**Surface Area Worksheet Answers**

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| If a rectangular box is opened:  1,2 = base or ends  3,5 = sides  4 = bottom or floor  6 = top or ceiling |

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| **Shape** | **Lateral Surface Area (LSA)** | **Total Surface Area (TSA)** |
| Cuboid | 2height(length + base) | 2(lb + bh + lh)=2Bh + (perimeter)(height) |
| Cube | 4a2 | 6a2 |
| Prism | Base perimeter × Height | LSA + 2 (area of one end) |
| Cylinder | 2πrh | 2πr(r + h) |

1. **Define the following terms:** 
   1. lateral surface area - surface area for all sides of a 3D object excluding the base and top sides; part of prism that are not the bases; units are squared (x2)
   2. total surface area - measure of the *total* area that the surface of a 3D object occupies; units are squared (x2)
   3. two-dimensional (2D) - flat object having the dimensions of width (x) and height (y) only
   4. three-dimensional (3D) - solid object with dimensions of width (x), height (y) and depth (z)

1. **Draw the geometric shapes for the following objects:** 
   1. cuboid - 3D box-shaped object; has six rectangular faces at right angles to each other; sometimes called a rectangular prism because it has the same cross-section along a length
   2. cube - 3D solid; symmetrical three-dimensional shape with six equal squares
   3. prism - 3D solid; same shape at beginning and end (ex. rectangle or triangle) with each end referred to as bases; bases are separated by a height
   4. cylinder - 3D solid; has two equivalent round shapes at either end and two parallel lines connecting the round ends; has 1 curved side but no corners

**Show the equation and solving of the following problems:**

1. The dimensions of a right rectangular prism are 4 inches by 5 inches by 6 inches. What is the surface area, in square inches, of the prism?

S.A. = Base Perimeter x Height + 2 (Area of Base)

S.A. = (4+4+5+5) x (6) + 2 (4x5)

Answer = 148 in2 (955cm2)

1. A cube has a surface area of 54 square meters. What is the volume, in cubic meters, of the cube?

6A = 54 square meters (m2) V= l x w x h

A = 54 m2 /6 V= 3m x 3m x 3m =27m3

A = 9 m2

A = l x w where for a cube, l = w = h

A = l2 =9 m2

l = square root of 9

l = w = h = 3 meter per side

1. A cubic prism has the dimensions of 4 inches by 4 inches and a height of 10in. What is the surface area?

S.A. = 2B + (perimeter)(height) = 2(4 x 4) + (4 x 4) (10) = 2(16) + (16)(10) = 32in2 +160in2 = 192in2 (1239cm2)

1. Find the surface area of a right triangular prism with a sides of 3in. x 4in. x 5in. and a height of 12in.

S.A. = 2B + (perimeter)(height) = 2(1/2bh) + ph = 2(1/2 x 3 x 4) + (3+4+5)(12) = 12 + (12)(12) = 156in2 (1006cm2)

1. What is the surface area of a cylinder with a radius of 3in. and a height of 6in.?

S.A. = 2πr(r + h) = 2 (3.14)(3) x (3+6)

S.A. ≈ (169 in2)