I. Model Problems

A **monomial** is an expression that is a number, variable or product of a number and variables.
Examples of monomials: -3, $4x$, $5xy$, y^2

To multiply monomials, multiply all the coefficients and all the variables.

Example Simplify $3x^2(5x^3)$.

$= 15x^2x^3$ Multiply the coefficients.

$= 15x^5$ Multiply variables.

The answer is $15x^5$.

II. Practice

Simplify.

1. $2x^2(3x)$

2. $-9x^7(8x^5)$

3. $-4x^3(2x^7)$

4. $10x^5(8x^8)$

5. $9x^2(3x^3)$

6. $-4x^2(6x^9)$

7. $-4x^2(3x^{10})$

8. $15x^4(3x^9)$

9. $7x^2y^5(9x^3y)$

10. $-8x^2y^4(3x^3y^{10})$

11. $-9x^2y^9(-10x^3y^{10})$

12. $9x^2y(x^3y^9)$

13. $5x^2y^9(7x^7y^5)$

14. $-14x^2(3x^{10}y^3)$

15. $4x^2y(-x^2y)$

16. $5x^2y(x^2yz)$

17. $3x^2yz(2x^2yz^2)$

18. $4xy^2z(3x^2y^2z^3)$

19. $3x^2y^2z(7x^2yz)$

20. $-2xyz(3x^2y^2z^2)$

III. Challenge Problems

21. What is the area of a rectangle with length $3xy$ inches and width $(14x^2y)$ inches? Write your answer as an expression in terms of x and y.

22. Explain why the product $(3x^{-3})(3x^3)$ is a constant.

23. $3x^ay^b(5x^2y^tz)$

24. Correct the Error
There is an error in the student work shown below:
Question: Simplify $5x^2(3x^3y)$.
Solution:

$$5x^2(3x^3y)$$
$$= 15x^2x^3y$$
$$= 15x^6y$$

What is the error? Explain how to solve the problem.

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