

Algebra 1 - Exponent Rules and Radicals - Quiz

Common Core N-RN.A.1, N-RN.A.2, N-RN.B.3 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Check what you know about exponent rules and radicals with 10 multiple-choice questions (N-RN.A.1, N-RN.A.2, and N-RN.B.3). Each question has one correct answer, and the explanation points out the common error behind the wrong choices. Use the results to decide what to practice next.

Algebra 1 · Common Core State Standards: **N-RN.A.1, N-RN.A.2, N-RN.B.3**

Questions

Question 1

Simplify $x^4 \cdot x^6$.

- A. x^{10}
- B. x^{24}
- C. x^2
- D. $2x^{10}$

Question 2

Simplify $(x^2)^5$.

- A. x^{10}
- B. x^7
- C. x^{25}
- D. $5x^2$

Question 3

Power	3^2	3^1	3^0	3^{-1}
Value	9	3	1	?

Continue the pattern. What is 3^{-1} ?

- A. -3
- B. $\frac{1}{3}$
- C. 0
- D. $-\frac{1}{3}$

Question 4

What is the value of $5^0 + 2^{-2}$?

- A. 1
- B. $1\frac{1}{4}$
- C. $\frac{1}{4}$
- D. 5

Question 5

Simplify $\sqrt{50}$.

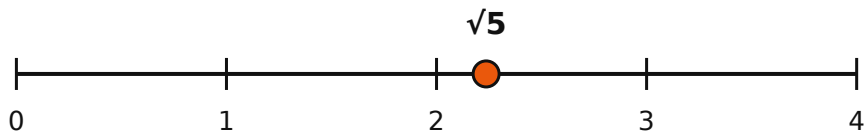
- A. $25\sqrt{2}$
- B. $2\sqrt{5}$
- C. $5\sqrt{2}$
- D. $10\sqrt{5}$

Question 6

What is $27^{2/3}$?

- A. 9
- B. 18
- C. 3
- D. 6

Question 7



The marked point is $\sqrt{5}$. Which describes it?

- A. Rational, exactly 2.2
- B. Rational, exactly 2.5
- C. Irrational, about 5
- D. Irrational, about 2.24

Question 8

Which expression is irrational?

- A. $\sqrt{16} + 1$
- B. $0.25 + \frac{1}{3}$
- C. $\sqrt{49} \cdot \frac{1}{7}$
- D. $\frac{1}{2} + \sqrt{3}$

Question 9

Which radical expression equals $x^{3/4}$?

- A. $\sqrt[3]{x^4}$
- B. $\sqrt[4]{x^3}$
- C. $(\sqrt{x})^3$
- D. $\sqrt[4]{x}$

Question 10

Hours	0	1	2	3
Bacteria	40	80	160	320

The population doubles each hour. Which model fits the table?

- A. $P = 40 + 40t$
- B. $P = 2 \cdot 40^t$
- C. $P = 40 \cdot 2^t$
- D. $P = 40 \cdot t^2$

Answers

1. **A** - Add the exponents when you multiply powers with the same base: $4 + 6 = 10$.
2. **A** - For a power of a power, multiply the exponents: $2 \cdot 5 = 10$.
3. **B** - Each step divides by 3, so after 1 comes $1/3$. A negative exponent means a reciprocal.
4. **B** - $5^0 = 1$ and $2^{-2} = 1/4$, so the sum is 1 and $1/4$.
5. **C** - $50 = 25 \cdot 2$, and the square root of 25 is 5.
6. **A** - The cube root of 27 is 3, and 3 squared is 9. Computing $27 \cdot 2/3$ gives 18, a common error.
7. **D** - 5 is not a perfect square, so its square root is irrational, between 2 and 3.
8. **D** - A rational number plus an irrational number is irrational. The other expressions are rational.
9. **B** - The denominator 4 is the root index and the numerator 3 is the power.
10. **C** - The starting value is 40 and the growth factor is 2, so $P = 40 \cdot 2^t$.

Remember

- Product rule: $a^m \cdot a^n = a^{m+n}$; quotient rule: $a^m / a^n = a^{m-n}$.
- Power rule: $(a^m)^n = a^{mn}$.
- $a^0 = 1$ and $a^{-n} = 1/a^n$ for $a \neq 0$.
- $a^{(1/2)} = \sqrt{a}$, and $a^{(m/n)}$ is the n -th root of a raised to the m .
- A rational plus an irrational number is irrational.