

UNIT 5: WORKSHEET HW HELP

Name: _____

Score: _____

Exponent Rules

Pre-algebra: E1

Use **product rule** to rewrite each expression as single positive exponent.

Keep base, add exponents

1) $4^8 \times 4^3$

$$4^{8+3} = \boxed{4^{11}}$$

2) $12^{-6} \times 12^{-10}$

3) $17^{-7} \times 17^6$

4) $3^{-5} \times 3^{-3}$

5) $7^{-2} \times 7^4$

6) $20^6 \times 20^8$

Use **quotient rule** to rewrite each expression as single positive exponent.

Keep base, subtract exponents

1) $14^5 \div 14^{-9}$

$$\frac{14^5}{14^{-9}} = \frac{14^{5-(-9)}}{1} = \boxed{14^{14}}$$

2) $5^{-7} \div 5^2$

$$\frac{5^{-7}}{5^2} = \frac{5^{-7-2}}{1} = \frac{1}{5^9}$$

3) $6^4 \div 6^{-6}$

4) $11^{-2} \div 11^{-4}$

5) $13^4 \div 13^5$

6) $8^3 \div 8^{-6}$

Use **power rule** to rewrite each expression as single positive exponent.

Keep base, multiply the exponents!

1) $(2^{10})^7$

$$2^{10 \cdot 7} = 2^{70} = \boxed{2^{70}}$$

2) $(19^8)^{-4}$

$$\frac{1}{(19^8)^4} = \frac{1}{19^{32}} = \boxed{\frac{1}{19^{32}}}$$

3) $(9^{-2})^2$

$$\frac{9^{-4}}{1} = \boxed{\frac{1}{9^4}}$$

4) $(8^9)^{-3}$

$$\frac{8^{-27}}{1} = \boxed{\frac{1}{8^{27}}}$$

5) $(17^{-7})^{-5}$

$$\boxed{17^{35}}$$

6) $(13^3)^4$

$$\boxed{13^{12}}$$

UNIT 5: WORKSHEET HW HELP

Math-8 Unit 5 | Exponents and Non-Linear Functions
 Raising a Power to a Power... aka: Powers of Products!

NAME: _____

Power Rule: Keep base, multiply the exponents!

Simplify the following expressions. Your answer should contain only positive exponents!

<p>1) $(3a^2)^3$</p> $\frac{3a^2 \cdot 3a^2 \cdot 3a^2}{3^3 \cdot (3 \cdot 3 \cdot 3) \cdot (a^2 \cdot a^2 \cdot a^2)}$ $\boxed{27a^6}$	<p>2) $(2n^3)^4$</p> $\frac{2n^3 \cdot 2n^3 \cdot 2n^3 \cdot 2n^3}{2^4 \cdot (2 \cdot 2 \cdot 2 \cdot 2) \cdot (n^3 \cdot n^3 \cdot n^3 \cdot n^3)}$ $\boxed{16n^{12}}$
<p>3) $(3x^4)^4$</p>	<p>4) $(6b^7)^2$</p>
<p>5) $(7y^4)^2$</p>	<p>6) $(3ab^6)^4$</p>
<p>7) $(2x^3y^4)^3$</p> $\frac{2x^3y^4 \cdot 2x^3y^4 \cdot 2x^3y^4}{(2 \cdot 2 \cdot 2) \cdot (x^3 \cdot x^3 \cdot x^3) \cdot (y^4 \cdot y^4 \cdot y^4)}$ $\boxed{8x^9y^{12}}$	<p>8) $(5mn^2)^3$</p> $\frac{5mn^2 \cdot 5mn^2 \cdot 5mn^2}{(5 \cdot 5 \cdot 5) \cdot (m \cdot m \cdot m) \cdot (n^2 \cdot n^2 \cdot n^2)}$ $\boxed{125m^3n^6}$
<p>9) $(x^4y^3)^2$</p>	<p>10) $(6x^4y)^2$</p>
<p>11) $(u^2v^3)^2$</p>	<p>12) $(2x^4y^4)^4$</p>
<p>13) $(3x^2 \cdot 2x^2)^2$</p> $\frac{(3x^2 \cdot 2x^2) \cdot (3x^2 \cdot 2x^2)}{(6x^4)^2 \cdot (6x^4)}$ $6^2 x^{4 \cdot 2}$ $\boxed{36x^8}$	<p>14) $(2p^3 \cdot 2p^4)^2$</p> $(4p^7)^2 = 4^{1 \cdot 2} \cdot p^{7 \cdot 2}$ $\boxed{16p^{14}}$
<p>15) $(4n^3 \cdot n^3)^2$</p>	<p>16) $(3x \cdot 2x)^2$</p>
<p>17) $(4x^4 \cdot x^4)^3$</p>	<p>18) $(4n^5 \cdot n)^3$</p>