

Grade 8 - Properties of Integer Exponents - Worksheet

Common Core 8.EE.A.1 · maths-pdf.fr/en/

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

These 21 problems practice the properties of integer exponents, including zero and negative exponents (Common Core 8.EE.A.1). Each problem has its own space for work, so print the page and write directly on it.

The problems start with direct skill checks and grow harder as you go. Later items combine several rules and use exponents in word problems. Use the answer key afterwards to check every step.

Grade 8 · Common Core State Standards: **8.EE.A.1**

Exercise 1 - Product rule

Use the product rule to write $5^3 \cdot 5^4$ as one power, then evaluate.

Exercise 2 - Quotient rule

Simplify $\frac{5^7}{5^4}$ and evaluate.

Exercise 3 - Power of a power

Simplify $(2^3)^2$ and evaluate.

Exercise 4 - Zero exponent

Evaluate 7^0 and $(-12)^0$.

Exercise 5 - Count the factors



2^3 : 3 factors 2^2 : 2 factors

Together: 5 factors, so 2^5

$$2^3 \times 2^2 = 2^5$$

Write the product shown as one power of 2.

Exercise 6 - Negative exponent

3^3 27	3^2 9	3^1 3	3^0 1	3^{-1} ?	3^{-2} ?
÷3		÷3	÷3	÷3	÷3

Each step to the right divides by 3, so the exponent drops by 1.

Complete the pattern: write 3^{-1} and 3^{-2} as fractions.

Exercise 7 - Powers of ten

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

Each step to the right divides by 10, so the exponent drops by 1.

Use the pattern to write 10^{-2} as a fraction and as a decimal.

Exercise 8 - Mixed exponents

Simplify $2^5 \cdot 2^{-3}$ and evaluate.

Exercise 9 - Negative power of a power

Write $(3^2)^{-1}$ with a positive exponent and evaluate.

Exercise 10 - Quotient with a negative result

Simplify $\frac{4^2}{4^5}$ and give the result as a fraction.

Exercise 11 - Power of a product

Evaluate $(2 \cdot 5)^3$ in two ways: first inside the parentheses, then by using $2^3 \cdot 5^3$.

Exercise 12 - Fraction to a negative power

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

Exercise 13 - Several rules

Simplify $\frac{5^{-3} \cdot 5^6}{5^2}$.

Exercise 14 - Write as a power

Write $\frac{1}{81}$ as a power of 3 with a negative exponent.

Exercise 15 - Power of a power with negatives

Simplify $(2^{-3})^2 \cdot 2^9$ and evaluate.

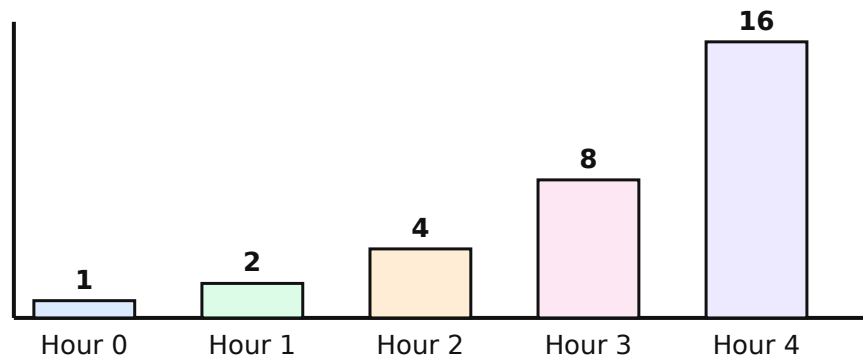
Exercise 16 - Nested rules

Simplify $\frac{4^2 \cdot 4^{-5}}{4^{-1}}$ and write it as a fraction.

Exercise 17 - Find the exponent

Find n so that $3^n \cdot 3^5 = 3^2$.

Exercise 18 - Bacteria growth



Cells double each hour.

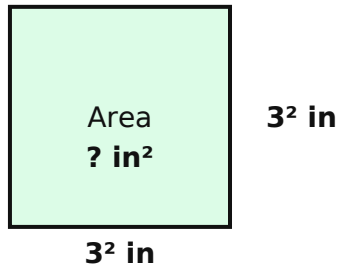
A lab culture starts with 1 cell and doubles every hour, so after t hours there are 2^t cells. How many cells are there after 10 hours? How many times as many cells are there after 12 hours as after 10 hours?

Exercise 19 - Computer storage

A kilobyte is about 2^{10} bytes and a gigabyte is about 2^{30} bytes. How many kilobytes make a

gigabyte? Write the answer as a power of 2 and as a number.

Exercise 20 - Square tile



Ethan's square tile has side 3^2 inches.

Ethan's square tile has side 3^2 inches. Write its area as a power of 3 and find the area in square inches.

Exercise 21 - Find the error

Priya simplified $(5^2)^3$ as 5^5 . Describe her error and give the correct value.