

**Practice Problems for Exponents, Roots, and Logarithms**  
from [www.topmath.info](http://www.topmath.info)

1 What is the square root of 0?

2 What is the cube root of 1,331?

3 What is the cube root of 97,336?

4 The logarithm base 4 of 61 is closest to what integer?

5 At the beginning of a week, Leah has some money. Every day, Leah spends money in such a way that there is only  $\frac{1}{4}$  of the previous day's amount left. After doing this for 5 days, Leah has \$.25 remaining. How much did Leah have at the beginning?

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6 Let  $x > 0$ . If  $\sqrt{x}/(x^3) = x^y$ , what is  $y$ ?

7 What is 6 cubed?

8 What is 19 cubed?

9 What can  $x$  be, if  $x^2 - 121 = 0$ ?

10 What can  $x$  be, if  $x^4 - 256 = 0$ ?

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11 A number,  $p$ , has 19 subtracted from it to produce a second number. The cube root of the second number is  $-0.7$ . What is  $p$ ?

12 A number,  $y$ , has 18 subtracted from it to produce a second number. The fifth root of the second number is  $-0.3$ . What is  $y$ ?

13 A number,  $u$ , has 4 subtracted from it to produce a second number. The cube root of the second number is  $0.7$ . What is  $u$ ?

14 A number,  $v$ , has 18 subtracted from it to produce a second number. The fifth root of the second number is  $0.2$ . What is  $v$ ?

15 What is the square root of 1?

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1 ANSWER: 121

2 ANSWER: 1728

3 ANSWER: 110592

4 ANSWER: 3. EXPLANATION: Note that  $4^3 = 64$ , and no other integer power of 4 is anywhere near as close to 61.

5 ANSWER: \$256.00. EXPLANATION: Work the problem backward from the end of the time period. Start with the ending value of \$.25, and multiply by 4 a total of 5 times. Since  $4^5$  is 1024, you can simply multiply \$.25 by 1024 to obtain the answer.

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6 ANSWER: -2.5. EXPLANATION: The square root of  $x$  is  $x^{(1/2)}$ . You divide powers by subtraction, so the answer is  $1/2 - 3$ .

7 ANSWER: 216

8 ANSWER: 6859

9 ANSWER: -11 or 11. EXPLANATION: Remember that both negative numbers and positive numbers have positive squares."

10 ANSWER: -4 or 4. EXPLANATION: The fourth root of a number is the square root of the square root of the number. The square root of 256 is 16, and the square root of 16 is 4. Since the exponent (4) is even, both the positive and negative roots are correct answers.

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11 ANSWER: 18.657. EXPLANATION: The second number is  $-0.7$  cubed, or  $-0.343$ . This is 19 less than  $p$ , so we add to get the answer.

12 ANSWER: 17.99757. EXPLANATION: The second number is  $-0.3$  to the fifth power, or  $-0.00243$ . This is 18 less than  $y$ , so we add to get the answer.

13 ANSWER: 4.343. EXPLANATION: The second number is  $0.7$  cubed, or  $0.343$ . This is 4 less than  $u$ , so we add to get the answer.

14 ANSWER: 18.00032. EXPLANATION: The second number is  $0.2$  to the fifth power, or  $0.00032$ . This is 18 less than  $v$ , so we add to get the answer.

15 ANSWER: 64