

Chapter 2 Class 9 Polynomials - Case Based Question Worksheet 2 by *teachoo*

Chapter: [Chapter 2 Class 9 Maths – Polynomials](#)

Name: _____

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Case Study 1: Geometric Solids



The volume of a sphere is given by $V_1(r) = \frac{4}{3}\pi r^3$ and the volume of a cone with the same radius r and height r is $V_2(r) = \frac{1}{3}\pi r^3$.

1. (1 Mark) What is the degree of the polynomial representing the volume of the sphere?
2. (1 Mark) Write the polynomial for the volume of a hemisphere of radius r .
3. (1 Mark) Write the polynomial for the volume of the new solid formed by placing the cone on top of the hemisphere.
4. (2 Marks) What is the ratio of the volume of the sphere to the volume of the new solid? Simplify your answer.

Case Study 2: The Water Tank



A cubical water tank has a volume of $V(x) = x^3$. A smaller cubical block of volume $V_s = 27$ cubic units is placed inside it.

1. (1 Mark) What is the side length of the smaller cubical block?
2. (1 Mark) Write a polynomial $P(x)$ for the remaining volume of water the tank can hold.
3. (1 Mark) If the side of the large tank is 4 units, what is the remaining volume?
4. (2 Marks) Factorize the polynomial $P(x)$ for the remaining volume completely using a suitable identity.

Case Study 3: The Stacking Cubes

Three cubes have side lengths of $(x - 1)$, x , and $(x + 1)$ respectively.

1. (1 Mark) Write the polynomial expression for the volume of the largest cube.
2. (1 Mark) Write a simplified polynomial expression for the total volume of all three cubes.
3. (1 Mark) If $x = 5$, what is the total volume?
4. (2 Marks) Write a simplified polynomial expression for the total surface area of all three cubes.

Important links

- Answer of this worksheet - <https://www.teachoo.com/25603/5367/Case-Based-Questions---Worksheet-2/category/Teachoo-Questions---Case-Based/>
- Full Chapter with Explanation, Activity, Worksheets and more – <https://www.teachoo.com/subjects/cbse-maths/class-9th/ch2-9th-polynomials/>
- Science Class 9 – <https://www.teachoo.com/subjects/science/class-9/>
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