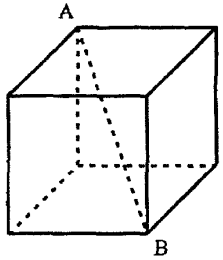
In the figure, A and B are two cones inside a cylindrical tube with length of 20 and diameter of 6. If the volumes of A and B are in the ratio 3:1 and b is the height of the cone B, find the value of b .



2003 HI7

在圖中，正方體的對角綫 AB 的長度是 $\sqrt{12}$ cm。若該正方體的體積是 M cm^3，求 M 的值。

In the figure, AB is a diagonal of the cube and $AB = \sqrt{12}$ cm. If the volume of the cube is M cm^3, find the value of M .



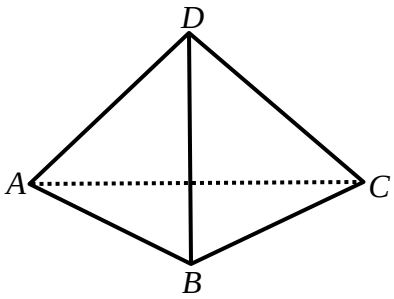
2005 HG6

若一正八面體的邊長為 1 cm，其體積為 f cm^3，求 f 的值。

Suppose the side of a regular octahedron is equal to 1 cm and the volume is equal to f cm^3, find the value of f .

2008 HG3

如圖，正四面體 $ABCD$ 的邊長為 2 cm。若該正四面體的體積是 $\sqrt{R}$ cm^3，求 R 的值。



In the figure, $ABCD$ is a regular tetrahedron with side length of 2 cm. If the volume of the tetrahedron is $\sqrt{R}$ cm^3, find the value of R.

2010 FI1.1

把三個體積分別為 1、8、27 的正立方體，以面同貼面的方法黏合起來。若 a 為所得的多面體的最小總表面積，求 a 的值。

Three cubes with volumes 1, 8, 27 are glued together at their faces. If a is the smallest possible surface area of the resulting polyhedron, find the value of a.

2013 FI2.2

一正方體的表面積是 b cm^2。若它每一條邊的長度增加 3 cm，它的體積隨之增加 $(2b-3)$ cm^3，求 b 的值。

The surface area of a cube is b cm^2. If the length of each side is increased by 3 cm, its volume is increased by $(2b-3)$ cm^3, find the value of b.

2023 FG4.3

如果正四面體的邊長是 1，求該正四面體的體積。

If the length of one side of a regular tetrahedron is 1,
find the volume of such tetrahedron.

Answers

1982 FG7.1 320π cm^2	1982 FG7.2 $\frac{2000\pi}{3}$ cm^3	1982 FG7.3 $\frac{2}{3}\pi r^2 h$	1982 FG7.4 3 : 1	1984 FI3.2 6
1984 FG9.2 52	1985 FSI.2 54	1986 FI2.2 32	1986 FI5.4 6	1987 FI2.1 3
1989 FG9.2 3	1991 FI3.2 125	1992 HI14 32	1992 FG8.4 27	1993 HI5 720
1994 HG2 972 cm^2	1994 FI5.2 36	1995 FI5.2 2	1996 FI1.3 36	1997 FI2.2 36
1997 FI5.1 6	2000 FG3.2 5	2003 HI7 8	2005 HG6 $\frac{\sqrt{2}}{3}$	2008 HG3 $\frac{8}{9}$
2010 FI1.1 72	2013 FI2.2 600	2023 FG4.3 $\frac{\sqrt{2}}{12}$		