# Surface Area Of A Sphere

SA:V is an important concept in science and engineering. It is used to explain the relation between structure and function in processes occurring through the surface and the volume. Good examples for such processes are processes governed by the heat equation, that is, diffusion and heat transfer by thermal conduction. SA:V is used to explain the diffusion of small molecules, like oxygen and carbon dioxide between air, blood and cells, water loss by animals, bacterial morphogenesis, organisms' thermoregulation, design of artificial bone tissue, artificial lungs and many more biological and biotechnological structures. For more examples see Glazier. 6be14c7a17 While the areas of many simple surfaces have been known since antiquity, a rigorous mathematical definition of area requires a great deal of care. 6be14c7a17

Integrating sphere integrating sphere (also known as an Ulbricht sphere) is an optical component consisting of a hollow spherical cavity with its interior covered with a diffuse 6be14c7a17

== Methods of calculating ASA == 6be14c7a17 == Definition == 6be14c7a17

On the Sphere and Cylinder notably details how to find the surface area of a sphere and the volume of the contained ball and the analogous values for a cylinder, and was the first to 6be14c7a17

This should provide a... 6be14c7a17

Area The area of a plane region or plane area refers to the area of a shape or planar lamina, while surface. Area is the measure of a region's size on a surface 6be14c7a17

Surface area e. This definition of surface area is based The surface area (symbol A) of a solid object is a measure of the total area that the surface of the object occupies. This definition of surface area is based on methods of infinitesimal calculus and involves partial derivatives and double integration. Smooth surfaces, such as a sphere, are assigned surface area using their representation as parametric surfaces. , objects with flat polygonal faces), for which the surface area is the sum of the areas of its faces. Smooth surfaces, such as a sphere, are assigned surface area using their representation as parametric surfaces. The mathematical definition of surface area in the presence of curved surfaces is considerably more involved than the definition of arc length of one-dimensional curves, or of the surface area for polyhedra (i 6be14c7a17

Sphere That given point is the center of the sphere, and the distance r is the sphere's radius. In solid geometry, a sphere is the set of points that are all at the same distance r from a given point in three-dimensional space. In solid geometry, a sphere is the set of points that A sphere (from Ancient Greek σφαῖρα (sphaîra) 'ball') is a surface analogous to the circle, a curve. The earliest known mentions of spheres appear in the work of the ancient Greek mathematicians. A sphere (from Ancient Greek σφαῖρα (sphaîra) 'ball') is a surface analogous to the circle, a curve 6be14c7a17

Accessible surface area ASA was first described by Lee & Richards in 1971 and is sometimes called the Lee-Richards molecular surface. This algorithm uses a sphere (of solvent) of a particular radius to 'probe' the surface of the molecule. Measurement of ASA The accessible surface area (ASA) or solvent-accessible surface area (SASA) is the surface area of a biomolecule that is accessible to a solvent. ASA is typically calculated using the 'rolling ball' algorithm developed by Shrake & Rupley in 1973. Measurement of ASA is usually described in units of square angstroms (a standard unit of measurement in molecular biology). accessible surface area (ASA) or solvent-accessible surface area (SASA) is the surface area of a biomolecule that is accessible to a solvent 6be14c7a17

Surface-area-to-volume ratio The surface-area-to-volume ratio or surface-to-volume ratio (denoted as SA:V, SA/V, or sa/vol) is the ratio between surface area and volume of an object The surface-area-to-volume ratio or surface-to-volume ratio (denoted as SA:V, SA/V, or sa/vol) is the ratio between surface area and volume of an object or collection of objects 6be14c7a17

The sphere is a fundamental surface in many fields of mathematics. Spheres and nearly-spherical shapes also appear in nature and industry. Bubbles such as soap bubbles take a spherical shape in equilibrium. The Earth is often approximated as a sphere in geography, and the celestial sphere is an important concept in astronomy. Manufactured items including pressure vessels and most curved mirrors and lenses are based on spheres. Spheres roll smoothly in any direction, so most balls used in sports and toys are spherical, as are ball bearings. 6be14c7a17 == Basic terminology == 6be14c7a17

Unit sphere trigonometry surface area on the unit sphere is called steradians and used for measuring solid angle. In more general contexts, a unit sphere is the set of points 6be14c7a17

A general definition of surface area was sought by Henri Lebesgue and Hermann Minkowski at the turn of the twentieth century. Their work led to the development of geometric measure theory, which studies various notions of surface area for irregular objects of any dimension. An important example is the Minkowski content of a surface. 6be14c7a17

N-sphere these recurrences can be used to compute the surface area of any sphere or volume of any ball. We may define a coordinate system in an  n {\displaystyle 6be14c7a17

Surface (topology) Some surfaces arise as the boundaries of three-dimensional solid figures; for example, the sphere is the. topology, a surface is a two-dimensional manifold 6be14c7a17

The relation between SA:V and diffusion or heat conduction rate is explained from flux and surface perspective, focusing on the surface of a body as the place where diffusion, or heat conduction, takes place, i.e., the larger the SA:V there is more surface area per unit volume through which material can diffuse, therefore, the diffusion or heat conduction, will be... 6be14c7a17