

Name: _____ Period: _____

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HW 4-4: Powers of Monomials

Simplify using the Laws of Exponents.

1. $(4^2)^3$

8. $(11c^4)^3$

2. $(5^3)^3$

9. $(6a^2b^6)^3$

3. $(d^7)^6$

10. $(2m^5n^{11})^6$

4. $(h^4)^9$

11. $(-3w^3z^8)^5$

Will the coefficient for this problem be a negative or positive number?

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

12. $(-5r^4s^{12})^4$

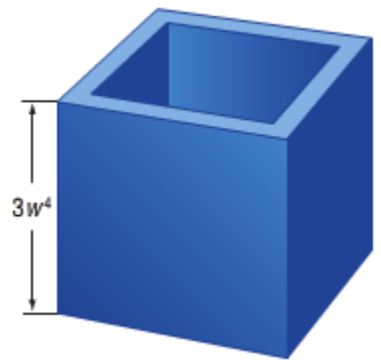
Will the coefficient for this problem be a negative or positive number?

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

7. $(5j^6)^4$

13. A shipping box is in the shape of a cube. Each side measures $3c^6d^2$ inches. Express the volume of the cube as a monomial.

14. Tamara is decorating her patio with a planter in the shape of a cube like the one shown. Find the volume of the planter.



Simplify.

15. $[(3x^2y^3)^2]^3$

16. $\left(\frac{3}{5}a^6b^9\right)^2$

17. $(-2v^7)^3(-4v^2)^4$

Solve each equation for x .

18. $(7^x)^3 = 7^{15}$

19. $(-2m^3n^4)^x = -8m^9n^{12}$

20. Which expression is equivalent to $(10^4)^8$?

(A) 10^2

(C) 10^{12}

(B) 10^4

(D) 10^{32}

Simplify using the Laws of Exponents.

21. $(2^2)^7$

25. $(z^{11})^5$

22. $(8v^9)^5$

26. $[(4^3)^2]^2$

23. $(3^4)^2$

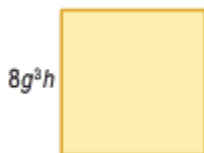
27. $[(2^3)^3]^2$

24. $(m^8)^5$

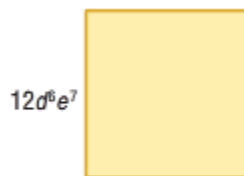
28. $(14y)^4$

Express the area of each square as a monomial and the volume of the cube as a monomial.

30.



31.



32.



Simplify.

33. $(0.3p^7)^3$

34. $\left(\frac{1}{4}w^5z^3\right)^2$

35. Which expression has the same value as $81h^8k^6$?

(F) $(9h^6k^4)^2$

(H) $(6h^5k^3)^3$

(G) $(9h^4k^3)^2$

(I) $(3h^2k)^6$

Simplify using the Laws of Exponents.

36. $6^4 \cdot 6^7$

37. $18^3 \cdot 18^5$

38. $(-3x^{11})(-6x^3)$

39. $(-9a^4)(2a^7)$

40. The table shows the heights of some United States waterfalls. What is the height of each waterfall?

| Waterfall | Height (ft) |
|-------------------------|------------------------|
| Bridalveil (California) | $2^2 \cdot 5 \cdot 31$ |
| Fall Creek (Tennessee) | 2^8 |
| Shoshone (Idaho) | $2^2 \cdot 53$ |