1. If a sphere is inscribed in a cylinder then the number of their common points is…

A) 2 B) 4 C) 6 D) 8 E) infinite

2. What is the total surface area of the rectangular prism with the dimensions 3,4 and 5 cm? (in cm^3)

A) 82 B) 94 C) 102 D) 112 E) 118

3. If the diagonal of a cube is *a* cm, what is the volume of the cube? (cm^3)

A) $\frac{a^3}{3}$ B) a^3 C) $\frac{a^3}{3\sqrt{3}}$ D) $\frac{a^3}{4}$ E) $\frac{2a^3}{3\sqrt{3}}$

4. What is the surface area of the sphere if its volume is $\frac{32\pi}{3}$ cm^3 ? (in cm^2)

A) 4π B) 8π C) 12π D) 16π E) 32π

5. Volume of the cube A is three times the volume of the cube B. If the area of the cube B is 18 cm^2, then find the volume of the cube A.

A) $\sqrt{3}$ B) 3 C) $3\sqrt{3}$ D) 9 E) $9\sqrt{3}$

6. The volumes of a cylinder and a sphere with equal radii *r* are equal. Find the altitude of the cylinder in terms of *r*.

A) $4r$ B) $2r$ C) $\frac{4}{3}$ D) $\frac{r}{3}$ E) $\frac{4r}{3}$

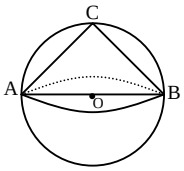
7. The sum of the base areas of a cylinder is equal to area of the lateral face. If the altitude of the cylinder is 2 cm, find the volume. (cm^3)

A) 8π B) 6π C) 4π D) 2π E) π

8. The base area of a regular square pyramid is 100 cm^2 and the sum of the areas of the lateral faces is 260 cm^2. Find the altitude of the pyramid.

A) 6 B) 10 C) 12 D) 13 E) 15

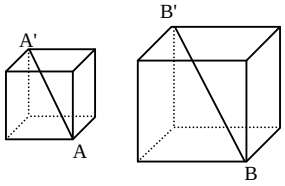
9. In the given figure, what is the ratio between the volume of the sphere and the volume of the cone?



A) 2 B) $2\frac{1}{2}$ C) 3

D) $3\frac{1}{2}$ E) 4

10. In the given figures, $|AA'| = 1$ cm and $|BB'| = 3$ cm . Find the ratio of the volumes of the cubes.



A) $\frac{1}{3}$ B) $\frac{1}{6}$ C) $\frac{1}{9}$ D) $\frac{1}{27}$ E) $\frac{1}{81}$

11. If the areas of the lateral faces of a right rectangular prism are $2\sqrt{2}$, $\sqrt{3}$ and $2\sqrt{6}$ cm^2, find the volume of this prism.

A) $\sqrt{6}$ B) 5 C) $2\sqrt{6}$ D) 6 E) 8

12. If the total surface area of a regular square pyramid is 144 cm^2 and length of one side of its base is 8 cm, find the volume.

A) 8 B) 27 C) 48 D) 64 E) 125

13. If the total area of a cube is *x* cm^2 and its volume is $\frac{x\sqrt{3}}{3}$ cm^3, find the diagonal of this cube.

A) $\sqrt{3}$ B) $3\sqrt{2}$ C) $2\sqrt{3}$ D) 4 E) 6

14. The surface areas of the three different faces of a rectangular prism are directly proportional with 3,4 and 5. If the volume of the prism is 450 cm^3, find the length of the shortest side.

A) $\frac{3}{2}\sqrt[3]{60}$ B) 6 C) 7.5 D) 9 E) 10