

Name

Key

Review Power of a Power and Zero and Negative Exponents

I. Power to a Power

1. $(a^3)^6$ a^{18}

7. $(4a)^3$ $4^3 a^3$ or $64a^3$

2. $(b^2)^3$ b^6

8. $(5b^4)^2$ $5^2 b^8$ or $25b^8$

3. $(c^5)^2$ c^{10}

9. $(-3c^2)^5$ $(-3)^5 c^{10}$

4. $(a^3b^4)^3$ $a^9 b^{12}$

10. $(2d^3e^7f^4)^4$ $2^4 d^{12} e^{28} f^{16}$

5. $(c^2d^5)^4$ $c^8 d^{20}$

11. $(-4gh^2k^4)^2$

$16d^{12} e^{28} f^{16}$
or
 $(-4)^2 g^2 h^4 k^8$ or
 $16g^2 h^4 k^8$

6. $(e^1f^5)^3$ $e^3 f^{15}$

12. $(8m^2np^4)^3$

$8^3 m^6 n^3 p^{12}$

Not to be confused with multiplying powers:

1. $x^4 \cdot x^5$

x^9

2. $y^3 \cdot y^4$

y^7

3. $a^2b^4 \cdot a^8b^5$

$a^{10} b^9$

II. Zero Exponents

1. $5^0 = 1$

2. $7^0 = 1$

3. $(3x)^0 = 1$

4. $y^0 = 1$

III. Negative Exponents

1. $a^{-3} = \frac{1}{a^3}$

2. $b^{-5} = \frac{1}{b^5}$

3. $6c^{-7} = \frac{6}{c^7}$

4. $2d^{-4} = \frac{2}{d^4}$

5. $5^{-3} = \frac{1}{5^3}$

6. $8^{-2} = \frac{1}{8^2}$ or $\frac{1}{64}$

7. $m^{-6} \cdot m^4 = \frac{m^4}{m^6} = \frac{1}{m^2}$

8. $n^3 \cdot n^{-4} = \frac{n^3}{n^4} = \frac{1}{n}$

9. $p^{-6} \cdot p^7 = \frac{p^7}{p^6} = p$

10. $5^3 \cdot 5^{-10} = \frac{5^3}{5^{10}} = \frac{1}{5^7}$

11. $3^{-4} \cdot 3^6 = \frac{3^6}{3^4} = 3^2$ or 9

12. $\frac{1}{x^{-5}} = x^5$

13. $\frac{1}{y^{-7}} = y^7$

14. $\frac{15a^4}{5a^2} = 3a^2$

15. $\frac{8b^7}{2b^4} = 4b^3$

16. $\frac{24a^5}{12a^9} = \frac{2}{a^4}$

17. $\frac{6^{-5}}{6^{-4}} = \frac{6^4}{6^5} = \frac{1}{6}$

18. $\frac{d^{-6}}{d^{-9}} r = \frac{d^9}{d^6} r = d^3 r$