

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Work the Practice Problems on a separate sheet of paper.**

What you need to know & be able to do	Things to remember		
1. Simplify a Radical	Prime Factor the radicand and look for Pairs.	1. $\sqrt{150}$ $5\sqrt{6}$	2. $8\sqrt{98}$ $56\sqrt{2}$
		3. $3c\sqrt{243c^{52}d^{11}m^{23}}$ $27c^{27}d^6m^{11}\sqrt{3dm}$	4. $4m^3\sqrt{48m^2}$ $16m^4\sqrt{3}$
2. Add / Subtract Radicals	You can only add or subtract if the radicand is the same. Try to simplify first. Simplify again at the end.	5. $2\sqrt{3} + 5\sqrt{3}$ $7\sqrt{3}$	6. $\sqrt{32} - 3\sqrt{48} + 2\sqrt{72}$ $16\sqrt{2} - 12\sqrt{3}$
		7. $-6\sqrt{9x} + 3\sqrt{64x} - \sqrt{50x}$ $6\sqrt{x} - 5\sqrt{2x}$	8. $3\sqrt{18} - \sqrt{72}$ $3\sqrt{2}$
3. Multiply Radicals	Multiply Outside by Outside and Inside by Inside. Simplify at the end.	9. $\sqrt{125a^2}\sqrt{2ab^2}$ $5ab\sqrt{10a}$	10. $a^5\sqrt{b} \cdot a^3\sqrt{b}$ $a^8b$
		11. $\sqrt{8xyz^3} \cdot \sqrt{10x^3y^2z}$ $4x^2yz^2\sqrt{5y}$	12. $3\sqrt{2t} \cdot \sqrt{2t^2}$ $6t\sqrt{t}$
4. Divide Radicals	Multiply both top and bottom by the radical in the denominator. Simplify at the end.	13. $\frac{\sqrt{63y^3}}{\sqrt{7y}}$ $3y$	14. $\frac{3}{\sqrt{12}}$ $\frac{\sqrt{3}}{2}$
		15. $\frac{\sqrt{3}}{2\sqrt{6}}$ $\frac{\sqrt{2}}{4}$	16. $\sqrt{\frac{15x^5}{3x}}$ $x^2\sqrt{5}$

5. Simplify Rational Expressions	Look for GCFs. Factor. Cross out anything that appears in both numerator and denominator.	17. $\frac{-3x^{-8}y^2}{15x^4y^7}$ $\frac{-1}{5x^{12}y^5}$	18. $\frac{6x-30}{x^2-7x+10}$ $\frac{6}{x-2}$
		19. $\frac{6x+36}{x^2-36}$ $\frac{6}{x-6}$	20. $\frac{x^2+x-6}{x^2+8x+15}$ $\frac{x-2}{x+5}$
6. Multiply Rational Expressions	Pretty much, the same as simplifying.	21. $\frac{x^2+5x+6}{x^2-1} \cdot \frac{x+1}{x+2}$ $\frac{x+3}{x-1}$	22. $\frac{3y^2}{8} \cdot \frac{32x}{20y}$ $\frac{3xy}{5}$
		23. $\frac{(x-4)}{2} \cdot \frac{x-8}{x^2-16}$ $\frac{x-8}{2(x+4)}$	24. $\left(\frac{5x}{x^2+5x-24}\right)\left(\frac{x-3}{2x^2+16x}\right)$ $\frac{5}{2(x+8)^2}$
7. Divide Rational Expressions	Change to Multiplication and Flip the second expressions.	25. $\frac{9x^2y}{13} \div \frac{3xy^2}{26}$ $\frac{6}{xy}$	26. $\frac{-6+3x}{5} \div \frac{4x-8}{25}$ $\frac{15}{4}$
		27. $\frac{x^2-x-6}{x^2+2x-15} \div \frac{x^2-4x-5}{x^2-25}$ $\frac{1}{x+1}$	28. $\frac{x^2-x-20}{x^2+7x+12} \div \frac{x^2-10x+25}{x^2+6x+9}$ $\frac{x+3}{x-5}$
8. Add & Subtract Rational Expressions with Common Denominators	Add the numerators and keep the denominator.	29. $\frac{x}{x^2-1} + \frac{1}{x^2-1}$ $\frac{1}{x-1}$	30. $\frac{5x+1}{x+5} - \frac{2x+3}{x+5}$ $\frac{3x-2}{x+5}$
		31. $\frac{x^2}{3x^2-4x} + \frac{5x}{3x^2-4x}$ $\frac{x+5}{3x-4}$	32. $\frac{7}{x-8} - \frac{5-x}{x-8}$ $\frac{x+2}{x-8}$
9. Add & Subtract Rational Expressions with Unlike Denominators	Get a Common Denominator (LCM) and then Add or Subtract.	33. $\frac{5}{t-1} + \frac{3}{t}$ $\frac{8t-3}{t(t-1)}$	34. $\frac{y}{y-9} - \frac{4}{4y-36}$ $\frac{y-1}{y-9}$
		35. $\frac{6}{x^2-4x-5} + \frac{1}{x+1}$ $\frac{1}{x-5}$	36. $\frac{m}{m-1} - \frac{8}{m-4}$ $\frac{m^2-12m+8}{(m-1)(m-4)}$