

Key

Day 3~ Exponents HW

Student

1. Which is equivalent to 5^{-1} ?

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. -5

D. 4

~~$\frac{1}{5^{-1}}$~~ = $\frac{1}{5}$

2. Which expression is equivalent to $20^8 \div 20^2$?

A. 4 · 20

B. 6 · 20

C. 20^4

D. 20^6

$\frac{20^8}{20^2} = 20^{8-2} = 20^6$

3. Which of the following represents $16 \times \frac{1}{8}$ using exponential notation?

~~A. $(2^4)(2^3) = 16 \cdot 8$~~

~~B. $(2^4)(2^{-3}) = 16 \cdot \frac{1}{8}$~~

~~C. $(2^{-4})(2^3) = \frac{1}{16} \cdot 8$~~

D. $(2^{-4})(2^{-3}) = \frac{1}{16} \cdot \frac{1}{8}$

4. What is the value of the expression $8^{-2} \times 8^3$?

A. 64

B. 8

C. $\frac{1}{8}$

D. $\frac{1}{48}$

$8^{-2} \cdot 8^3 = 8^{-2+3} = 8^1$

5. If $(-3)^5 \times (-3)^2 = (-3)^x$, what is the value of x?

A. 3

B. 7

C. 10

D. 25

$(-3)^5 \times (-3)^2 = (-3)^{5+2} = (-3)^7$

6. Which of the following is equivalent to $\frac{5}{49}$?

~~A. $5(7^2) = 5 \cdot 49$~~

~~B. $\frac{1}{5(7^2)} = \frac{1}{5(49)}$~~

~~C. $5 - 7^2 = 5 - 49$~~

D. $5(7^{-2}) = \frac{5(\cancel{7^2})}{7^2} = \frac{5}{49}$

7. Which of the following is equivalent to $10 \times 10^4 \times 10^3 \times 10^{-5}$?

A. 10^2

B. 10^3

C. 10^7

D. 10^{13}

$10^1 \cdot 10^4 \cdot 10^3 \cdot 10^{-5} = 10^{1+4+3+5} = 10^3$

8. Which expression is equivalent to $\frac{(3^2 \times 3^{-4})}{3^2}$?

A. -81

B. -12

C. $\frac{1}{12}$

D. $\frac{1}{81}$

$\frac{(3^2 \cdot 3^{-4})}{3^2} = \frac{3^{2+(-4)}}{3^2} = \frac{3^{-2}}{3^2} = 3^{-2-2} = 3^{-4}$

* Cannot have a negative exponent!

~~$\frac{1}{3^4}$~~ = $\frac{1}{3^4} = \frac{1}{81}$

9. Which expression is equivalent to $5^2 \times 5^6 \div 5^{-3}$?

- A. 5^4
- B. 5^5
- C. 5^9
- D. 5^{11}

↓ rewrite

$$\frac{5^2 \cdot 5^6}{5^{-3}} = \frac{5^{2+6}}{5^{-3}} = \frac{5^8}{5^{-3}} = 5^{8-(-3)} = 5^{8+3} = \boxed{5^{11}}$$

10. What is the value of the

expression $\frac{2^{-6}}{2^4} \times 2^8$?

- A. $\frac{1}{16}$
- B. $\frac{1}{4}$
- C. 4
- D. 16

$$\frac{2^{-6}}{2^4} \cdot 2^8$$

$$2^{-6-4} \cdot 2^8$$

$$2^{-10} \cdot 2^8$$

$$\frac{\cancel{2^{10}} \cdot 2^8}{2^{10}} = 2^{8-10} = 2^{-2} = \frac{\cancel{2^2}}{2^2} = \boxed{\frac{1}{4}}$$