LEMBAR KERJA PESERTA DIDIK

Topic : **Exponents and Logarithms**
Sub-topic : **Properties of Exponents**
Class : **X-...**
Identity :
.....
.....

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 $= \ldots. \times \ldots. \times \ldots. \times \ldots. \times \ldots. \times \ldots. = \ldots.$

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?

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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
$6^3 \times 6^2$		
$4{,}2^2 \times 4{,}2^3$		
$7^4 \times 7^4$		
$\left(\frac{1}{3}\right)^2 \times \left(\frac{1}{3}\right)^5$		
$\left(-\frac{1}{3}\right)^3 \times \left(-\frac{1}{3}\right)^4$		
$5^3 \times 5^3$		

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.

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2. Quotient of Power Property

Observe the table below!

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

After observing the table above, complete the table below.

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

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

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

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