Exponent laws: variables, negative and fractional powers worksheet – Grade 9

Grade 9 · Mixed level · 20 questions · **Version X2629**

Name: _____ Date: _____ Score: ___ / 20

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1. Evaluate 2^{-4}. Write it as a fraction.

   Answer: _____

2. Find the value of 2^{-2}. Write it as a fraction.

   Answer: _____

3. Work out $(5^3)^0 + 5^0$.

   Answer: _____

4. Evaluate $27^{\frac{1}{3}}$.

   Answer: _____

5. Simplify: $(3x^2)^3$.

   A. $3x^6$ **B.** $9x^6$ **C.** $27x^5$ **D.** $27x^6$

6. Find the value of $8^{\frac{1}{3}}$.

   Answer: _____

7. Work out 5^{-3}. Write it as a fraction.

   Answer: _____

8. Work out $25^{\frac{2}{2}}$.

   Answer: _____

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9. Find the value of $81^{-\frac{1}{4}}$. Write it as a fraction.

   Answer: _____

10. Evaluate $64^{-\frac{1}{3}}$. Write it as a fraction.

    Answer: _____

11. Simplify $\frac{x^{-3}y^{3}}{x^{2}y^{-4}}$. Use positive exponents only.

    A. $\frac{y^{-1}}{x^{-1}}$ **B.** $\frac{x^{5}}{y^{7}}$ **C.** $x^{5}y^{7}$ **D.** $\frac{y^{7}}{x^{5}}$

12. Find the value of $8^{\frac{3}{3}}$.

    Answer: _____

13. Write $x^{\frac{3}{4}}$ using a radical.

    A. x^{12} **B.** $\sqrt[3]{x^{4}}$ **C.** $4x^{3}$ **D.** $\sqrt[4]{x^{3}}$

14. Write $(3x^{-5}y^{4})^{-2}$ in simplest form. Use positive exponents only.

    A. $9x^{10}y^{8}$ **B.** $\frac{x^{10}}{9y^{8}}$ **C.** $\frac{y^{8}}{9x^{10}}$ **D.** $\frac{9x^{10}}{y^{8}}$

15. Find the value of $\left(\frac{1}{4}\right)^{-2}$. Write it as a fraction.

    Answer: _____

16. Work out $32^{\frac{1}{5}} + 4^{\frac{1}{2}} \times 2^{0}$.

    Answer: _____

17. Using $s = V^{\frac{1}{3}}$, what is the side of a cube if V is 125 cm³?

    Answer: _____

18. Simplify: $x^{\frac{2}{5}} \times x^{\frac{1}{5}}$.

    A. $x^{\frac{3}{5}}$ **B.** $x^{\frac{2}{5}}$ **C.** $2x^{\frac{3}{5}}$ **D.** $x^{\frac{3}{10}}$

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19. Evaluate $\left(\frac{2}{3}\right)^{-3}$. Write it as a fraction.

    Answer: _____

20. Write $(x^8y^4)^{\frac{1}{2}}$ in simplest form.

    A. x^6y^2 **B.** x^8y^2 **C.** x^4y^4 **D.** x^4y^2

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Answer key · Version X2629

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1. **1/16**
2. **1/4**
3. **2**
4. **3**
5. **D ($27x^{6}$)**
6. **2**
7. **1/125**
8. **25**
9. **1/3**
10. **1/4**
11. **D ($\frac{y^{7}}{x^{5}}$)**
12. **8**
13. **D ($\sqrt[4]{x^{3}}$)**
14. **B ($\frac{x^{10}}{9y^{8}}$)**
15. **16/1**
16. **4**
17. **5**
18. **A ($x^{\frac{3}{5}}$)**
19. **27/8**
20. **D ($x^{4}y^{2}$)**

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