Practice Questions for Volume and Surface Area

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| Question | A right triangle with sides 3 cm, 4 cm and 5 cm is rotated the side of 3 cm to form a cone. The volume of the cone so formed is: |
| Option A |  |
| Option B |  |
| Option C |  |
| Option D |  |
| Answer | Option A |
| Explanation | http://www.indiabix.com/_files/images/aptitude/volume-and-surface-area/1.png  Clearly, we have *r* = 3 cm and *h* = 4 cm.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Volume = | 1 | *r*2*h* = | ( | 1 | x  x 32 x 4) | cm3 | = 12 cm3. | | 3 | 3 | |

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| Question | 66 cubic centimeters of silver is drawn into a wire 1 mm in diameter. The length of the wire in meters will be: |
| Option A | 84 |
| Option B | 90 |
| Option C | 168 |
| Option D | 336 |
| Answer | Option **A** |
| Explanation | Let the length of the wire be *h*.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Radius = | 1 | mm | = | 1 | cm. | Then, | | 2 | 20 |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 22 | x | 1 | x | 1 | x *h* = 66. | | 7 | 20 | 20 |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *h* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 66 x 20 x 20 x 7 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 8400 cm = 84 m. | | 22 | |

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| Question | The curved surface area of a cylindrical pillar is 264 m2 and its volume is 924 m3. Find the ratio of its diameter to its height. |
| Option A | 3:7 |
| Option B | 7:3 |
| Option C | 6:7 |
| Option D | 7:6 |
| Answer | Option **B** |
| Explanation | |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *r*2*h* | = | 924 | http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif     *r* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 924 | x 2 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 7 m. | | 2*rh* | 264 | 264 |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | And, 2*rh* = 264     http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif     *h* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 264 x | 7 | x | 1 | x | 1 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 6m. | | 22 | 2 | 7 |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Required ratio = | 2*r* | = | 14 | = 7 : 3. | | *h* | 6 | |

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| Question | A boat having a length 3 m and breadth 2 m is floating on a lake. The boat sinks by 1 cm when a man gets on it. The mass of the man is: |
| Option A | 12kg |
| Option B | 60kg |
| Option C | 72kg |
| Option D | 96kg |
| Answer | Option **B** |
| Explanation | |  |  | | --- | --- | | Volume of water displaced | = (3 x 2 x 0.01) m3 | |  | = 0.06 m3. |  |  |  | | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Mass of man | = Volume of water displaced x Density of water | |  | = (0.06 x 1000) kg | |  | = 60 kg. | |

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| Question | The cost of painting the whole surface area of a cube at the rate of 13 paise per Sq.cm is Rs. 343.98. Then the volume of the cube is |
| Option A |  |
| Option B |  |
| Option C |  |
| Option D |  |
| Answer | Option D |
| Explanation | |  | | --- | | = (34398 / 13) | | **‹=›**2646cm3 | | ‹=›6a2= 2646 | | ‹=›a2= 441 | | ‹=›a = 21. | |

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| Question | An iron cubes of side 10 cm is hammered into a rectangular sheet of thickness 0.5 cm. If the sides of the sheet are in the ratio 1 : 5 the sides are |
| Option A | 10cm, 50cm |
| Option B | 20cm, 100cm |
| Option C | 40cm, 200cm |
| Option D | [None of these](http://www.a2zinterviews.com/Aptitude/volume-and-surface-area/problems-on-volume-surface_1.php#t1) |
| Answer | Option B |
| Explanation | |  | | --- | | Let the sides of the sheet be x and 5x. | | Then,volume of the sheet= volume of the cube | | ‹=› x × 5x ×1/2 | | **‹=›** 10×10×10 | | **‹=›**5x2= 2000 | | **‹=›** x2= 400 | | **‹=› x = 20.** | |

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| Question | How many cubes of 10 cm edge can be put in a cubical box of 1 m edge? |
| Option A | 10 |
| Option B | 100 |
| Option C | 1000 |
| Option D | 10000 |
| Answer | Option C |
| Explanation | |  | | --- | | = (100×100×100 /10×10×10) | | **‹=› 1000.** | |

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| Question | What is the total surface area of a right circular cone of height 14 cm and base radius 7 cm? |
| Option A | 344.35 cm2 |
| Option B | 462 cm2 |
| Option C | 498.35 cm2 |
| Option D | None of these |
| Answer | Option **C** |
| Explanation | *h* = 14 cm, *r* = 7 cm.  So, *l* = (7)2 + (14)2 = 245 = 75 cm.   |  |  | | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Total surface area | = http://www.indiabix.com/_files/images/aptitude/1-sym-pi.gif*rl* + http://www.indiabix.com/_files/images/aptitude/1-sym-pi.gif*r*2 | |  | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 22 | x 7 x 75 + | 22 | x 7 x 7 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gifcm2 | | 7 | 7 | | |  | = [154(5 + 1)] cm2 | |  | = (154 x 3.236) cm2 | |  | = 498.35 cm2. | |

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| Question | Spheres A and B have their radil 40 cm and 10 cm respectively. The ratio of the surface area of A to the surface area of B is |
| Option A | 1:4 |
| Option B | 1:16 |
| Option C | 4:1 |
| Option D | 16:1 |
| Answer | Option D |
| Explanation | |  |  |  | | --- | --- | --- | | Let the radil of A and B be r and R respectively. | | | | Required ratio | = 4Πr2/ 4ΠR2 |  | | **‹=›** r2 / R2 |  | | **‹=›** (r/R)2 |  | | **‹=›**(40/10)2 |  | | **‹=› 16 : 1.** |  | |

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| Question | The curved surface area of a right circular cyliner of base radius r is obtained by multiplying its volume by |
| Option A | r² km |
| Option B | 2r² km |
| Option C | r/2 km |
| Option D | 2/r km |
| Answer | Option D |
| Explanation | Curved surface area = 2∏rh = (2∏r²h) 2/r = (Volume \* 2/r). |

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| Question | The radii of two cones are in the ratio 2:1, their volumes are equal. Find the ratio of their heights. |
| Option A | 1/4 |
| Option B | 1/8 |
| Option C | 2/4 |
| Option D | 4/1 |
| Answer | Option A |
| Explanation | Let their radii be 2x, x and their heights be h and H respectively. Then, 1/3 \* \* (2x)² \* h = 1/3 \* \* x² \* H or h/H = 1/4. |

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| Question | The slant height of a right circular cone is 10 m and its height is 8 m. Find the area of its curved surface. |
| Option A | 30m² |
| Option B | 40m² |
| Option C | 50m² |
| Option D | 60m² |
| Answer | Option D |
| Explanation | l = 10 m, h = 8. So, r = √l² - h² = √(10)² - 8² = 6 m. ∴ Curved surface area = rl = ( \* 6 \* 10) m² = 60∴ m² |

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| Question | A cone of height 7 cm and base radius 3 cm is carved from a rectangular block of wood 10 cm \* 5 cm \* 2 cm. The percentage of wood wasted is : |
| Option A | 26% |
| Option B | 28% |
| Option C | 32% |
| Option D | 34% |
| Answer | Option D |
| Explanation | Volume of the block = (10 \* 5 \* 2)cm³ = 100 cm³ Volume of the cone carved out = [1/3 \* 22/7 \* 3 \* 3 \* 7] cm³  = 66 cm³ ∴ Wood wasted = (100 - 66)% = 34%. |

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| Question | The perimeter of one face a of cube is 20 cm. Its volume must be |
| Option A |  |
| Option B |  |
| Option C |  |
| Option D |  |
| Answer | Option A |
| Explanation | |  |  | | --- | --- | | Edge of the cube | = (20 / 4) cm | | **‹=›**5 cm. | | Volume | = (5×5×5)cm3 | | **‹=›125 cm3.** | |

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| Question | 66 cubic centimetres of silver is drawn into a wire 1 mm in diameter. The length of the wire in metres will be : |
| Option A | 84m |
| Option B | 88m |
| Option C | 120m |
| Option D | 137m |
| Answer | Option A |
| Explanation | Let the length of the wire b h. Radius = 1/2 mm = 1/20 cm. Then, 22/7 \* 1/20 \* 1/20 \* h = 66 ⇔ = [66 \* 20 \* 20 \* 7 / 22] = 8400cm = 84 m. |