

Dividing Terms Worksheet

1. Simplify the following expression and explain each step: $\frac{12x^4y^2}{4x^2y}$
2. Divide the term $15a^3b^2$ by $3a$ and show your working.
3. A rectangle has an area of $24x^5y^3$ and a width of $6x^2y$. Write an expression for its length and simplify it.
4. Consider the expression $\frac{18m^6n^2}{6m^2n}$. Simplify it and describe the rules you used to divide the terms.
5. When dividing $-20p^4q^2$ by $5p^2q$, what result do you get? Explain your reasoning.
6. Create your own example of dividing two algebraic terms and solve it, showing all steps.
7. Why is it important to understand the laws of indices (exponents) when dividing algebraic terms? Give an example to support your answer.
8. Simplify the following and explain your process: $\frac{30x^7y^4}{-5x^2y^2}$
9. A term k is divided by $2k^2$. What is the simplified result? Explain how you reached your answer.
10. Divide $8m^3n^4$ by $4mn^2$ and explain each step in your working.

Answer Key

1. $\frac{12x^4y^2}{4x^2y} = 3x^{4-2}y^{2-1} = 3x^2y$

2. $\frac{15a^3b^2}{3a} = 5a^{3-1}b^2 = 5a^2b^2$

3.

4. Length = $\frac{24x^5y^3}{6x^2y} = 4x^{5-2}y^{3-1} = 4x^3y^2$

5.

6. $\frac{18m^6n^2}{6m^2n} = 3m^{6-2}n^{2-1} = 3m^4n$. Used the rule: divide coefficients, subtract exponents of like bases.

7.

8. $\frac{-20p^4q^2}{5p^2q} = -4p^{4-2}q^{2-1} = -4p^2q$

9. Example: $\frac{10x^5}{2x^2} = 5x^{5-2} = 5x^3$

10.

11. The laws of indices help simplify terms when dividing, as you subtract exponents of like bases. Example: $\frac{x^6}{x^2} = x^{6-2} = x^4$.

12.

13. $\frac{30x^7y^4}{-5x^2y^2} = -6x^{7-2}y^{4-2} = -6x^5y^2$

14. $\frac{k}{2k^2} = \frac{1}{2}k^{1-2} = \frac{1}{2}k^{-1} = \frac{1}{2k}$

15. $\frac{8m^3n^4}{4mn^2} = 2m^{3-1}n^{4-2} = 2m^2n^2$