Laws of Exponents
Unit/3 Review

ANSWER KEY

Key

1. Simplify: $(-4b^3)(2b^5)$

A) $-2b^{15}$
B) $-8b^8$
C) $-2b^8$
D) $-8b^{15}$

2. Simplify $\frac{-9a^5b^8}{3a^2b^4}$

A) $\frac{-6a^3}{b^4}$
B) $3a^3b^2$
C) $-3a^3b^4$
D) $-3a^3b^2$

3. Simplify: $(-2a^3 \bullet -a^4)^2(-6a^2)$

$(-2)^2a^6(-1)^2a^8(-6)a^2$
$4 \cdot a^6 \cdot 1 \cdot a^8 \cdot -6 \cdot a^2$

$-24a^{16}$

4. Simplify: $(-6p^2q^3)^2$

$(-6)^2p^4q^6$

A) $12p^4q^5$
B) $36p^4q^6$
C) $12p^4q^6$
D) $36p^4q^5$

5. Simplify $\frac{a^2b^{-7}}{a^{-4}b^{-2}}$ $\frac{a^2a^4}{b^2b^7}$

A) $\frac{a^2}{b^9}$
B) a^6b^5
C) $\frac{a^6}{b^5}$
D) $\frac{b^5}{a^6}$

6. Simplify $(-3n^{-4})(-5n^7)$

$\frac{(-3)(-5)(n^7)}{n^4}$

$15n^3$

7. Simplify $\frac{6x^2y^3}{(-4x^4y)(-3x^3y^2)}$

$\frac{6x^2y^3}{12x^7y^3}$

A) $\frac{1}{2x^5}$
B) $\frac{y}{2x^5}$
C) $\frac{2}{x^5}$
D) $\frac{2y}{x^5}$

8. Simplify (½ pt each)

A) $-2^3 =$ _____ **-8** $-1 \cdot 2^3$

B) $8^2 =$ _____ **64**

C) $9^{-1} =$ _____ **1/9**

D) $(-4)^{-2} =$ _____ **1/16** $\frac{1}{4^2}$

9. Simplify $(-3p^{-3}q \bullet 3p^3q^{-4})^2$

$(-3)^2p^{-6}q^2 3^2p^6q^{-8}$

$\frac{9 \cdot 9p^6q^2}{p^6q^8}$

A) $81pq^6$
B) $\frac{1}{81q^6}$
C) $81q^6$
D) $\frac{81}{q^6}$

10. Simplify: $(5x^4)^3$

5^3x^{12}

A) $125x^{12}$
B) $25x^{12}$
C) $125x^7$
D) $25x^7$

11. Simplify $(-4a^2)(2a^{-3})^{-4}$

$\frac{(-4a^2)}{2^4a^{-12}} = \frac{-4a^2a^{12}}{16} = \frac{a^{14}}{-4}$

A) $\frac{a^{14}}{-4}$
B) $\frac{1}{-4a^{10}}$
C) $-4a^{10}$
D) $-64a^{14}$

12. Simplify $\frac{28x^5}{14x^{-4}}$ $2x^5x^4$

A) $\frac{2}{x^9}$
B) $2x$
C) $2x^9$
D) $\frac{2}{x}$

13. Simplify $(-7x^4y^2)(-2x^3y)$

A) $14x^7y^2$
B) $-7x^7y^3$
C) $14x^7y^3$
D) $14x^{12}y^2$

14. Simplify $(4m^{-4}n^3)^{-2}$

$\left(\frac{4n^3}{m^4}\right)^{-2} = \frac{m^8}{4^2n^6}$

A) $\frac{16m^8}{n^6}$ B) $\frac{-8m^8}{n^6}$

C) $\frac{m^8n^6}{16}$ D) $\frac{m^8}{16n^6}$

15. Simplify: $\frac{(4a^{-1}b^{-4})^{-3}}{(-8a^4b^{-2})^{-2}}$

$a^{11}b^8$

$\frac{4^{-3}a^3b^{12}}{(-8)^{-2}a^{-8}b^4} = \frac{(-8)^2a^3a^8b^{12}}{4^3b^4}$

$\frac{64a^{11}b^8}{64}$

16. Simplify $(2p^{-3})^5$

$\frac{32}{p^{15}}$

$2^5p^{-15} = \frac{2^5}{p^{15}}$

17. Simplify $(-2c^{-4}d^{-1})(5c^2d^{-3})$

$\frac{-2\cdot5c^2}{c^4d^1d^3} = \frac{-10}{c^2d^4}$

A) $\frac{c^2}{-10d^4}$ B) $\frac{-10d^3}{c^8}$

C) $\frac{-10}{c^2d^4}$ D) $\frac{-10d^4}{c^2}$

18. Simplify: $\frac{-9b^{-5}}{(-3b^{-1}\bullet b^{-4})^3} = \frac{-9b^{-5}}{(-3)^3b^{-3}b^{-12}} =$

$\frac{-9b^3b^{12}}{-27b^5} = \frac{1\cdot b^{15}}{3b^5} = \frac{b^{10}}{3}$

$\frac{b^{10}}{3}$

19. Simplify: $(-7x^3y^4)^2(x^2y^5)$

$(-7)^2x^6y^8x^2y^5$

$49x^8y^{13}$

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20. Simplify: $\frac{5a^7}{10a^3}$

A) $2a^4$ B) $\frac{1}{2a^4}$

C) $\frac{a^4}{2}$ D) $\frac{a^4}{5}$

21. Simplify $\frac{n^5}{(-2n^4)^3} = \frac{n^5}{(-2)^3n^{12}} = \frac{1}{-8n^7}$

A) $\frac{1}{-6n^7}$ B) $\frac{1}{-8n^7}$

C) $-6n^2$ D) $-8n^2$

22. Simplify $(-8a^5b^7)^0$

A) 0 B) 1

C) $-8a^5b^7$ D) $\frac{1}{-8a^5b^7}$