Math   Name:

Product of Powers Property   Period: _____

Simplify. Your answer should contain only positive exponents.

1) $2^2 \cdot 2^4$

$2^2 \cdot 2^4$ Write the original problem

2^{2+4} Multiplying powers with the same base can ADD exponents

2^6 Add exponents

3) $3x \cdot 4x^2 \cdot 2x^2$

$3x \cdot 4x^2 \cdot 2x^2$ Write the original problem

$3 \cdot 4 \cdot 2 \cdot x^1 \cdot x^2 \cdot x^2$ Regroup coefficients and Variables

$24 \cdot x^{1+2+2}$ Multiply coefficients and
                                            Multiplying powers with the same base can ADD exponents

$24x^5$ Add exponents

5) $n^4 \cdot 2n$

$n^4 \cdot 2n$ Write the original problem

$2 \cdot n^4 \cdot n^1$ Regroup coefficients and Variables

$2 \cdot n^{4+1}$ Multiplying powers with the same base can ADD exponents

$2n^5$ Add exponents

7) $4n^4 \cdot n \cdot 2n$

$4n^4 \cdot n \cdot 2n$ Write the original problem

$4 \cdot 2 \cdot n^4 \cdot n^1 \cdot n^1$ Regroup coefficients and Variables

$8 \cdot n^{4+1+1}$ Multiply coefficients and
                                            Multiplying powers with the same base can ADD exponents

$8n^6$ Add exponents

9) $3v^4 \cdot 3v^3$

$3v^4 \cdot 3v^3$	Write the original problem
$3 \cdot 3 \cdot v^4 \cdot v^3$	Regroup coefficients and Variables
$9 \cdot v^{4+3}$	Multiply coefficients and Multiplying powers with the same base can ADD exponents
$9v^7$	Add exponents

11) $2x^2 \cdot x^2$

$2x^2 \cdot x^2$	Write the original problem
$2 \cdot x^2 \cdot x^2$	Regroup coefficients and Variables
$2 \cdot x^{2+2}$	Multiplying powers with the same base can ADD exponents
$2x^4$	Add exponents

13) $4m^2n^4 \cdot 3n^3$

$4m^2n^4 \cdot 3n^3$	Write the original problem
$4 \cdot 3 \cdot m^2 \cdot n^4 \cdot n^3$	Regroup coefficients and Variables
$12 \cdot m^2 \cdot n^{4+3}$	Multiply coefficients and Multiplying powers with the same base can ADD exponents
$12m^2n^7$	Add exponents

15) $3v^3 \cdot u^4v^3$

$3v^3 \cdot u^4v^3$	Write the original problem
$3 \cdot u^4 \cdot v^3 \cdot v^3$	Regroup coefficients and Variables
$3 \cdot u^4 \cdot v^{3+3}$	Multiplying powers with the same base can ADD exponents
$3u^4v^6$	Add exponents

17) $xy^3 \cdot 3x^3y^4$

$xy^3 \cdot 3x^3y^4$	Write the original problem
$3 \cdot x^1 \cdot x^3 \cdot y^3 \cdot y^4$	Regroup coefficients and Variables
$3 \cdot x^{1+3} \cdot y^{3+4}$	Multiplying powers with the same base can ADD exponents
$3x^4y^7$	Add exponents

19) $4y^4 \cdot x^3y^3 \cdot 3y^2$

$4y^4 \cdot x^3y^3 \cdot 3y^2$	Write the original problem
$4 \cdot 3 \cdot x^3 \cdot y^4 \cdot y^3 \cdot y^2$	Regroup coefficients and Variables
$12 \cdot x^3 \cdot y^{4+3+2}$	Multiply coefficients and Multiplying powers with the same base can ADD exponents
$12x^3y^9$	Add exponents

21) $2v^2 \cdot 4u^2v^3$

$2v^2 \cdot 4u^2v^3$	Write the original problem
$2 \cdot 4 \cdot u^2 \cdot v^2 \cdot v^3$	Regroup coefficients and Variables
$8 \cdot u^2 \cdot v^{2+3}$	Multiply coefficients and Multiplying powers with the same base can ADD exponents
$8u^2v^5$	Add exponents

23) $zx^2 \cdot 3z^2$

$zx^2 \cdot 3z^2$	Write the original problem
$3 \cdot x^2 \cdot z^1 \cdot z^2$	Regroup coefficients and Variables
$3 \cdot x^2 \cdot z^{1+2}$	Multiplying powers with the same base can ADD exponents
$3x^2z^3$	Add exponents

25) $3a^4 \cdot 2b^4$

$3a^4 \cdot 2b^4$ Write the original problem

$3 \cdot 2 \cdot a^4 \cdot b^4$ Regroup coefficients and Variables

$6a^4b^4$ Multiply coefficients

27) $2ab^3 \cdot a^4b^4$

$2ab^3 \cdot a^4b^4$ Write the original problem

$2 \cdot a^1 \cdot a^4 \cdot b^3 \cdot b^4$ Regroup coefficients and Variables

$2 \cdot a^{1+4} \cdot b^{3+4}$ Multiplying powers with the same base can ADD exponents

$2a^5b^7$ Add exponents

29) $3m^3q^4 \cdot 3pm^2$

$3m^3q^4 \cdot 3pm^2$ Write the original problem

$3 \cdot 3 \cdot m^3 \cdot m^2 \cdot p \cdot q^4$ Regroup coefficients and Variables

$9 \cdot m^{3+2} \cdot p \cdot q^4$ Multiply coefficients and
Multiplying powers with the same base can ADD exponents

$9m^5pq^4$ Add exponents

31) $3q^4r^4 \cdot 4prq^2 \cdot 3q^3r^4$

$3q^4r^4 \cdot 4prq^2 \cdot 3q^3r^4$ Write the original problem

$3 \cdot 4 \cdot 3 \cdot p \cdot q^4 \cdot q^2 \cdot q^3 \cdot r^4 \cdot r^1 \cdot r^4$ Regroup coefficients and Variables

$36 \cdot p \cdot q^{4+2+3} \cdot p \cdot r^{4+1+4}$ Multiply coefficients and
Multiplying powers with the same base can ADD exponents

$36pq^9r^9$ Add exponents