Name:_____

Exponents
Worksheet 1

	Exponent Form	Base	Exponent	Expanded Form	Standard Form
1.	10^2	10	2	10·10	100
2.	2^3	2	3	2 • 2 • 2	8
3.	$\left(\frac{1}{4}\right)^2$	$\frac{1}{4}$	2	$\frac{1}{4}\cdot\frac{1}{4}$	$\frac{1}{16}$
4.	15^1	15	1	15	15
5.	1^4	1	4	1 ·1 ·1 ·1	1
6.	x^2	x	2	x·x	
7.	b^3	b	3	b·b·b	
8.	y^7	y	7	$y{\cdot}y{\cdot}y{\cdot}y{\cdot}y{\cdot}y{\cdot}y$	
9.	$(2x)^4$	$2x$	4	2x·2x·2x·2x	
10.	$(5n)^3$	5n	3	$5n \cdot 5n \cdot 5n$	
11.	$4(xy)^2$	xy	2	4·xy·xy	
12.	$3y^4$	y	4	$3{\cdot}y{\cdot}y{\cdot}y{\cdot}y$	
13.	$(2xyz)^3$	2xyz	3	2xyz·2xyz·2xyz	
14.	$-2x^6$	x	6	-2·x·x·x·x·x·x	
15.	$(-4y)^2$	-4y	2	-4y·-4y	

Name:_____

Exponents
Worksheet 1

Directions: Complete the table below.

Directions: Complete the chart below.

	2nd	Expanded Form	4th
1.	$2^{10} \cdot 2^2$	$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$ (10 times; 2 times)	2^{12}
2.	$3^2 \cdot 3^4$	$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$ (2 times; 4 times)	3^6
3.	$5^3 \cdot 5^6$	$5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5$ (3 times; 6 times)	5^9
4.	$x^5 \cdot x^1$	$x \cdot x \cdot x \cdot x \cdot x \cdot x$ (5 times; 1 time)	x^6
5.	$y^3 \cdot y^5$	$y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$ (3 times; 5 times)	y^8
7.	$a^3 \cdot a^4$	$a \cdot a \cdot a \cdot a \cdot a \cdot a \cdot a$ (3; 4)	a^7
8.	$m^2 \cdot m$	$m^2 \cdot m$	m^3
9.	$x^3 \cdot x^6 \cdot x^3 \cdot x^2$	$x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$ (3 times; 6 times; 3 times; 2 times)	$x^9 \cdot x^5 = x^{14}$
10.	$5y^3 \cdot y \cdot y^5$	$5 \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$	$5y^9$
11.	$2b^3 \cdot 3b^{10}$	$2 \cdot b \cdot b \cdot b \cdot 3 \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b$	$6b^{13}$

12. Compare the 2nd and 4th columns in the table above. Describe, in words, what you notice about the relationship you see between them.

The exponent in column 4 is the sum of the exponents in column 2.

Name:_____

Exponents
Worksheet 2

Directions: Complete the chart below.

		Expanded Form	Single Base and a Power
1.	$\frac{x^4}{x^3}$	$\frac{x \cdot x \cdot x \cdot x}{x \cdot x \cdot x}$ ← 4 times ← 3 times	$x = x^1$
2.	$\frac{x^8}{x^5}$	$\frac{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}{1 \cdot x \cdot x \cdot x \cdot x \cdot x}$	$x \cdot x \cdot x = x^3$
3.	$\frac{x^5}{x}$	$\frac{x \cdot x \cdot x \cdot x \cdot x}{x}$	x^4
4.	$\frac{x^2}{x^8}$	$\frac{x \cdot x}{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}$	$\frac{1}{x^6}$
5.	$\frac{x}{x^5}$	$\frac{x}{x \cdot x \cdot x \cdot x \cdot x}$	$\frac{1}{x^4}$

6. Compare the 2nd and 4th columns in the table above. Describe, in words, what you notice about the relationship you see between them.

		Expanded Form	Single Base and a Power
7.	$\frac{x^3y^3}{x^3y}$	$\frac{x \cdot x \cdot x}{x \cdot x \cdot x} \cdot \frac{y \cdot y \cdot y}{y}$	y^2
8.	$\frac{x^2y^5}{x^3y^2}$	$\frac{x \cdot x}{x \cdot x \cdot x} \quad \frac{y \cdot y \cdot y \cdot y \cdot y}{y \cdot y}$	$\frac{y^3}{x}$
9.	$\frac{6x^5}{8x^3}$	$\frac{2 \cdot 3 \, x \cdot x \cdot x \cdot x \cdot x}{2 \cdot 4 \, x \cdot x \cdot x}$	$\frac{3x^2}{4}$
10.	$\frac{12x^7y}{6x^3y^6}$	$\frac{2 \cdot 2 \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y}{2 \cdot 3 \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y}$	$\frac{2x^3}{y^5}$

Name:_____

Exponents
Worksheet 2

1) $\frac{b^6}{b^4} = b^2$

2) $\frac{8n^6z^3}{2n^5z^2} = 4nz$

3) $\frac{5dk^3}{9d^4k^6} = \frac{5}{9d^3k^3}$

4) $\frac{kh}{7k^4h^5} = \frac{k \cdot h}{7k \cdot k \cdot k \cdot k \; h \cdot h \cdot h \cdot h \cdot h} = \frac{1}{7k^3h^4}$

5) $\frac{3w}{7w^6} = \frac{3w^1}{7w^6} = \frac{3}{7w^5}$

6) $\frac{6^3}{6} = \frac{6^3}{6^1} = 6^2$ or 36

7) $\frac{4k^3z^2}{3kz^4} = \frac{4k^3z^2}{3k^1z^4} = \frac{4k^2}{3z^2}$

8) $\frac{w}{w^3} = \frac{w^1}{w^3} = \frac{1}{w^2}$

9) $\frac{9g^4}{6g^6} = \frac{3 \cdot 3g^4}{3 \cdot 2g^6} = \frac{3}{2g^2}$

10) $\frac{9^2}{9^4} = \frac{1}{9^2}$ or $\frac{1}{81}$

11) $\frac{5h^4}{2h^3k^5} = \frac{5h^2}{2k^5}$

12) $\frac{2d^2}{6d} = \frac{2d^2}{2 \cdot 3d^1} = \frac{d}{3}$