

Grade 8 · Properties of Integer Exponents · Quiz

Common Core 8.EE.A.1 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This 10-question quiz checks the properties of integer exponents for Grade 8: the product, quotient and power rules, and zero and negative exponents. Choose the one correct answer for each question, then read the explanation.

Grade 8 Common Core: 8.EE.A.1

Questions

Question 1

Simplify $4^3 \cdot 4^5$.

$$\underbrace{4 \times 4 \times 4}_{4^3} \times \underbrace{4 \times 4 \times 4 \times 4 \times 4}_{4^5}$$

Count the factors.

- A. 4^{15}
- B. 16^8
- C. 4^2
- D. 4^8

Question 2

Simplify $\frac{7^9}{7^3}$.

- A. 7^3
- B. 7^{12}
- C. 7^6
- D. 1^6

Question 3

Simplify $(3^2)^4$.

- A. 3^6

- B. 3^2
- C. 3^{16}
- D. 3^8

Question 4

What is the value of 8^0 ?

- A. 1
- B. 0
- C. 8
- D. undefined

Question 5

What is 2^{-5} as a fraction?

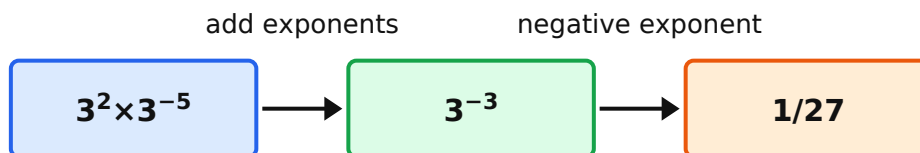
	$\div 2$	$\div 2$	$\div 2$	$\div 2$	$\div 2$
2^2	2^1	2^0	2^{-1}	2^{-2}	2^{-3}
4	2	1	$1/2$	$1/4$	$1/8$

The pattern keeps halving.

- A. -32
- B. -10
- C. $\frac{1}{32}$
- D. $\frac{1}{10}$

Question 6

What is $3^2 \cdot 3^{-5}$ written as a fraction?



Add the exponents, then take the reciprocal.

- A. $\frac{1}{27}$
- B. 27
- C. $\frac{1}{243}$
- D. -27

Question 7

Which decimal equals 10^{-3} ?

- A. 0.001
- B. 0.0001
- C. -1000
- D. 0.01

Question 8

Evaluate $\left(\frac{2}{5}\right)^{-2}$.

- A. $\frac{4}{25}$
- B. $\frac{25}{4}$
- C. $-\frac{4}{25}$
- D. $\frac{25}{2}$

Question 9

Which expression equals $\frac{1}{64}$?

- A. 4^3
- B. 2^{-8}
- C. 8^{-3}
- D. 4^{-3}

Question 10

What exponent makes $5^? \cdot 5^{-3} = 5^6$ true?

- A. 3
- B. 9
- C. -9
- D. 2

Answer key

1. **D** - Same base, so add exponents: $3 + 5 = 8$. Multiplying the exponents gives 4^{15} , and multiplying the bases gives 16^8 , which are common mistakes.
2. **C** - Subtract exponents: $9 - 3 = 6$. Dividing the exponents gives 7^3 , and adding them gives 7^{12} .
3. **D** - For a power of a power, multiply exponents: $2 \times 4 = 8$. Adding gives 3^6 .
4. **A** - Any nonzero number to the power 0 equals 1. The mistakes 0 and 8 come from treating the exponent like a multiplier.
5. **C** - $2^{-5} = \frac{1}{2^5} = \frac{1}{32}$. A negative exponent gives a reciprocal, not a negative number.
6. **A** - Add exponents: $2 + (-5) = -3$, and $3^{-3} = 1/27$. The value $1/243$ comes from 3^{-5} alone.
7. **A** - $10^{-3} = \frac{1}{1000} = 0.001$. The exponent counts the decimal places.
8. **B** - A negative exponent flips the fraction: $(5/2)^2 = 25/4$. Squaring without flipping gives $4/25$.
9. **D** - $4^{-3} = \frac{1}{4^3} = \frac{1}{64}$. And $2^{-8} = \frac{1}{256}$ and $8^{-3} = \frac{1}{512}$.
10. **B** - Add exponents: $? + (-3) = 6$, so $? = 9$. Subtracting 3 from 6 gives the common wrong answer 3.

Remember:

- Standard 8.EE.A.1: use the properties of integer exponents to write equivalent numerical expressions.
- Product rule: $a^m \cdot a^n = a^{m+n}$. Quotient rule: $\frac{a^m}{a^n} = a^{m-n}$.
- Power rule: $(a^m)^n = a^{mn}$.
- Zero exponent: $a^0 = 1$ for any nonzero base.
- Negative exponent: $a^{-n} = \frac{1}{a^n}$, a reciprocal and not a negative number.