

Name	Class.....	Roll No.....	Time 35 Min.	Max. Marks 29	Marks Obtained
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Competency - Focused Practice Questions

- Q. 1. Which of the following numbers can never be a perfect square? (Easy) [1]
 (A) 256 (B) 361
 (C) 478 (D) 729

Ans.

- Q. 2. The cube root of 4913 is: (Medium) [1]
 (A) 13 (B) 17
 (C) 19 (D) 23

Ans.

- Q. 3. Which locker numbers will remain open in the locker puzzle? (Easy) [1]
 (A) Only prime numbers (B) Only square numbers
 (C) Multiples of 2 (D) Multiples of 3

Ans.

Passage

In a rural village in Tamil Nadu, a large square water tank is being constructed to store rainwater for the dry season. The area of the tank is designed to be a perfect square so that the length and width are equal, making it easier to divide into smaller square sections for maintenance.

The initial design gives an area of 3,600 sq. metres. Villagers want to expand the tank while keeping it a perfect square. They plan to add extra sections so that the new area remains a perfect square and ends with two zeroes in its value.

The engineer also needs to estimate the side length without measuring physically, using properties of perfect squares. (Difficult)

- Q. 4. What is the present length of each side of the tank? [1]
 (A) 50 m (B) 55 m
 (C) 60 m (D) 65 m

Ans.

- Q. 5. If the new area must remain a perfect square ending with two zeroes, which is the smallest new area possible? [1]
 (A) 4,900 sq. m (B) 6,400 sq. m
 (C) 8,100 sq. m (D) 10,000 sq. m

Ans.

- Q. 6. If the engineer doubles the side length from the current size, by what factor will the area increase? [1]
 (A) 2 (B) 3
 (C) 4 (D) 8

Ans.

- Q. 7. The villagers decide on a new side length of 80 m. Calculate the percentage increase in area from the original size. [1]

Ans.

Q. 8. Without direct measurement, estimate if 5,929 sq. m could be the area of a perfect square tank. [1]

Ans.

Q. 9. Write the square of the smallest odd prime number.

Ans. (Easy) [1]

Q. 10. If the volume of a cube is 512 cm^3 , what is its edge length?

Ans. (Medium) [1]

Q. 11. Find the cube root of 13,824 using prime factorisation.

Ans. (Easy) [2]

Q. 12. A square park has an area of $6,400 \text{ m}^2$. A path 2 m wide is built inside along all sides. Find the area of the path.

Ans. (Medium) [2]

Q. 13. A solid metal cube of side 18 cm is melted and recast into smaller cubes of side 3 cm. Find the number of smaller cubes formed.

Ans. (Medium) [5]

Q. 14. A cube of side 24 cm is painted on all its faces and then cut into smaller cubes, each of side 4 cm. How many of the small cubes have exactly one face painted? (Difficult) [5]

Ans.

Q. 15. A square courtyard has a side length of 50 m. Four square flower beds of equal size are placed in the four corners of the courtyard. The side of each flower bed is 8 m. Find the area of the courtyard left uncovered by the flower beds. (Difficult) [5]

Ans.



Name	Class.....	Roll No.....	Time 25 Min.	Max. Marks 20	Marks Obtained
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Competency - Focused Practice Questions

- Q. 1. What is the smallest perfect square divisible by both 8 and 9? (Medium) [1]
(A) 72 (B) 144
(C) 288 (D) 576

Ans.

- Q. 2. If a perfect square ends with two zeroes, the number of zeroes must be: (Easy) [1]
(A) any number (B) even
(C) odd (D) none of the above

Ans.

- Q. 3. Which of the following is a taxi cab number? (Medium) [1]
(A) 1728 (B) 1729
(C) 1730 (D) 1719

Ans.

- Q. 4. If a number can be expressed as the sum of first 15 odd numbers, it is equal to: (Easy) [1]
(A) 15^2 (B) 15^3
(C) 2×15^2 (D) $15^2 + 1$

Ans.

- Q. 5. The cube of a 2-digit number can have at most how many digits? (Medium) [1]
(A) 5 (B) 6
(C) 7 (D) 8

Ans.

- Q. 6. Which of the following numbers has exactly three factors? (Medium) [1]
(A) 9 (B) 8
(C) 12 (D) 25

Ans.

- Q. 7. If a number's cube ends with 4, the unit digit of the number is: (Easy) [1]
(A) 2 (B) 4
(C) 6 (D) 8

Ans.

Passage

A farmer in Punjab owns a perfectly cubic warehouse for storing grain. The volume is a perfect cube so that the structure is symmetric and stackable in smaller cubes. The current volume is 42,875 cubic metres.

The farmer wants to know how many cubic boxes of side 1 metre can fit inside. He also plans to build a new cubic warehouse whose volume is 8 times the present volume. He wants to check cube root calculations and see if the last digit of the volume can predict possible cube roots. (Difficult)

Q. 8. The cube root of 42,875 is:

- (A) 33 m
(C) 37 m

- (B) 35 m
(D) 39 m

[1]

Ans.

Q. 9. If the volume is increased by 8 times, what will be the new side length?

- (A) 70 m
(C) 80 m

- (B) 75 m
(D) 90 m

[1]

Ans.

Q. 10. Which of the following cannot be the last digit of a perfect cube's volume?

- (A) 2
(C) 7

- (B) 3
(D) None of the above

[1]

Ans.

Q. 11. The farmer cuts his warehouse into cubic boxes of side 1 m. How many such boxes can be made?

[1]

Ans.

Q. 12. Without full calculation, estimate the cube root of 91,125 using nearby cubes.

[1]

Ans.

Q. 13. State whether 1,089 is a perfect square without using prime factorisation, by checking with nearest squares. (Difficult) [1]

Ans.

Q. 14. A cube has surface area 600 cm^2 . Find its volume. (Difficult) [2]

Ans.

Q. 15. A square courtyard has a side length of 50 m. Four square flower beds of equal size are placed in the four corners of the courtyard. The side of each flower bed is 8 m. Find the area of the courtyard left uncovered by the flower beds. (Difficult) [5]

Ans.

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