

Properties of Exponents

Evaluate the following:

1. $(x^2)(x^4) = x^6$

$x \cdot x \cdot x \cdot x \cdot x \cdot x$

2. $y^7/y^4 = y^3$

~~$y \cdot y \cdot y \cdot y \cdot y$~~
 ~~$y \cdot y \cdot y$~~
 $y \cdot y \cdot y$

3. $(d^3)^4 = d^{12}$

$d^3 \cdot d^3 \cdot d^3 \cdot d^3$
 $d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d$

Do you notice any patterns with your answer and the original exponents?

Rules for Exponents with the Same Base

Multiplication - Keep the base and **add** the exponents.

Division - Keep the base and **subtract** the exponents.

Power to a Power - Keep the base and **multiply** the exponents

You Try:

1. $(5^2)(5^5)$

5^7

2. $6^8/6^3$

6^5

3. $(5^3)^2$

5^6

4. $12^{22}/12^4$

12^{18}

5. $(4^{10})^3$

4^{30}

6. $(9^2)(9^4)$

9^6

7. $(h^9)^2$

h^{18}

8. a^m/a^n

a^{m-n}

9. $6^{13}/6^{20}$

6^{-7}
 $\frac{1}{6^7}$

Simplify each expression:

$$[(5-2)^5](3^{-8}) + (5+2)^0$$

$$(3^5)(3^{-8}) + 1$$

$$3^{-3} + 1$$

$$\frac{1}{3^3} + 1$$

$$\left(\frac{1}{27}\right)$$

$$[(10-6)^3](4^2) + (10+2)^2$$

$$(4^3)(4)^2 + 12^2$$

$$4^5 + 144$$

$$1024 + 144$$

$$\textcircled{1168}$$

$$\frac{[(6-1)^2]^2}{(3+2)^3}$$

$$(5^2)^2$$

$$= \frac{5^4}{5^3} = \textcircled{5}$$

Classwork: p. 91

HW: WB pp. 89-90 #s 3-19 odds, 24