

Lesson 4 Reteach

Powers of Monomials

Power of a Power: To find the power of a power, multiply the exponents.
Power of a Product: To find the power of a product, find the power of each factor and multiply.

Example 1

Simplify $(5^3)^6$.

$$\begin{aligned} (5^3)^6 &= 5^{3 \cdot 6} && \text{Power of a power} \\ &= 5^{18} && \text{Simplify.} \end{aligned}$$

Example 2

Simplify $(-3m^2n^4)^3$.

$$\begin{aligned} (-3m^2n^4)^3 &= (-3)^3 \cdot m^{2 \cdot 3} \cdot n^{4 \cdot 3} && \text{Power of a product} \\ &= -27m^6n^{12} && \text{Simplify.} \end{aligned}$$

Exercises

Simplify.

1. $(4^3)^5$

4^{15}

2. $(4^2)^7$

4^{14}

3. $(9^2)^4$

9^8

4. $(k^4)^2$

k^8

5. $[(6^3)^2]^2$

6^{12}

6. $[(3^2)^2]^3$

3^{12}

7. $(5q^4r^2)^5$

$5^5 q^{20} r^{10}$

8. $(3y^2z^2)^6$

$3^6 y^{12} z^{12}$

9. $(7a^4b^3c^7)^2$

$7^2 a^8 b^6 c^{14}$

10. $(-4d^3e^5)^2$

$(-4)^2 d^6 e^{10}$

11. $(-5g^4h^9)^7$

$(-5)^7 g^{28} h^{63}$

12. $(0.2k^8)^2$

$(0.2)^2 k^{16}$
or $.2^2 k^{16}$

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You need
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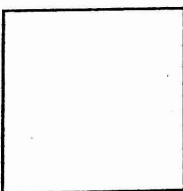

Lesson 4 Skills Practice

Powers of Monomials

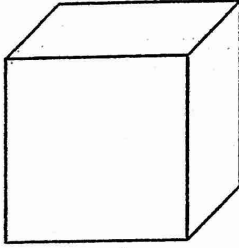
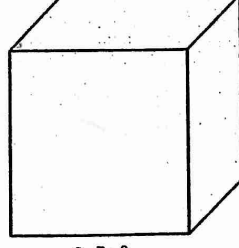
Simplify.

- | | | | |
|--|--|--|---|
| 1. $(7^2)^3$
7^6 | 2. $(3^2)^6$
3^{12} | 3. $(8^3)^2$
8^6 | 4. $(9^4)^2$
9^8 |
| 5. $(d^7)^6$
d^{42} | 6. $(m^5)^5$
m^{25} | 7. $(h^6)^3$
h^{18} | 8. $(z^7)^3$
z^{21} |
| 9. $[(4^3)^2]^2$
4^{12} | 10. $(-5a^2b^7)^7$
$(-5)^7 a^{14} b^{49}$ | 11. $(2m^5g^{11})^6$
$2^6 m^{30} g^{66}$ | 12. $[(2^3)^3]^2$
2^{18} |
| 13. $(7a^5b^6)^4$
$7^4 a^{20} b^{24}$ | 14. $(7m^3n^{11})^5$
$7^5 m^{15} n^{55}$ | 15. $(-3w^3z^8)^5$
$(-3)^5 w^{15} z^{40}$ | 16. $(-7r^4s^{10})^4$
$(-7)^4 r^{16} s^{40}$ |

GEOMETRY Express the area of each square below as a monomial.

- | | |
|--|--|
| 17. 
$6g^3h^5$
$A = s^2$
$(6g^3h^5)^2$
$6^2 g^6 h^{10}$ | 18. 
$13d^5e$
$(13d^5e)^2$
$13^2 d^{10} e^2$ |
|--|--|

GEOMETRY Express the volume of each cube below as a monomial.

- | | |
|--|---|
| 19. 
$7c^5d^2$
$V = s^3$
$(7c^5d^2)^3$
$7^3 c^{15} d^6$ | 20. 
$6r^7s^8$
$(6r^7s^8)^3$
$6^3 r^{21} s^{24}$ |
|--|---|