

ALGEBRA I

Unit
10

parts of a Radical

Perfect Squares

SQUARE ROOTS with Variables

ADDING & SUBTRACTING RADICALS

Dividing Radicals

Type I: Dividing by a Monomial

STEPS TO SOLVE Radical Equations

RADICAL EXPRESSIONS & EQUATIONS

NOTES • HOMEWORK • QUIZZES • TEST

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Unit 10 - Radical Expressions & Equations: Sample Unit Outline

	TOPIC	HOMEWORK
DAY 1	Simplifying Radicals (Square and Cube Roots)	HW #1
DAY 2	Simplifying Radicals with Variables	HW #2
DAY 3	Adding & Subtracting Radicals	HW #3
DAY 4	Quiz 10-1	None
DAY 5	Multiplying Radicals	HW #4
DAY 6	Dividing Radicals (Includes Rationalizing the Denominator)	HW #5
DAY 7	Dividing Radicals with Binomials (Conjugates)	HW #6
DAY 8	Quiz 10-2	None
DAY 9	Solving Radical Equations (Day 1)	HW #7
DAY 10	Solving Radical Equations (Day 2 – Resulting in Quadratics)	HW #8
DAY 11	Unit 10 Review	Study for Test
DAY 12	UNIT 10 TEST	None
<p>Note – If following along with my Algebra Curriculum, Simplifying Radicals (Days 1 and 2) may be skipped as it is also included in Unit 6 (Exponents). If you wish to use it as a review, all notes and homework assignments were rewritten so it will not be a duplicate.</p>		

See sample images of the pages on the next page.

Name: _____	Date: _____
Topic: _____	Class: _____

Main Ideas/Questions	Notes/Examples
Parts of a Radical	The n^{th} root of a number *If there is no If a radical has indicates a List
Perfect Squares	
Perfect Square Roots	1. $\sqrt{16}$

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes/Examples
SQUARE ROOTS <i>with Variables</i>	GIVEN: $\sqrt{a^m}$ • IF m IS A MULTIPLE OF 2, • IF m IS NOT a multiple of
EXAMPLES	1. $\sqrt{x^2}$

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes/Examples
Multiplying Radicals	① Multiply coefficients. ② Multiply the radicands using the the PRODUCT RULE : $\sqrt{a} \cdot \sqrt{b} = \sqrt{ab}$ ③ SIMPLIFY the resulting radical.
Directions: Find each product. Write your answer in simplest form.	

Name: _____	Date: _____
Topic: _____	Class: _____

Main Ideas/Questions	Notes/Examples
Type 1: Dividing by a Monomial	To simplify when there is a monomial in the denominator multiplying the numerator and denominator by the denominator, then simplify. Directions: Find each quotient. Write your answer in simplest form.
1. $\frac{2+\sqrt{5}}{\sqrt{2}}$	2. $\frac{4-\sqrt{3}}{\sqrt{3}}$
3. $\frac{4-6\sqrt{2}}{\sqrt{2}}$	4. $\frac{5+\sqrt{3}}{\sqrt{18}}$
5. $\frac{2-\sqrt{5}}{\sqrt{12}}$	6. $\frac{5-\sqrt{5}}{4\sqrt{8}}$
Type 2: Dividing by a Binomial	To simplify when there is a binomial in the denominator and denominator by the conjugate, then simplify. What is a conjugate? _____
Practice with Conjugates	Directions: Multiply each expression by its conjugate.
7. $3+\sqrt{5}$	8. $1-7\sqrt{2}$

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes
STEPS TO SOLVE Radical Equations	① Make sure the radical is ISOLATED. ② SQUARE BOTH SIDES OF THE EQUATION to eliminate the radical sign. ③ SOLVE the remaining equation. ④ CHECK for EXTRANEIOUS SOLUTIONS .
What are Extraneous Solutions?	
Directions: Solve each equation. Check all solutions.	
1. $\sqrt{x} = 9$	2. $\sqrt{m+5} = 2$
3. $6 = \sqrt{4y}$	4. $\sqrt{\frac{a}{3}} = 7$
5. $\sqrt{5m-1} = 13$	6. $3 = \sqrt{35-2w}$

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes/Examples
ADDING & SUBTRACTING RADICALS	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 . EXAMPLE: $-2\sqrt{20} - 2\sqrt{5}$
Directions: Find each sum or difference. Make sure your answer is in simplest radical form.	

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes/Examples
Dividing Radicals	① Break apart the radicands using the the QUOTIENT RULE : $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ ② Look for perfect square radicals and simplify them. ③ Simplify (divide/reduce) the radicands, if possible. ④ Simplify the resulting radical, along with any coefficients.
Examples	Directions: Find each quotient. Write your answer in simplest radical form.
1. $\sqrt{\frac{49}{100}}$	2. $\sqrt{\frac{8}{32}}$
3. _____	

Unit 10 Test Study Guide

(Radical Expressions & Equations)

Name: _____	Date: _____
Topic: _____	Class: _____
1. $\sqrt{44a^3b^{16}}$	3. $2\sqrt{108x^9y^2z^{14}}$
2. $16a^4$	6. $\sqrt[3]{320m^3n^7}$
4. 18	8. $\sqrt{72} - \sqrt{18}$
5. 18	10. $3\sqrt{5} + 7\sqrt{125} - 2\sqrt{45}$
6. 18	13. $\sqrt{5x^2} \cdot \sqrt{8x^2}$
7. 18	

Quiz 10-1: Simplify, Add, and Subtract Radicals

Final answers in simplest radical form.

2. $4\sqrt{108}$

1. _____

Name: _____	Date: _____
Topic: _____	Class: _____
Main Ideas/Questions	Notes/Examples
Dividing Radicals	Directions: Find each quotient. Make sure your final answer is rationalized.

1. $\frac{\sqrt{8}}{\sqrt{98}}$

2. $\frac{\sqrt{6}}{\sqrt{50}}$

3. $\frac{7\sqrt{60}}{\sqrt{3}}$

4. $\frac{8\sqrt{5}}{2\sqrt{36}}$

5. $\frac{5\sqrt{3}}{10\sqrt{27}}$

6. $\frac{8\sqrt{14}}{12\sqrt{18}}$

** This is a 2-page document! **

SHOW ALL WORK NEEDED TO ANSWER EACH QUESTION!
PLACE YOUR FINAL ANSWER IN THE BOX. GOOD LUCK! ☺

15	2. Simplify: $\sqrt{80a^9b^2c^5}$
18	4. Simplify: $\sqrt[3]{250m^6n^{10}}$
-8\sqrt{12}	6. Simplify: $13\sqrt{2} - \sqrt{50}$
+11\sqrt{63} - 2\sqrt{28}	8. Simplify: $3\sqrt{8} - \sqrt{125} + \sqrt{32} + \sqrt{45}$