

keep scrolling to get a
sneak peak!

This set of guided
notes will walk Algebra
2 students
through simplifying
radical expressions.
All you need to do is print
& make copies for your
students!

SIMPLIFYING RADICAL EXPRESSIONS

Algebra 2 Guided Notes

SIMPLIFYING RADICAL EXPRESSIONS

The index will tell you how many factors are needed. Ex: 6th root = 6 factors

- No radicals have perfect nth powers as factors other than the index.
- No radicands contain fractions.
- No radicals are in the denominator of fractions.

Find the number of factors of the radicand. Divide the radicand by the index to get the number of factors.

	1	2	3	4	5	6	7	8	9	10
Perfect square	1									
Perfect cube	1									

Math with Ms. Rivera

ANSWER KEY INCLUDED

2. $\sqrt[4]{16 \cdot 7}$
 $\sqrt[4]{16} \cdot \sqrt[4]{7}$
 $2\sqrt[4]{7}$

3. $\sqrt[5]{32 \cdot 5}$
 $\sqrt[5]{32} \cdot \sqrt[5]{5}$
 $2\sqrt[5]{5}$

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Algebra 2 Guided Notes

Simplifying Radical Expressions

why do you need this?



It's simple and done-for-you! Just print and make copies!



Students can work on essential Algebra 2 skills.



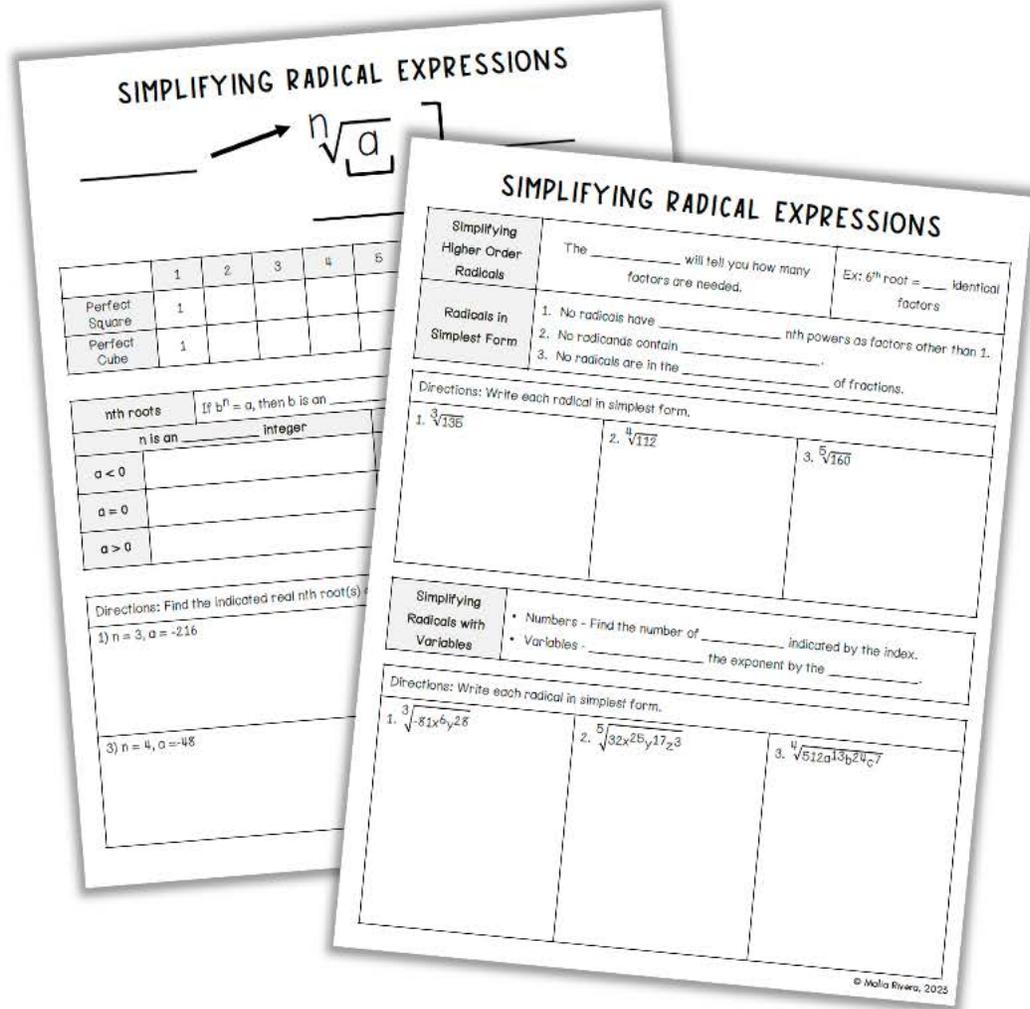
Aligns to CCSS, TEKS, and VA SOLs!



Suggested and detailed answer keys are included for you!

The image shows two overlapping worksheets titled "SIMPLIFYING RADICAL EXPRESSIONS". The top worksheet includes a table for "Simplifying Higher Order Radicals" with columns for 1, 2, 3, 4, and 5. Below the table are sections for "Radicals in Simplest Form" with three numbered problems: 1. $\sqrt[3]{135}$, 2. $\sqrt[4]{112}$, and 3. $\sqrt[5]{160}$. The bottom worksheet includes a section for "Simplifying Radicals with Variables" with three numbered problems: 1. $\sqrt[3]{-81x^6y^{28}}$, 2. $\sqrt[5]{32x^{25}y^{17}z^3}$, and 3. $\sqrt[4]{512a^{13}b^2c^7}$. Both worksheets include directions and a copyright notice for Malia Rivera, 2023.

Algebra 2 Guided Notes: Simplifying Radical Expressions *includes:*



- ✓ 2 pages of guided notes
- ✓ Finding nth Roots
- ✓ Types of nth Roots
- ✓ Simplifying Higher Order Radicals - 2nd, 3rd, 4th, and 5th roots.
- ✓ Simplifying Radical with Variables

Algebra 2 Guided Notes: Simplifying Radical Expressions includes:

 Detailed answer keys

CCSS: HSA-SSE.B.3

TEKS: A1.11.A, A2.7.G

VA SOL: EO.A11.1.b

SIMPLIFYING RADICAL EXPRESSIONS

index → $\sqrt[n]{a}$ } radical
radicand

	1	2	3	4	5
Perfect Square	1	4	9	16	25
Perfect Cube	1	8	27	64	125

SIMPLIFYING RADICAL EXPRESSIONS

Simplifying Higher Order Radicals	The <u>index</u> will tell you how many factors are needed.	Ex: 6 th root = <u>6</u> identical factors
Radicals in Simplest Form	1. No radicals have <u>perfect</u> <u>n</u> th powers as factors other than 1. 2. No radicands contain <u>fractions</u> . 3. No radicals are in the <u>denominator</u> of fractions.	

Directions: Write each radical in simplest form.

1. $\sqrt[3]{135}$ $\sqrt[3]{27 \cdot 5}$ $\sqrt[3]{27} \cdot \sqrt[3]{5}$ $3\sqrt[3]{5}$	2. $\sqrt[4]{112}$ $\sqrt[4]{16 \cdot 7}$ $\sqrt[4]{16} \cdot \sqrt[4]{7}$ $2\sqrt[4]{7}$	3. $\sqrt[5]{160}$ $\sqrt[5]{32 \cdot 5}$ $\sqrt[5]{32} \cdot \sqrt[5]{5}$ $2\sqrt[5]{5}$
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SIMPLIFYING RADICAL EXPRESSIONS

Simplifying Radicals with Variables	• Numbers - Find the number of <u>factors</u> indicated by the index. • Variables - <u>Divide</u> the exponent by the <u>index</u> .
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Directions: Write each radical in simplest form.

1. $\sqrt[3]{-81x^6y^{28}}$ $\sqrt[3]{-81} \cdot \sqrt[3]{x^6} \cdot \sqrt[3]{y^{28}}$ $-3\sqrt[3]{3} \cdot x^2 \cdot \sqrt[3]{y^{28}}$	2. $\sqrt[5]{32x^{25}y^{17}z^3}$ $\sqrt[5]{32} \cdot \sqrt[5]{x^{25}} \cdot \sqrt[5]{y^{17}} \cdot \sqrt[5]{z^3}$	3. $\sqrt[4]{512a^{13}b^{24}c^7}$ $\sqrt[4]{512} \cdot \sqrt[4]{a^{13}} \cdot \sqrt[4]{b^{24}} \cdot \sqrt[4]{c^7}$
---	--	--

nth roots | If $b^n = a$, then b is an nth root of a.

n is an <u>even</u> integer	
a < 0	No real n^{th} roots $\sqrt[n]{a}$: (imaginary roots)
a = 0	one real n^{th} root $\sqrt[n]{0} = 0$
a > 0	Two real n^{th} roots $\pm \sqrt[n]{a} = a^{\pm \frac{1}{n}}$

Directions: Find the indicated real nth root(s) of

1) $n = 3, a = -216$
 $\sqrt[3]{-216}$ $n = \text{odd}$
 $a < 0$
 one real cube root
 $\sqrt[3]{-216} = -6$

3) $n = 4, a = -48$
 $\sqrt[4]{-48}$ $n = \text{even}$
 $a < 0$

Check out what *other teachers* are saying:



"This was great practice for my Algebra II students after I presented the lesson. Next Year, I may use them as notes."

- Vonda B.



"Great resource for what we were currently covering in precalc!"

- Megan M.



"I used this in conjunction with another document, but this would have worked fine on its own. The students found it much easier to understand the concept using these guided notes."

- Cheryl W.

Check out the *year-long bundle!*

ALGEBRA 2 GUIDED NOTES Year-Long Bundle

TRANSFORMATIONS OF FUNCTIONS

Type of Transformation	f(x) Notation
Reflection	$-f(x)$
Vertical Dilation	$af(x)$ $0 < a < 1$ $ a > 1$
Horizontal Dilation	$f(bx)$ $0 < b < 1$ $ b > 1$
Vertical Translation	$f(x) + k$

LINEAR REGRESSION

Scatter Plot Definition: A graph of _____ points that are _____

Scatter Plot Relationships: _____

Line of Best Fit Definition: A line that _____ as close as possible to all _____

Linear Regression Definition: A linear model that is used to _____ between two variables.

Linear Intersections: Estimating data _____

GRAPHING QUADRATIC TRANSFORMS

Reflection over the x-axis: _____

Reflection over the y-axis: _____

COMPOSITION OF FUNCTIONS

Definition: To make the _____ another function.

Things to remember:

- Always start with the _____ the function on the _____
- Tag does not always equal _____

$(f \circ g)(x) = \dots$ is also _____

$g(x) = 2x + 3$ and $f(x) = x^2$, find $(f \circ g)(x)$

$g(x) = 2x + 3$ and $f(x) = x^2$, find $(g \circ f)(x)$

COMPOUND INEQUALITIES

Compound inequality has two separate inequalities joined by _____

Graph of a compound inequality with "and" of the graphs of the inequalities _____

$x > 3$

POLYNOMIAL FUNCTION CHARACTERISTICS

Characteristics	Graph
Intercepts	_____
Touch	_____
Inflection	_____

Relative Extrema (Minimum or Maximum): Points on the graph that help to describe the _____ of a function. They are also called _____

Increasing Intervals: The interval between _____ y-values _____ as the x-value _____

Decreasing Intervals: The interval between _____ y-values _____

Positive Intervals: Intervals where _____

PROPERTIES OF RATIONAL EXPONENTS & RADICALS

Property	Properties of Rational Exponents
Product of Powers	Definition
Power of a Power	
Power of a Product	
Negative Exponent	
Zero Exponent	
Quotient of Powers	
Power of a Quotient	

Directions: Use the properties of rational exponents to simplify _____

Answer key included

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hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy these Simplifying Radical Expressions guided notes for Algebra 2 that can be used all year long!

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