

Name:

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples	
ADDING & SUBTRACTING <i>Radicals</i>	①	SIMPLIFY all radicals.
	②	Identify radicals with the SAME INDEX and SAME RADICAND . Only these can be combined!
	③	For common radicals, add/subtract the coefficients and KEEP THE COMMON RADICAL .
	1. $3\sqrt{27} - 2\sqrt{12}$	2. $3\sqrt[3]{54} - 2\sqrt[3]{2} + 7\sqrt[3]{-16}$
	3. $7\sqrt[4]{48} - 2\sqrt[4]{3} + 3\sqrt[3]{72}$	4. $10\sqrt{28} + \sqrt[3]{-56} - 4\sqrt{175}$
	5. $\sqrt{98x^4y^2} - 3x^2y\sqrt{2}$	6. $\sqrt[3]{-40a^7} + 2a^2 \cdot \sqrt[3]{135a^4}$
MULTIPLYING <i>Radicals</i>	①	Multiply coefficients, then use the PRODUCT RULE : $\sqrt[n]{a} \cdot \sqrt[n]{b} =$
	②	SIMPLIFY the resulting radical.
	7. $\sqrt{27} \cdot \sqrt{5}$	8. $3\sqrt{10} \cdot -2\sqrt{18}$
	9. $2\sqrt[3]{9} \cdot 5\sqrt[3]{-24}$	10. $-3\sqrt[4]{64} \cdot -\sqrt[4]{8}$

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<p style="text-align: center;">DIVIDING <i>Radicals</i></p>	①	Divide coefficients, then use the QUOTIENT RULE : $\frac{\sqrt[n]{a}}{\sqrt[n]{b}} =$
	②	SIMPLIFY the resulting radical.
	1. $\frac{12\sqrt{160}}{2\sqrt{5}}$	2. $\frac{36\sqrt[4]{1,250}}{9\sqrt[4]{2}}$
	3. $\frac{\sqrt{x^3y^9}}{\sqrt{x^2y^5}}$	4. $\frac{28\sqrt[3]{-16m^6}}{4\sqrt[3]{2m}}$
	5. $\sqrt{\frac{48}{16}}$	6. $\sqrt[3]{\frac{40}{27}}$
	7. $\sqrt[3]{\frac{7x^5}{64y^6}}$	8. $\sqrt[4]{\frac{32w}{81}}$
<p style="text-align: center;">RATIONALIZING <i>the Denominator</i></p>	<p>* Monomial Denominators: Multiply the numerator and denominator by the radical. * Binomial Denominators: Multiply the numerator and denominator by the conjugate. (The same expression but with the opposite sign in the middle.)</p>	
	9. $\frac{3}{2\sqrt{5}}$	10. $\sqrt{\frac{8}{15}}$

	11. $\frac{3\sqrt{12}}{4\sqrt{7}}$	12. $\frac{\sqrt{32a^5}}{\sqrt{3a}}$
	13. $\frac{\sqrt{8}-\sqrt{2}}{\sqrt{2}}$	14. $\frac{3\sqrt{2}+\sqrt{6}}{\sqrt{12}}$
<p style="text-align: center;">BINOMIAL <i>Denominators</i></p>	15. $\frac{4}{4+\sqrt{2}}$	16. $\frac{2}{6-\sqrt{5}}$
	17. $\frac{\sqrt{3}}{1-4\sqrt{2}}$	18. $\frac{5-\sqrt{5}}{\sqrt{5}+\sqrt{3}}$
	19. $\frac{3+\sqrt{7}}{2+2\sqrt{7}}$	20. $\frac{8-\sqrt{6}}{3-4\sqrt{6}}$