Name: _____

EXPONENTS: POWER TO A POWER

The Power Rule

$$(a^b)^c = a^{b \times c}$$

PART I: Use the power rule to solve each of the following. The first problem has already been solved for you.

1. $(5^3)^7 = 5^{21}$
2. $(3^{10})^2 =$ _____
3. $(14^8)^8 =$ _____
4. $(3^5)^6 =$ _____
5. $(10^6)^1 =$ _____
6. $(33^4)^9 =$ _____
7. $(12^2)^6 =$ _____
8. $(19^5)^{14} =$ _____
9. $(4^{18})^3 =$ _____
10. $(2^{10})^{10} =$ _____
11. $(13^{13})^{13} =$ _____
12. $(7^{24})^9 =$ _____

PART II: Use the power rule to solve each of the following. The first problem has already been solved for you.

13. $(y^6)^3 = y^{18}$
14. $(z^{10})^{11} =$ _____
15. $(j^9)^9 =$ _____
16. $(m^{25})^{10} =$ _____
17. $(g^{12})^{11} =$ _____
18. $(y^4)^{25} =$ _____
19. $(x^{21})^6 =$ _____
20. $(w^{12})^{10} =$ _____
21. $(y^{11})^7 =$ _____
22. $(b^4)^{22} =$ _____
23. $(x^{19})^9 =$ _____
24. $(c^{33})^4 =$ _____

ANSWER KEY

PART I:

1. $(5^3)^7 = 5^{21}$
2. $(3^{10})^2 = 3^{20}$
3. $(14^8)^8 = 14^{64}$
4. $(3^5)^6 = 3^{30}$
5. $(10^6)^1 = 10^6$
6. $(33^4)^9 = 33^{36}$
7. $(12^2)^6 = 12^{12}$
8. $(19^5)^{14} = 19^{70}$
9. $(4^{18})^3 = 4^{54}$
10. $(2^{10})^{10} = 2^{100}$
11. $(13^{13})^{13} = 13^{169}$
12. $(7^{24})^9 = 7^{216}$

PART II:

13. $(y^6)^3 = y^{18}$
14. $(z^{10})^{11} = z^{110}$
15. $(j^9)^9 = j^{81}$
16. $(m^{25})^{10} = m^{250}$
17. $(g^{12})^{11} = g^{132}$
18. $(y^4)^{25} = y^{100}$
19. $(x^{21})^6 = x^{126}$
20. $(w^{12})^{10} = w^{120}$
21. $(y^{11})^7 = y^{77}$
22. $(b^4)^{22} = b^{88}$
23. $(x^{19})^9 = x^{171}$
24. $(c^{33})^4 = c^{132}$