

Name: Key

Period: \_\_\_\_\_

P2 Exponents Practice

1) Fill in the blanks. You should get to know these values as well as you know the times tables. There is a quizlet on [scevmath.org](http://scevmath.org) if you took a while to fill this section out.

$1^2 = 1$	$6^2 = 36$	$11^2 = 121$	$16^2 = 256$	$1^3 = 1$	$6^3 = 216$	$1^4 = 1$
$2^2 = 4$	$7^2 = 49$	$12^2 = 144$	$17^2 = 289$	$2^3 = 8$	$7^3 = 343$	$2^4 = 16$
$3^2 = 9$	$8^2 = 64$	$13^2 = 169$	$18^2 = 324$	$3^3 = 27$	$8^3 = 512$	$3^4 = 81$
$4^2 = 16$	$9^2 = 81$	$14^2 = 196$	$19^2 = 361$	$4^3 = 64$	$9^3 = 729$	$4^4 = 256$
$5^2 = 25$	$10^2 = 100$	$15^2 = 225$	$20^2 = 400$	$5^3 = 125$	$10^3 = 1000$	$5^4 = 625$

Simplify each expression.

2)  $(2^3 x^4 y)(-4x^2 y^5)^2 = 128 x^8 y^{11}$

3)  $64(-2)^{-6} = 64 \cdot \frac{1}{64} = 1$

4)  $(2(x+y)^2)^0 = 1$

5)  $\frac{x^{n+1}}{x^{n-2}}(x+y)^2 = x^3 (x+y)^2$

6)  $\left(\frac{3^{-3} a^{11} b^{-4} c^5}{9^2 a^{-5} b^{-2} c}\right)^{-1} (4a(b^2 c d^{-2})^3)^2 = \left(\frac{a^{16} c^4}{b^2 \cdot 2187}\right)^{-1} \left(\frac{16 a^2 b^{12} c^6}{d^{12}}\right) = \frac{34,992 b^{14} c^2}{a^{14} d^{12}}$

7)  $\frac{a^{4n+3} b^{2n-1}}{(a^{2n+1} b^{3+n})^2} = \frac{a^1}{b^7}$

$a^{4n+2} b^{6+2n}$

$$8) 2^{-6n} \cdot 2^{2n} \cdot (2^{(2n)})^2 = 2^{-4n} \cdot 2^{4n} = 2^0 = 1$$

$$9) \left( \frac{(x+y)^4 x^{-3} y^2}{(x+y)^2 x^{-7} y^4} \right)^{-2} = \left( (x+y)^2 x^4 y^{-2} \right)^{-2} = \frac{y^4}{(x+y)^4 x^8}$$

Convert each number to scientific notation.

10) 983 trillion

$$9.83 \times 10^{14}$$

11) 0.00000000000068

$$6.8 \times 10^{-12}$$

12) 12

$$1.2 \times 10^1$$

Write each number as a decimal.

13)  $4.75 \times 10^{11}$

$$475,000,000,000$$

14)  $1.08 \times 10^{-7}$

$$.000000108$$

15)  $8.9 \times 10^9$

$$8,900,000,000$$

Simplify each expression.

16)  $(5.25 \times 10^9)(4.0 \times 10^{-3})$

$$21 \times 10^6 = 2.1 \times 10^7$$

$$17) \frac{3.6 \times 10^{12}}{1.2 \times 10^{-3}}$$

$$= 3 \times 10^{15}$$

$$18) \sqrt{8 \times 10^{12}}$$

$$10^6 \cdot \sqrt{8} = 2,000,000 \sqrt{2}$$