Dividing Exponentials

Quotient Rule: $A^m \div A^n = A^{m-n}$

When you divide exponentials with the SAME base, you subtract the exponents

Example: **Simplify $\frac{6^{10}}{6^2}$ in exponential notation.**

$\frac{6^{10}}{6^2} = 6^{10-2}$,

$= 6^8$.

Simplify the following expressions in exponential notation.

1. $\frac{6^7}{6^4}$

2. $\frac{9^4}{9^3}$

3. $4^8 \div 4^5$

4. $\frac{12^{15}}{12^3}$

5. $2^8 \div 2^3$

6. $\frac{3^{97}}{3^{11}}$

7. $5^7 \div 5^3$

8. $11^{14} \div 11^4$

9. $\frac{10^{10}}{10^5}$

10. $8^{33} \div 8^5$

11. $\frac{27}{3^2}$

12. $10^8 \div 10^2$

13. $\frac{5^4 \cdot 3^2 \cdot 5^7 \cdot 3^4}{5^8 \cdot 3^5}$

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Simplify the following expressions in exponential notation.

1. $\frac{m^{12}}{m^5}$
2. $5^9 \div 5^4$
3. $7^{10} \div 7^9$
4. $8^5 \div 8$
5. $x^8 \div x^6$
6. $\frac{2^{13}}{2^4}$
7. $4^{14} \div 4^5$
8. $y^5 \div y^2$
9. $12^{13} \div 12^8$
10. $\frac{5^6}{5^4}$
11. $3^{10} \div 3^6$
12. $11^{13} \div 11^7$
13. $7^5 \div 7^4$
14. $6^{12} \div 6^{10}$
15. $11^5 \div 11^3$

$$\frac{x^6y^4z^2x^4}{x^3y^3}$$

N.B. If a number does not have an exponent, it's understood to be 1!

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$= 6^8$.

Simplify the following expressions in exponential notation.

1. $7^7 \div 7^2$
2. $\frac{2^{12}}{2^{10}}$
3. $11^{12} \div 11^{11}$
4. $7^{12} \div 7^{11}$
5. $11^6 \div 11^5$
6. $5^{11} \div 5^5$
7. $8^{14} \div 8^9$
8. $5^8 \div 5^2$
9. $y^5 \div y^2$
10. $6^{11} \div 6$
11. $4^8 \div 4^4$
12. $\frac{z^{13}}{z^{10}}$
13. $8^6 \div 8^2$
14. $9^{14} \div 9^6$
15. $10^9 \div 10^3$

$$\frac{x^6y^5z^2x^4}{x^3y^4}$$

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Example: **Simplify** $\frac{6^{10}}{6^2}$ **in exponential notation.**

$\frac{6^{10}}{6^2} = 6^{10-2}$,

$= 6^8$.

Simplify the following expressions in exponential notation.

1. $2^9 \div 2^7$
2. $7^6 \div 7^4$
3. $9^9 \div 9^4$
4. $\frac{10^7}{10^2}$
5. $3^{14} \div 3^9$
6. $6^{13} \div 6^4$
7. $12^{11} \div 12^4$
8. $8^{10} \div 8^2$
9. $10^9 \div 10^8$
10. $12^6 \div 12^4$
11. $\frac{12^6}{12^4}$
12. $5^{13} \div 5^5$
13. $8^{10} \div 8^2$
14. $7^8 \div 7^4$
15. $2^{12} \div 2^4$

$$\frac{x^3y^4z^2x^4}{x^6y^3}$$

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