10.2 Video 1 Expand and Condense Exponents

NOTES

ALGEBRA

Write your questions here!

Base

Exponent (power)

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

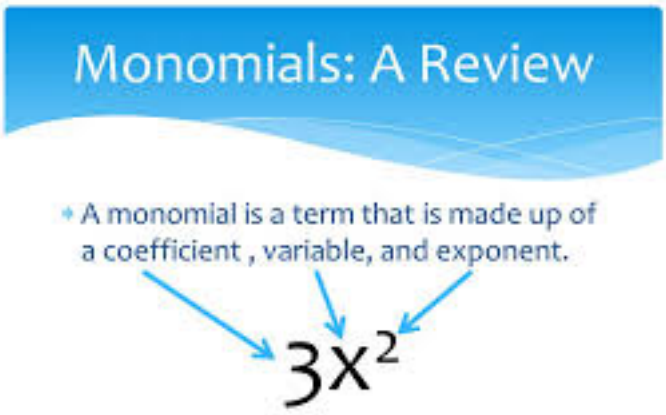
c. $(-3)^5$

d. m^5

e. 3^2x^5

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

VIDEO 1 PROBLEM SET - TRY ON YOUR OWN



Coefficient: A number used to multiply a variable.

Example: 6z means 6 times z, and "z" is a variable, so 6 is a coefficient.

Variables with no number have a coefficient of 1.

Example: x is really 1x.

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. $2 \cdot 2 \cdot y \cdot y \cdot y$ **What is the variable base?** **What is the exponent? (or power?)** **What is the coefficient?**	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. $(-2)(-2)(m)(m)(m)$ **What is the base (variable)?** **What is the exponent? (or power?)** **What is the coefficient?**	7. $5 \cdot 5 \cdot m \cdot n \cdot n \cdot n \cdot n$

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

10.2 Video 2 - Product Rule of Exponents

NOTES

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

VIDEO 2 PROBLEM SET - TRY ON YOUR OWN

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. $3m^4(2m^2)$

10.2 Video 3 – Power Rule of Exponents

NOTES

Power

a. $(2^3)^2$

b. $(5^3)^4$

c. $(x^4)^2$

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

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

VIDEO 3 PROBLEM SET - TRY ON YOUR OWN

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

10.2 Video 4 - Quotient of Exponents

NOTES

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

VIDEO 4 PROBLEM SET - TRY ON YOUR OWN

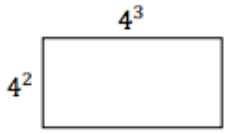
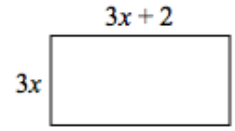
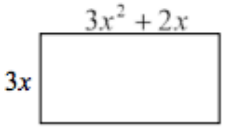
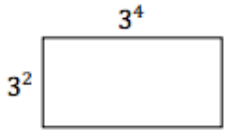
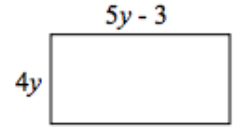
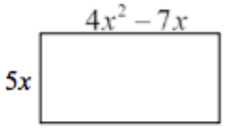
Write the following without using exponents and then simplify. QUOTIENT (Divide)		
30. $\frac{4^5}{4^2}$	31. $\frac{h^8}{h^3}$	32. $\frac{15x^7}{3x^2}$
33. $\frac{3b^6}{12b^4}$	34. $\frac{2x^5y^3}{6x^2y}$	35. $\frac{4^5a^5b^3}{4^2a^3b^2}$

VIDEO 4 PROBLEM SET - TRY ON YOUR OWN FIRST
APPLICATION

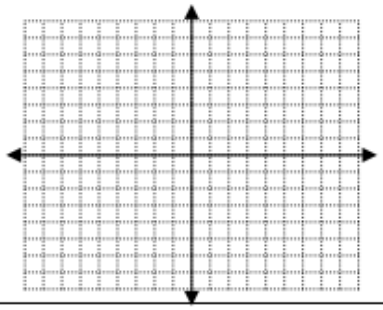
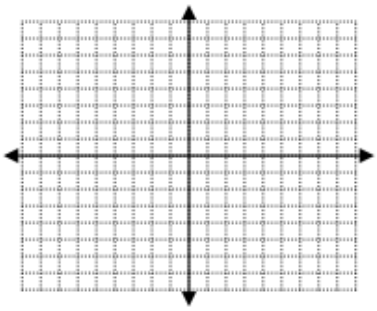
Write the following without using exponents and then simplify.

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

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

NUMERIC SOLUTIONS (number answers)	**VARIABLE SOLUTIONS (letter answers)**	
3. Find the area. 	4. Find the area. 	5. Find the area. 
6. Find the area. 	7. 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, $s = 4y$

SKILLZ REVIEW		
GRAPH	**EVALUATE**	**SOLVE**
1. $y = \frac{3}{4}x - 1$ 	2. $3a - 2b^2$, when $a = 4$ and $b = 3$	3. $4(2x - 5) = 2x$
4. $y = 4$ 	5. $d + \frac{3d}{2} - t$, when $d = -2$ and $t = 1$	6. $4(x - 5) + 1 = 2x - 5$