

Name _____

Period _____ Date _____

Rational Exponents

Simplify each expression. No decimal answers allowed!

1. $8^{\frac{1}{3}}$	2. $1^{\frac{1}{3}}$	3. $4^{-\frac{1}{2}}$	4. $32^{\frac{4}{5}}$
5. $(16)^{\frac{3}{2}}$	6. $(81)^{\frac{1}{2}}$	7. $(25)^{-\frac{3}{2}}$	8. $(-125)^{\frac{2}{3}}$
9. $\sqrt[3]{8}$	10. $\sqrt[5]{-1}$	11. $\sqrt[3]{-1000}$	12. $\sqrt[6]{64}$
13. $(\sqrt[4]{16})^2$	14. $(\sqrt[5]{32})^{-3}$	15. $(\sqrt[3]{-8})^5$	16. $(\sqrt[5]{-32})^{-4}$
17. $\sqrt{\frac{1}{25}}$	18. $\sqrt{4a^6}$	19. $\sqrt[3]{\frac{8}{125}}$	20. $\sqrt[5]{\frac{x^{10}}{y^5}}$
21. $\sqrt[3]{x^5} \sqrt[3]{x}$	22. $(8^{\frac{2}{3}})^{\frac{1}{2}}$	23. $\frac{\sqrt[5]{x^4}}{\sqrt[3]{x}}$	24. $x^{\frac{2}{5}} \cdot x^{\frac{1}{3}}$

25. $\frac{1}{36^{\frac{1}{2}}}$	26. $\frac{1}{81^{-\frac{1}{2}}}$	27. $\frac{216^{\frac{1}{3}}}{125^{\frac{1}{3}}}$	28. $27^{\frac{4}{3}}$
29. $\left(\frac{36}{121}\right)^{-\frac{1}{2}}$	30. $\sqrt[7]{x^3} \cdot \sqrt{x}$	31. $(\sqrt[5]{32})^{-3}$	32. $\sqrt[7]{x^3} \cdot \sqrt{x}$

Mixed Review:

Use the Rules of Exponents to simplify the following.

33. $\frac{5x^7y^2}{15xy^{13}}$	34. $(2x^4y^6)^3$	35. $\frac{-4x^4y^7}{8x^5y^3}$	36. $(3x^2y^{-5})^2$
37. $(8x^{11})(-3x^5)$	38. $\frac{28x^3y^{19}}{4x^5y^{12}}$	39. $\frac{15x^6y^{11}}{27x^4y^2}$	40. $(10x^5y^{-2})^{-4}$