

9.1 Expand and Condense Exponents

NOTES:

Base

Exponent (power)

Expand

base =

power =

base =

power =

Condense

Write the following using exponents:

a. $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$

b. $(-3)(-3)(-3)$

c. $\left(\frac{2}{5}\right)\left(\frac{2}{5}\right)\left(\frac{2}{5}\right)\left(\frac{2}{5}\right)\left(\frac{2}{5}\right)$

d. $x \cdot x \cdot x \cdot x$

e. $5 \cdot 5 \cdot y \cdot y \cdot y \cdot y \cdot y$

f. $3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y$

Expand

Write the following without using exponents:

a. 4^3

b. $\left(\frac{2}{3}\right)^5$

c. $(-3)^5$

d. m^5

e. 3^2x^5

f. $5^4x^2y^3$

Expand and Simplify

Write the following without using exponents and then simplify:

Product (Multiply)

a. $2^2 \cdot 2^5$

b. $\left(\frac{3}{4}\right)\left(\frac{3}{4}\right)^2$

c. $(-4)^2(-4)^3$

d. $y^3 \cdot y^4$

e. $2x^3 \cdot 4x^4$

f. $(3^4d^2)(3d^4)$

Power

a. $(2^3)^2$

b. $(5^3)^4$

c. $(x^4)^2$

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

e. $(4^3y^2)^3$

Quotient (Divide)

a. $\frac{2^4}{2^2}$

b. $\frac{x^5}{x^3}$

c. $\frac{10x^7}{2x^2}$

d. $\frac{3y^6}{12y^4}$

e. $\frac{2^5x^4y^5}{2^2x^3y}$

Summarize your notes!

9.1 PRACTICE

Write the following using exponents. CONDENSE

1. $4 \cdot 4 \cdot 4 \cdot 4$	2. $x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$	3. $2 \cdot 2 \cdot y \cdot y \cdot y$	4. $\left(\frac{1}{4}\right) \left(\frac{1}{4}\right) \left(\frac{1}{4}\right) \left(\frac{1}{4}\right) \left(\frac{1}{4}\right)$
5. $3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y$	6. $(-2)(-2)(m)(m)(m)$	7. $5 \cdot 5 \cdot m \cdot n \cdot n \cdot n \cdot n \cdot n$	

Write the following without using exponents. EXPAND

8. 7^5	9. m^3	10. 6^3y^2	11. $\left(\frac{2}{3}\right)^3$
12. 4^3w^2	13. $\left(\frac{4}{5}\right)^3 x^4$	14. $2a^3b^4$	15. $3^2x^5y^2$

Write the following without using exponents and then simplify. PRODUCT (Multiply)

16. $4^2 \cdot 4^6$	17. $3^3 \cdot 3$	18. $2^4 \cdot 2^3 \cdot 2$	19. $x^4 \cdot x^2$
20. $2x^4 \cdot 3x^2$	21. $3y \cdot y$	22. $z^2 \cdot z \cdot z^3$	23. $3m^4(2m^2)$

Write the following without using exponents and then simplify. POWER

24. $(3^5)^2$	25. $(7^4)^3$	26. $[(-5)^3]^4$
27. $(y^4)^6$	28. $(3n^5)^2$	29. $(7x^2y)^3$

Write the following without using exponents and then simplify. QUOTIENT (Divide)

30. $\frac{4^5}{4^2}$

31. $\frac{h^8}{h^3}$

32. $\frac{15x^7}{3x^2}$

33. $\frac{3b^6}{12b^4}$

34. $\frac{2x^5y^3}{6x^2y}$

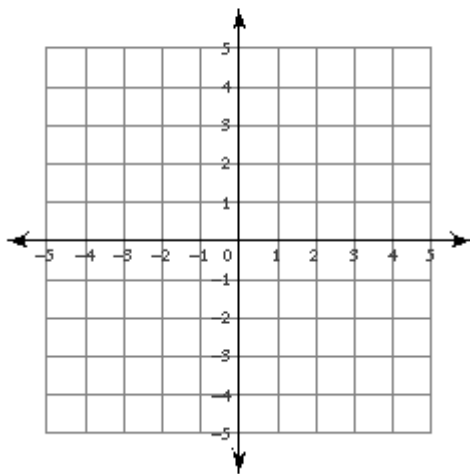
35. $\frac{4^5a^5b^3}{4^2a^3b^2}$

QUICK REVIEW

Solve the system of equations!

1) $y = \frac{1}{2}x + 1$

$y = -\frac{1}{4}x - 2$



2) $8x + 4y = 20$
 $y = x + 2$

9.1 APPLICATION

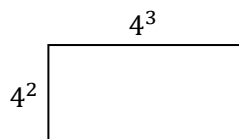
Write the following without using exponents and then simplify.

1. $(3x^2y^5)(2x^7y^4)$

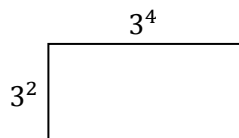
2. $(3a^2)^3$

NUMERIC SOLUTIONS (number answers)

3. Find the area.

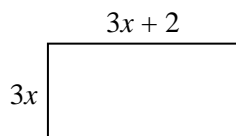


6. Find the area.

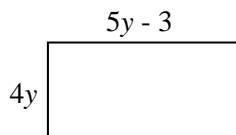


VARIABLE SOLUTIONS (letter answers)

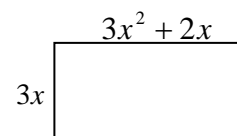
4. Find the area.



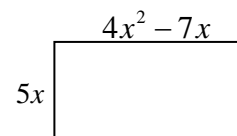
7. Find the area.



5. Find the area.



8. Find the area.



9. The volume of a cube is $V = s^3$. Find the volume of a cube with side, $s = 4y$

Coming Up... What multiplies to give you the bottom number and adds to give you the top number?

<p>10.</p>	<p>11.</p>	<p>12.</p>	<p>13.</p>	<p>14.</p>
------------	------------	------------	------------	------------