ALBERT

Name _____ Date _____

Exponent Rules Worksheet

Grade 8 · Common Core 8.EE.A.1

> Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

Practice

Builds the skill step by step.

1. Write $4^3 \times 4^5$ as a single power of 4.

2. Write $7^9 \div 7^4$ as a single power of 7.

3. Write $(2^3)^4$ as a single power of 2.

4. Evaluate 5^0.

5. Evaluate 2^{-3}. Write your answer as a fraction.

6. Which is equal to 3^{-2}?

   A. $\frac{1}{6}$

   B. -9

   C. $\frac{1}{9}$

   D. -6

7. Write 10^{-2} as a decimal.

8. Evaluate $3^2 \times 3^3$.

9. Which is equal to $6^4 \times 6^2$?

   A. 36^6

   B. 6^8

   C. 6^2

   D. 6^6

10. Evaluate $(-2)^4$.

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On Level

Grade-level practice.

1. Evaluate $3^{2} \times 3^{-5}$. Write your answer as a fraction.

2. Evaluate $5^{-3} \times 5^{5}$.

3. Evaluate $2^{4} \div 2^{7}$. Write your answer as a fraction.

4. Evaluate $(4^{-1})^{2}$. Write your answer as a fraction.

5. Which expression is equal to 1?

   A. 9^{0}

   B. 9^{1}

   C. 0^{9}

   D. 9^{-1}

6. Evaluate $(2 \times 5)^{3}$.

7. Write $8^{2} \times 8^{-6}$ as a single power of 8.

8. Which expression is NOT equal to 2^6?

   A. $2^8 \div 2^2$

   B. $2^2 \times 2^3$

   C. $2^3 \times 2^3$

   D. $(2^2)^3$

9. Write $10^3 \times 10^{-5}$ as a decimal.

10. Evaluate $(3^2)^2 \div 3^3$.

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Challenge

Multi-step and word problems that stretch it.

1. Find n: $2^n \times 2^3 = 2^{10}$

2. Find n: $5^n \div 5^4 = 5^{-2}$

3. Marco says $4^3 \times 4^2 = 16^5$. Which single power is correct?

   A. 16^5

   B. 4^5

   C. 4^6

   D. 16^6

4. Evaluate $(2^{-2} \times 2^5)^2$.

5. Evaluate $6^{-2} \times 6^3 \div 6^2$. Write your answer as a fraction.

6. Evaluate $3^{-1} + 3^{-2}$. Write your answer as a fraction in simplest form.

7. Which is greater, 2^{-3} or 3^{-2}?

   A. 2^{-3}

   B. 3^{-2}

   C. They are equal

   D. You cannot tell

8. Write 9^4 as a single power of 3.

9. Evaluate $(5^3 \times 5^{-1}) \div 5^4$. Write your answer as a fraction.

10. Evaluate $(10^2)^{-2} \times 10^6$.