

Write each expression with fractional exponents.

1. $\sqrt{x^5}$

5. $3\sqrt[8]{3^5x^3y^4}$

2. $\sqrt[5]{6x^4}$

6. $xy^3\sqrt[4]{5xy}$

3. $\sqrt{8x^4}$

7. $a^3\sqrt[4]{ab}$

4. $3a\sqrt[6]{a^4}$

8. $\sqrt{x^3y^6}$

Write each expression in simplest radical form (using at most one radical sign).

9. $81^{\frac{1}{2}} =$

11. $x^{\frac{1}{3}} \cdot x^{\frac{1}{3}} =$

10. $27^{-\frac{1}{2}} =$

12. $\left(a^{-\frac{4}{5}}\right)^{-5} =$

13. $(4x^3y)^{\frac{1}{2}} =$

19. $(a^{\frac{1}{4}} \cdot a^{\frac{2}{9}})^2 =$

14. $(a^{\frac{1}{2}})^2 =$

20. $2x^2(x^{\frac{1}{3}})^{\frac{1}{2}} =$

15. $(2a^3)^{\frac{1}{4}} =$

16. $(x^{\frac{1}{2}} \cdot y^{\frac{1}{3}})^{\frac{1}{2}} =$

17. $2^{\frac{1}{3}} \cdot x^{\frac{1}{6}} =$

18. $3x \cdot y^{\frac{4}{5}} =$

Answer Key

1. $x^{\frac{1}{5}}$

2. $6^{\frac{1}{5}}x^{\frac{4}{5}}$

3. $2^{\frac{3}{2}}x^2$

4. $3a^{\frac{5}{3}}$

5. $3^{\frac{13}{8}}x^{\frac{3}{8}}y^{\frac{1}{2}}$

6. $5^{\frac{1}{4}}x^{\frac{5}{4}}y^{\frac{13}{4}}$

7. $a^{\frac{13}{4}}b^{\frac{1}{4}}$

8. $x^{\frac{3}{2}}y^3$

9. 9

10. $\sqrt{\frac{3}{9}}$

11. $\sqrt[3]{x^2}$

12. a^4

13. $2x^{\frac{3}{2}}y^{\frac{1}{2}}$

14. a

15. $\sqrt[4]{2a^3}$

16. $\sqrt[12]{x^3y^2}$

17. $\sqrt[6]{4x}$

18. $3x^5\sqrt[5]{y^4}$

19. $\sqrt[18]{a^{17}}$

20. $2x^2\sqrt[6]{x}$