Solids: Regular & Non-Regular

Regular: Cube, cuboid

Non-Regular: Cone, Pyramid

In Cube/Cuboid

No. of faces = 6

No. of edges = 12

No. of corners/Vertices = 8

For any Solid

Edges + 2 = Faces+ Corners

LSA/CSA: Area without top & bottom.

TSA/SA: Sum of area of the all the visible surfaces

Or

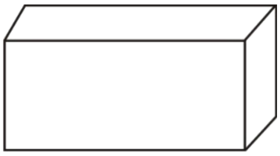
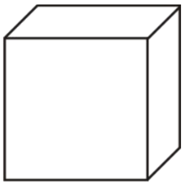
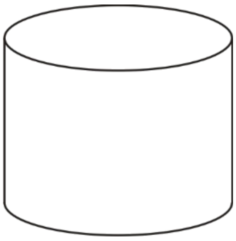
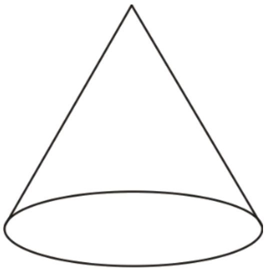
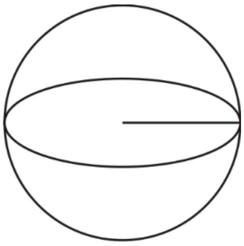
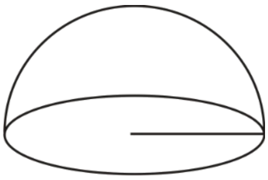
LSA + Area of top & bottom.

Volume: Capacity

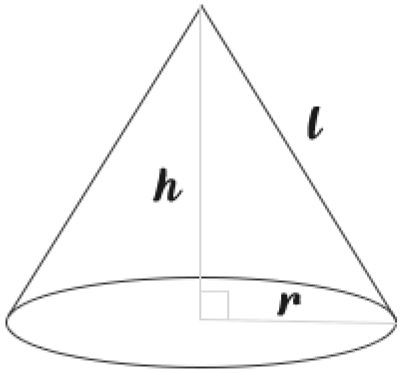
Diagonal:

Cube = $\sqrt{3}$ a

Cuboid = $\sqrt{l^2+b^2+h^2}$

S. No	Name	Figure	Lateral/Curved Surface Area	Total Surface Area	Volume
1.	Cuboid		$2 \times h \times (l \times b)$ h – height l – length b – breadth	$2(lb + bh + lh)$	$l \times b \times h$
2.	Cube		$4a^2$ a – edge	$6a^2$	a^3
3.	Right Circular Cylinder		$2\pi rh$ r – radius h – height	$2\pi r(r + h)$	$\pi r^2 h$
4.	Right Circular Cone		πrl h – height r – radius l – slant height $l^2 = r^2 + h^2$	$\pi r(r + l)$	$\frac{1}{3} \times \pi r^2 h$
5.	Sphere		$4\pi r^2$ r – radius	$4\pi r^2$ r – radius	$\frac{4}{3} \times \pi r^3$
6.	Hemi-sphere		$2\pi r^2$	$3\pi r^2$	$\frac{2}{3} \times \pi r^3$

Volume of any Pyramid = $\frac{1}{3}$×Base area×height



Problem: 2 cubes each of side 5 cm are joined together to form a cuboid. Find its surface area?

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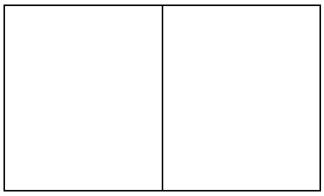
Each cube is having 6 faces and therefore, total 12 faces out of which only 10 are visible.



Therefore

SA = 10× Area of each face = 10 × 25

Problem:

A cube of side 7cm is painted blue and then cut into small identical cubes each of side 1 cm. How many small cubes have exactly 1 face painted?

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For n^3

1 face painted $= 6\times(n-2)^2$ (faces)

2 face painted $= 12\times(n-2)$ (edges)

3 face painted $= 8$ (corners)

0 face painted $= (n-2)^3$

Answer $= 6\times25 = 150$

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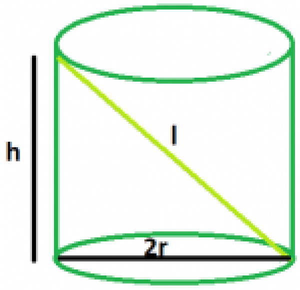

Height of cylinder = 10π

Circumference of base = $2\pi R = 10\pi$

R = 5cm

Longest rod = $\sqrt{(2R)^2 + h^2}$

$\sqrt{5^2 + (10\pi)^2} = \sqrt{25 + 100\pi}$

Problem:

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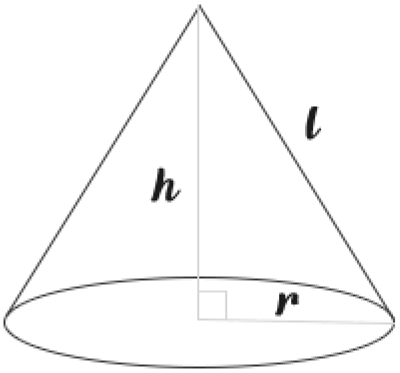

R = 8, l = 10

As we know, $h^2 + r^2 = l^2$

Triplet is (6,8,10)

Therefore, h = 6

$$v = \frac{1}{3} \times 8 \times 8 \times 6 = 128$$

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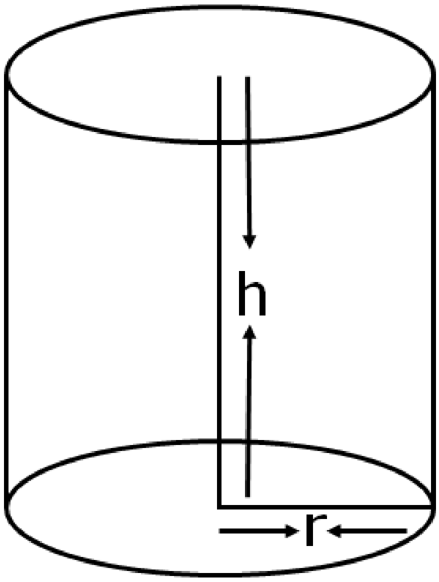

Increase in SA = Area of 2 rectangles

$= 2\,(2r \times h)$

$= 2 \times 2 \times 6 \times 14 = 336$