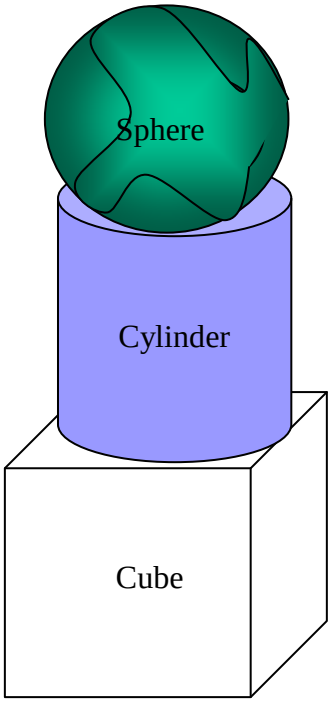
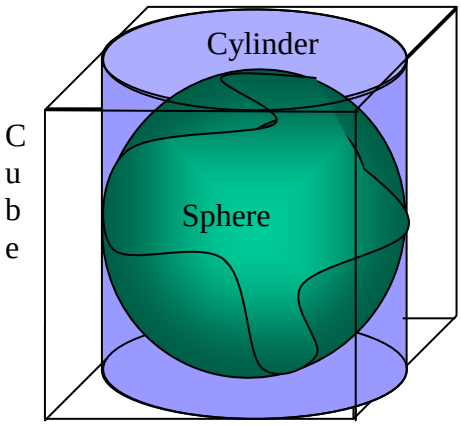
RELATIONSHIPS
between
CUBE, CYLINDER and SPHERE
By the use of *M* & *R*

M = 0.78125
R = 0.64, 2*R* = 1.28 & 3*R* = 1.92
*M**2*R**1.5= 3/2
*M**2*R* *(2/3) = 0.66667

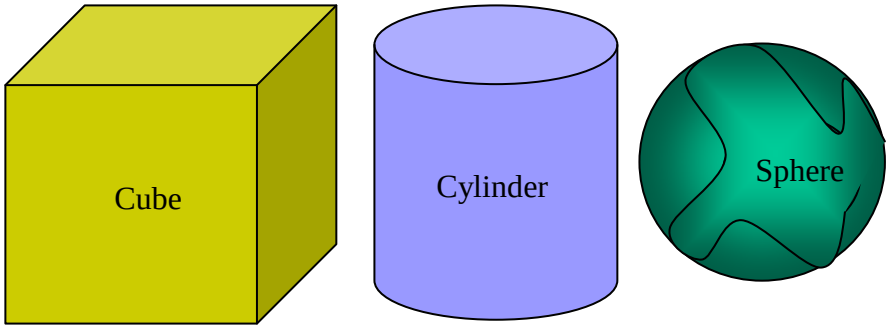




www.correctpi.com
ISBN 978-91-631-8992-0

Provided that the diameter, height and side of a sphere, cylinder and cube respectively are equal, the following relationships are obtained. The area of the cylinder is equal to $^{2}/_{3}$ of the mantle area of the cube “mantle area = four sides of a cube”. The surface area of the sphere is equal to $^{2}/_{3}$ of the surface area of the cylinder.
The volume of the cube is (2*R*) 1.28 times larger than the volume of the cylinder. The volume of the cube is (3*R*) 1.92 times the volume of the sphere.

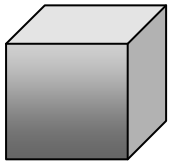
Note! The above principle is not valid if a value that is larger or smaller than *M* is used to calculate these characteristics.



ISBN 978-91-631-8992-0

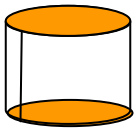
Relationship between a cube, cylinder and sphere:
A cylinder is placed in a cube with a side of 7u.l.
The diameter of the cylinder is 7u.l. and the height is 7u.l.
In the cylinder is a sphere with a diameter of 7u.l.
The relationships between the different bodies can be seen below.
The values of the cylinder and sphere can be calculated by using the cube as follows:

Total area of cube: $s^2 * 6 \rightarrow 7^2 * 6 = 294\ cm^2$
Mantle area of cube: $s^2 * 4 \rightarrow 7^2 * 4 = 196\ cm^2$
Volume of cube: $s^3 \rightarrow 7^3 = 343\ cm^3$

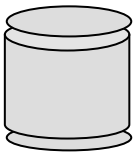


Mantle area of cylinder:

Mantle area of cylinder: $4d * h\ (\ln\sqrt{S^2 * 2} / \ln S)^2 / 2$
$4d * h\ (cy\sqrt{S^2 * 2} / cy\ S)^2 / 2$
$4 * 7 * 7 * M = 153.125\ cm^2$
$4d * h * M$

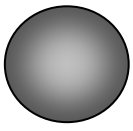


Total area of cylinder:
$(2(d^2 * (\ln\sqrt{S^2 * 2} / \ln S)^2 / 2) + (h * 4d * (\ln\sqrt{S^2 * 2} / \ln S)^2 / 2)$
$(2(d^2 * (cy\sqrt{S^2 * 2} / cy\ S)^2 / 2) + (h * 4d * (cy\sqrt{S^2 * 2} / cy\ S)^2 / 2)$
$((2 * (d^2 * M) + (4d * h * M)$
$((2 * (7^2 * M) + (4 * 7 * 7 * M) = 229.6875\ cm^2$

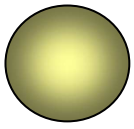


Volume of cylinder: $d * h * (\ln\sqrt{S^2 * 2} / \ln S)^2 / 2$
$d * h * (cy\sqrt{S^2 * 2} / cy\ S)^2 / 2$
Volume of cylinder: $7^2 * 7 * M = 267.96875\ cm^3$
$d^2 * h * M$

Area of sphere $\rightarrow$ $d^2 * 4 * M$
Area of sphere $\rightarrow$ $7^2 * 4 * M = 153.0125\ cm^2$



Volume of sphere $\rightarrow$ $d^3 * 2M / 3$
Volume of sphere $\rightarrow$ $7^3 * 2M / 3 = 178.6458333\ldots cm^3$



www.correctpi.com
ISBN 978-91-631-8992-0

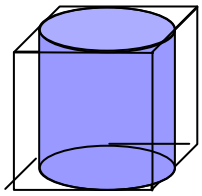
The relationship between the total area of the cube and the total area of the cylinder is $2R = 1.28$.

Total area of cube and mantle area of cylinder is $3R = 1.92$

Mantel area cube and mantle area cylinder is $2R = 1.28$

Volume of cube and volume of cylinder is $2R = 1.28$

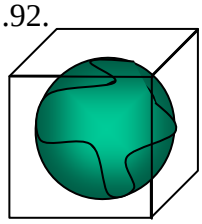
Volume of cylinder and volume of cube is $M = 0.78125$



The relationship between cube total area and sphere area is $3R = 1.92$.

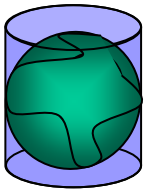
Mantle area of cube and sphere area is $2R = 1.28$

Volume of cube and volume of sphere is $1.92 = 3R$



The relationship between the mantle area of the cylinder and the area of the sphere is 1.

Total area of cylinder and area of sphere is $1.5 = 3/2$.



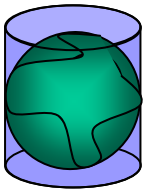
Area of sphere and total area of cylinder is 2/3.

Area of sphere * M* $2R$* $3/2$ = total area of cylinder

Total area of cylinder * M* $2R$* $2/3$ = area of sphere

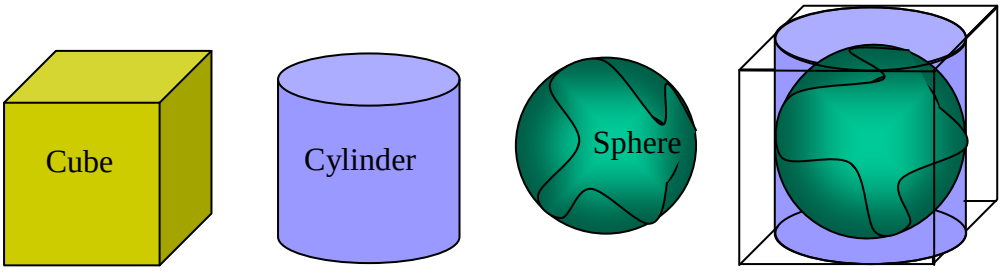
Cylinder volume and sphere volume is $1.5 = 3/2$.

Volume of cylinder * M* $2R$* $3/2$ = volume of sphere



Volume of sphere and volume of cylinder is 2/3

Volume of sphere * M* $2R$* $2/3$ = volume of cylinder



ISBN 978-91-631-8992-0