

Spring egg geometry for CBSE Class 10: answers

CBSE Math Revision · CBSE Class 10 (Class 9 can try most of it) · Teacher answers and notes

No calculator. Use $\pi = 22/7$ throughout.

Teacher notes

- These are typical 'combination of solids' and 'conversion of solids' questions in a spring setting.
- In task A (b), remind students that the flat circle where the two solids join is inside the egg, so it is not painted.
- In task B (b), insist on complete moulds: 34, not 34.28.

Starter

1. **308 cm²**
 - $2 \times 22/7 \times 7 \times 7 = 308$
2. **308 cm³**
 - $1/3 \times 22/7 \times 49 \times 6 = 308$
3. **10 cm**
 - $\sqrt{36 + 64} = 10$
4. **616 cm²**
 - $4 \times 22/7 \times 49 = 616$

Task A: A hemisphere-and-cone egg

- a. **5852/3 = 1950 2/3 cm³**
 - Hemisphere: $2/3 \times 22/7 \times 343 = 2156/3$.
 - Cone: $1/3 \times 22/7 \times 49 \times 24 = 1232$.
 - $2156/3 + 1232 = 5852/3$
- b. **858 cm²**
 - Slant height = $\sqrt{49 + 576} = 25$.
 - Hemisphere: $2 \times 22/7 \times 49 = 308$. Cone: $22/7 \times 7 \times 25 = 550$.
 - $308 + 550 = 858$
- c. **₹429**
 - $858 \times 0.5 = 429$

Task B: Melt and recast

- a. **64**
 - $(7/1.75)^3 = 4^3 = 64$ (the $4/3 \times \pi$ cancels).
- b. **34**
 - Cylinder: $22/7 \times 49 \times 20 = 3080$ cm³.
 - Mould: $2/3 \times 22/7 \times 42.875 = 539/6$ cm³.
 - $3080 \div 539/6 = 18\ 480/539 = 34.28\dots$, so 34 moulds.
- c. **154 cm²**
 - $4 \times 22/7 \times 3.5 \times 3.5 = 154$

Task C: An egg in a box

a. **$490/3 = 163 \frac{1}{3} \text{ cm}^3$**

- Cube: 343. Sphere: $\frac{4}{3} \times \frac{22}{7} \times 42.875 = 539/3$.
- $343 - 539/3 = 490/3$

b. **$11/21$**

- $(539/3) \div 343 = 539/1029 = 11/21$

c. **245 cm^2**

- $5 \text{ faces} \times 49 = 245$

Extension

1. **14 cm**

- $\frac{1}{3} \times \pi \times 49 \times h = \frac{2}{3} \times \pi \times 343$ gives $49h = 686$, so $h = 14$.

2. **125; 5 : 1**

- $(5/1)^3 = 125$
- $125 \times 4\pi \times 1 : 4\pi \times 25 = 500\pi : 100\pi = 5 : 1$

Every question is original and every answer was recomputed by computer before publishing.