

Name: _____

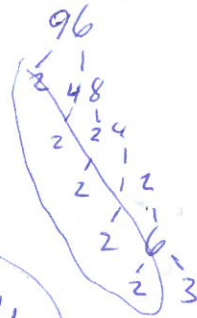
Period: _____

P2 Radicals and Rational Exponents Practice

Simplify each expression. Write your final answer with rational exponents.

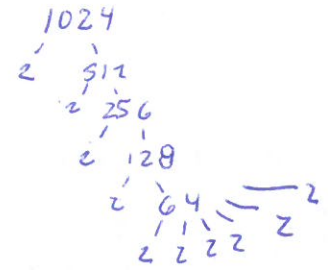
1) $-5(-2)^2 \cdot \left(-\frac{2^3}{4^2}\right) = -5(4) \left(-\frac{8}{16}\right) = +10$

2) $\sqrt[5]{-96x^{-10}y^{13}} = \sqrt[5]{\frac{-96y^{13}}{x^{10}}} = \frac{-2\sqrt[5]{y^2} \sqrt[5]{3y^3}}{x^2}$



3) $\frac{(216a^3b^9)^{2/3}}{(81a)^{3/4}b^5} = \frac{216^{2/3} a^{2} b^6}{81^{3/4} a^{3/4} b^5} = \frac{36 a^{5/4} b}{27} = \frac{4 a^{5/4} b}{3}$

4) $\sqrt[2]{\sqrt[5]{1024x^{17}}} = \sqrt[10]{1024x^{17}} = 2x^1 \sqrt{x^7}$



5) $\left(\frac{9^{3/2} a^{-7/2} b^{1/3} c^{11/6}}{3^{5/3} a^{2/3} b^{-9/2} c^2}\right)^{12} = \frac{9^{18} a^{-42} b^4 c^{22}}{3^{20} a^8 b^{-54} c^{24}} = \frac{3^{36} A^{-42} B^4 C^{22}}{3^{20} A^8 B^{-54} C^{24}} = \frac{3^{16} B^{58} C^2}{A^{50}}$

6) $\sqrt[4]{4^3 \sqrt[6]{64x^{12} \sqrt[5]{x^{18}y^{15}}}} = 2 \sqrt[4]{2^3 \sqrt[6]{2^3 \sqrt[5]{x^{18}y^{15}}}} = 2(2x^2 \sqrt[3]{x^3 y^3}) = 4x^2 x^{18/30} y^{15/30} = 4x^{13/5} y^{1/2}$

Evaluate each expression with a calculator.

7) $\sqrt[4]{243x^{10}y^{12}} = 3x^2 y^3 \sqrt[3]{3x^2}$

8) $\left(\frac{-8}{125}\right)^{-2/3} = \frac{-8^{-2/3}}{125^{-2/3}} = \frac{(-8)^{2/3}}{(-125)^{2/3}} = \frac{5^2}{(-2)^2} = \frac{25}{4}$

9) $\left(\frac{16x^{11}y^2}{81x^3y^{-2}}\right)^{5/4} = \frac{32x^{55/4}y^{10/4}}{243x^{15/4}y^{-10/4}} = \frac{32x^{10}y^5}{243y^5}$

Rationalize each expression.

$$10) \frac{14}{\sqrt{2}-\sqrt{7}} \frac{\sqrt{2}+\sqrt{7}}{\sqrt{2}+\sqrt{7}} = \frac{14(\sqrt{2}+\sqrt{7})}{2-7} = \frac{14(\sqrt{2}+\sqrt{7})}{-5}$$

$$11) \frac{30}{\sqrt{5}+\sqrt{3}} \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}-\sqrt{3}} = \frac{30(\sqrt{5}-\sqrt{3})}{2} = 15(\sqrt{5}-\sqrt{3})$$

$$12) \frac{12}{\sqrt[4]{12a^3b}} \frac{\sqrt[4]{4 \cdot 9 \cdot 9b^3}}{\sqrt[4]{4 \cdot 9 \cdot 9b^3}} = \frac{12 \sqrt[4]{369b^3}}{69b} = \frac{2 \sqrt[4]{369b^3}}{9b}$$

$$13) \frac{5}{\sqrt[3]{4ab^5}} \frac{\sqrt[3]{2a^2b}}{\sqrt[3]{2a^2b}} = \frac{5 \sqrt[3]{2a^2b}}{2ab^2}$$

Simplify each expression.

$$14) \sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{8} + \sqrt{9} + \sqrt{12} + \sqrt{16} + \sqrt{20}$$

$$= 2 + 2\sqrt{2} + 3 + 2\sqrt{3} + 4 + 2\sqrt{3} + 4 + 2\sqrt{5}$$

$$= 3\sqrt{2} + 3\sqrt{3} + 9 + 2\sqrt{5}$$

$$15) 2\sqrt[3]{24a^4} + 6a\sqrt[3]{81a} - 3a\sqrt[3]{3a}$$

$$4a\sqrt[3]{3a} + 18a\sqrt[3]{3a} - 3a\sqrt[3]{3a}$$

$$19a\sqrt[3]{3a}$$

$$16) 2\sqrt{(x+y)^2} + \sqrt{(x+y)^4} + (x+y)$$

$$2(x+y) + (x+y)^2 + (x+y)$$

$$3(x+y) + (x+y)^2$$