LEMBAR KERJA PESERTA DIDIK
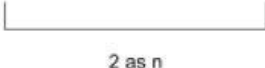
Topic	: Exponents and Logarithms
Sub-topic	: Properties of Exponents
Class	: X-...
Identity	:

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ACTIVITY 1 Discovering and identifying the concept and formal form of exponent numbers.

From the viruses problem, what can you conclude?

1st phase	$= 2 = 2^1$
2nd phase	$= 2 \times 2 = \ldots$
3rd phase	$= \ldots \times \ldots \times \ldots = \ldots$
…th phase	$= \ldots \times \ldots \times \ldots \times \ldots = \ldots$
n-th phase	$= \ldots \times \ldots \times \ldots \times \ldots \times \ldots = \ldots$

2 as n

The form above represents the repeated multiplication of the number 2, which is called exponents of 2.

In general, the repeated multiplication of a number x is called exponents of … .

ACTIVITY 2 Zero exponent property

1. What are the values of the exponent numbers below?

   a. $2^5 = \ldots$ $2^4 = \ldots$ $2^3 = \ldots$ $2^2 = \ldots$ $2^1 = \ldots$

   b. $3^5 = \ldots$ $3^4 = \ldots$ $3^3 = \ldots$ $3^2 = \ldots$ $3^1 = \ldots$

2. Can you find a pattern in the answers to question number 1? Explain it.

3. a. $2^0 = \ldots$ b. $3^0 = \ldots$

   Can the pattern you found be used to calculate the values of the exponent numbers above? Why?

4. Write down the conclusion obtained from the zero exponent property!

ACTIVITY 3 Product and Quotient of Power Properties

1. **Product of Power Property**
   Complete the table below.

Operasi Perkalian pada Perpangkatan	Operasi Perkalian	Perpangkatan
$6^3 \times 6^2$		
$4,2^2 \times 4,2^3$		
$7^4 \times 7^4$		
$\left(\dfrac{1}{3}\right)^2 \times \left(\dfrac{1}{3}\right)^5$		
$\left(-\dfrac{1}{3}\right)^3 \times \left(-\dfrac{1}{3}\right)^4$		
$5^3 \times 5^3$		

After completing the table above, what information do you obtain about the multiplication operation in exponents?

Simplify the multiplication operation in exponent with base *a* below.

$$a^m \times a^n = a^{\cdots + \cdots}$$

Does the rule you obtained apply to multiplication operations in exponentiation with different bases? For example, $5^4 \times 2^3$. Explain your answer.

2. **Quotient of Power Property**

Observe the table below!

Pembagian Bentuk Perpangkatan	Pengulangan Bentuk Perkalian	Bentuk Perpangkatan
$\dfrac{3^9}{3^4}$	$\dfrac{3\times3\times3\times3\times3\times3\times3\times3\times3}{3\times3\times3\times3}$	3^5
$\dfrac{(-2)^6}{(-2)^3}$	$\dfrac{(-2)\times(-2)\times(-2)\times(-2)\times(-2)\times(-2)}{(-2)\times(-2)\times(-2)}$	$(-2)^3$
$\dfrac{6^8}{6^4}$	$\dfrac{6\times6\times6\times6\times6\times6\times6\times6}{6\times6\times6\times6}$	6^4

After observing the table above, complete the table below.

Pembagian pada Perpangkatan	Bentuk Perkalian Berulang	Perpangkatan
$\dfrac{4,2^{10}}{4,2^5}$		
$\dfrac{(-7)^7}{(-7)^5}$		
$\dfrac{2^7}{2^1}$		

In general, $\dfrac{a^m}{a^n}$ can be stated as:

$$\frac{a^m}{a^n} = a^{\ldots - \ldots}$$