

Grade 8 · Properties of Integer Exponents · Worksheet

Common Core 8.EE.A.1 · mathovore.fr

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

This worksheet gives 24 problems on the properties of integer exponents for Grade 8, standard 8.EE.A.1. Early problems practice the product, quotient and power rules with positive exponents.

Later problems use zero and negative exponents to write equivalent numerical expressions. The last six are word problems, comparisons and error checks. Show every step and leave answers as powers or fractions when asked.

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

Problem 1: Expand and evaluate

Write 2^5 as repeated multiplication and find its value.

Problem 2: Write as a power

Write $5 \cdot 5 \cdot 5 \cdot 5$ as a power and evaluate it.

Problem 3: Product rule

Simplify $3^4 \cdot 3^2$ and find its value.

$$\underbrace{\boxed{3} \times \boxed{3} \times \boxed{3} \times \boxed{3}}_{3^4} \times \underbrace{\boxed{3} \times \boxed{3}}_{3^2}$$

Count the factors.

Problem 4: Product with a large base

Write $7^5 \cdot 7^3$ as a single power.

Problem 5: Quotient rule

Simplify $\frac{5^9}{5^6}$ and find its value.



Cancel matching factors.

Problem 6: Powers of ten

Simplify $\frac{10^8}{10^3}$ and write the value as a whole number.

Problem 7: Power of a power

Simplify $(2^3)^2$ and find its value.

Problem 8: Power of a larger base

Simplify $(4^2)^3$ and find its value.

Problem 9: Zero exponent

Evaluate 9^0 , $(-6)^0$ and $4 \cdot 3^0$.

Problem 10: Negative exponents

Use the pattern in the table to find 2^{-3} . Then write 5^{-2} as a fraction.

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

Divide by 2 at each step.

Problem 11: Negative power of ten

Write 10^{-4} as a fraction and as a decimal.

	÷ 10	÷ 10	÷ 10	÷ 10	÷ 10	÷ 10
10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}	10^{-4}
100	10	1	1/10	1/100	1/1000	?

Divide by 10 at each step.

Problem 12: Mixed exponents

Simplify $3^2 \cdot 3^{-5}$ and write it as a fraction.

Problem 13: Negative plus positive

Simplify $4^{-2} \cdot 4^5$ and find its value.

Problem 14: Quotient with a negative result

Simplify $\frac{6^3}{6^5}$ and write the answer as a fraction.

Problem 15: Negative power of a power

Simplify $(3^{-2})^2$ and write it as a fraction.

Problem 16: Power of a product

Use the power of a product rule to evaluate $(2 \cdot 5)^3$ and $\left(\frac{2}{3}\right)^3$.

Problem 17: Fraction base, negative exponent

Evaluate $\left(\frac{3}{2}\right)^{-2}$.

Problem 18: Find the missing exponent

Find the missing exponent in each equation: $7^? \cdot 7^4 = 7^9$; $\frac{2^8}{2^?} = 2^3$; $3^? = \frac{1}{81}$.

Problem 19: Multi-step expression

Simplify $\frac{(3^5 \cdot 3^{-2})^2}{3^4}$ and find its value.

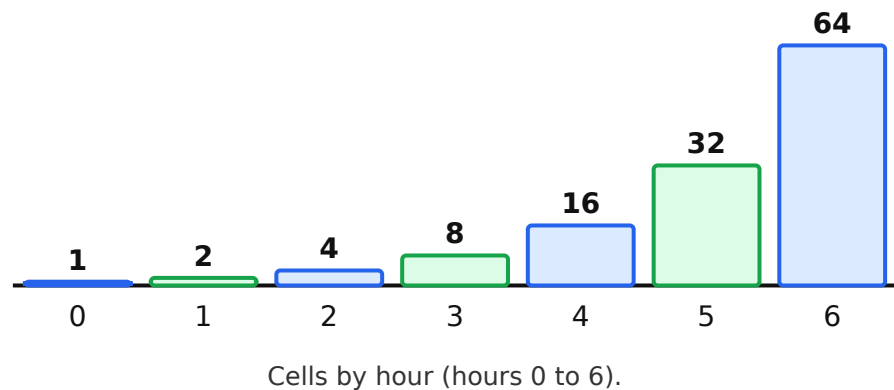
Problem 20: Which is greater?

Maya says 2^{-4} is greater than 3^{-2} because 2 to the fourth is bigger. Compare the two

numbers and decide whether she is right.

Problem 21: Doubling colony

A colony starts with 1 cell and doubles every hour. (a) Write the number of cells after 10 hours as a power of 2 and evaluate it. (b) Explain why 2^0 fits the starting count.



Problem 22: Gigabytes and kilobytes

A gigabyte is about 10^9 bytes and a kilobyte is about 10^3 bytes. How many kilobytes are in one gigabyte?

Problem 23: Find Noah's error

Noah wrote $2^3 \cdot 2^4 = 4^7$. Explain his mistake and give the correct result.

Problem 24: Find Priya's error

Priya says $2^{-3} = -8$. Explain the error and write the correct value.