Name: _____

Last Name: _____

Lesson Topic:
Understanding Exponents

$a^0 = 1 \quad a^1 = a$

$a^n \times a^m = a^{n+m}$

$a^n \div a^m = a^{n-m}$

Exponents

I. Solve these for warm-up:

1. $15^2 =$
2. $45^2 =$
3. $0.1^2 =$
4. $5.5^2 =$
5. $6.5^2 =$
6. $(-5)^2 =$
7. $(-5)^3 =$
8. $-5^4 =$
9. $(-5)^4 =$

II. Using the laws of exponents first simplify, than (and only than!) solve:

1. $2^3 \div 2^1 =$
2. $2^3 \div 2^2 =$
3. $2^3 \div 2^3 =$
4. $2^7 \div 2^5 =$
5. $9^7 \div 9^5 =$
6. $15^4 \div 15^2 =$
7. $101^4 \div 101^3 =$
8. $2^3 \times 2^5 \div 2^5 =$
9. $2^3 \times 2^0 \div 2 =$
10. $3^{15} \times 3^{25} \div 3^{40} =$

III. Using the laws of exponents simplify the following:

1. $a + a^2 + a =$
2. $a \times a^2 \times a =$
3. $4b + 3b - 2b =$
4. $4b \times 3b \div 2b =$
5. $a^7 \times a^3 \div a^4 =$
6. $a^3 + a^5 \div a^2 =$
7. $a^7 - a^5 \times a^2 =$
8. $a^n \div a^m =$

Exponents

$$a^0 = 1 \qquad a^1 = a$$
$$a^n \times a^m = a^{n+m}$$
$$a^n \div a^m = a^{n-m}$$

I. Solve these for warm-up:

1. $75^2 =$
2. $105^2 =$
3. $0.1^3 =$
4. $0.01^2 =$

5. $7.5^2 =$
6. $10.5^2 =$
7. $(-0.2)^2 =$
8. $(-0.2)^3 =$

9. $-0.2^2 =$
10. $-0.2^3 =$
11. $-0.5^4 =$
12. $(-0.5)^4 =$

II. Using the laws of exponents first simplify, than (and only than!) solve:

1. $5^3 \div 5^0 =$
2. $5^3 \div 5^1 =$
3. $5^3 \div 5^2 =$
4. $5^3 \div 5^3 =$
5. $3^8 \div 3^5 =$
6. $3^7 \div 3^4 =$
7. $10^9 \div 10^5 =$

8. $1.5^4 \div 1.5^2 =$
9. $0.1^6 \div 0.1^3 =$
10. $2^2 \times 2^3 \div 2^3 =$
11. $2^2 + 2^3 \div 2^3 =$
12. $2^2 - 2^3 \div 2^2 =$
13. $7^3 \times 7^0 \div 7 =$
14. $7^5 \times 7^1 \div 7^5 =$

III. Using the laws of exponents simplify the following:

1. $a^2 + a^2 + a^2 =$
2. $a^2 \times a^2 \times a^2 =$
3. $a^2 + a^3 + a^2 =$
4. $a^2 \times a^3 \times a^2 =$
5. $4a^2 + 3a^2 - 2a^2 =$
6. $4a^2 \times 3a^2 \div 2a^2 =$

7. $a^7 \times a^3 \div a^4 =$
8. $a^3 + a^5 \div a^2 =$
9. $a^7 - a^5 \times a^2 =$
10. $a^n \times a^m =$
11. $a^n \div a^m =$
12. $a^n \times a^m \div a^m =$