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CUBES AND CUBE ROOTS

Q1. Fill in the blanks with the correct option:

- a. Cube root of -64 is _____. (positive/negative)
- b. Cube of $(-xy)$ is _____. ($-x^3y^3$ / $-xy^3$)
- c. Cube root of $\frac{1}{b}$ is _____. ($\sqrt[3]{1/b}$ / $\sqrt[3]{1/b}$)
- d. The digit in the ones place in the cube of 56 is _____. (6 / 5)

Q2. Find the prime factorisation of the following numbers and fill in the blanks. Determine whether they are perfect cubes or not, and write Yes/No alongside each of the following:

Number	Prime factorisation	Perfect cube (Yes/No)
a. 1764	_____	_____
b. 2744	_____	_____
c. 3375	_____	_____

Q3. Find the smallest number by which 23040 must be

- a. multiplied
- b. divided

so as to make the resulting number a perfect cube.

Fill in the blanks with the correct number:

- a. $23040 \times$ _____ $=$ _____ is a perfect cube.
- b. $23040 \div$ _____ $=$ _____ is a perfect cube.

Q4. Find the cube root of the following numbers:

- a. 15.625 : _____
b. 9261 : _____
c. $140\frac{76}{125}$: _____

Q5. If the length of each side of cube X is three times the side of cube Y, find the ratio of their volumes.

Ratio of the volume of cube X to the volume of cube Y = _____ : _____

Q6. The side of a cube is 3.5 cm. Find the volume of the cube.

Answer: _____

Q7. If a and b are prime numbers, find whether each of the following is a perfect cube or not:

Number	Perfect cube (Yes/No)
a. a^4b^4	_____
b. a^9b^6	_____
c. a^3b^6	_____
d. a^8b^{125}	_____

Q8. Evaluate each of the following:

- a. $\sqrt[3]{343} - \sqrt[3]{-9261} =$ _____
b. $\sqrt[3]{3375} \times \sqrt[3]{125} =$ _____
c. $\sqrt[3]{-8} + \sqrt[3]{-8000} =$ _____

Q9. If the volume of a cubical box is 3511.808 cm^3 , find the length of each side of the box.

Answer: _____

Q10. Mrs Tandon brought 64 cubes of side 1 cm each for the Maths activity class. She asked the students to create solid cubes of different dimensions, as given in the table below. In the table, tick (☒) the cubes that the students would be able to make and cross out (☒) the ones which would not be possible.

Length of each side of cube	Possible/Not Possible
3 cm	
2 cm	
5 cm	
4 cm	

Answers

1. a. negative; b. $-x^3y^3$ c. $\sqrt[3]{\frac{1}{b}}$; d. 6

Number	Prime factorisation	Perfect cube(Yes/No)
a. 1764	$7 \times 3 \times 7 \times 3 \times 2 \times 2$	No
b. 2744	$2 \times 2 \times 2 \times 7 \times 7 \times 7$	Yes
c. 3375	$3 \times 3 \times 3 \times 5 \times 5 \times 5$	Yes

3. a. $23040 \times 75 = 17,28,000$; b. $23040 \div 45 = 512$

4. a. 2.5; b. 21; c. $5\frac{1}{5}$

5. 27 : 1

6. 42.875 cm^3

7. a. No; b. Yes; c. Yes; d. No

8. a. 28; b. 75; c. -22

9. 15.2 cm

10.

Length of each side of cube	Possible/Not Possible
3 cm	✓
2 cm	✓
5 cm	✗
4 cm	✓