Objective

- Orally justify your sorting and labeling of properties of radicals using the key words common, exponent and base, nth root, principal nth root, radical expression, index, and radicand in a group.
 - A) Using a graphic organizer to sort
 - B) Using sentence frames with word bank
 - C) Using examples from the exponent rules

Success Criteria

- Define nth root and corresponding vocabulary
- Identify common features in exponent and radical properties
- Brainstorm examples of radical properties with numbers
- Vocabulary: common, exponent and base, nth root, principal nth root, radical expression, index, radicand

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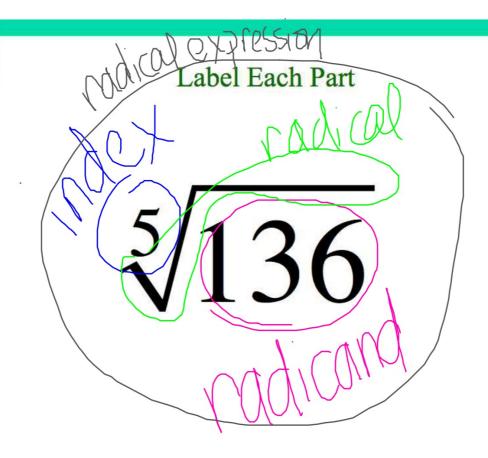


Let n be an integer greater then 1 and a and b real numbers.

- 1. If b^n , then b is the **nth root** of a.
- 2. If a has an nth root, the **principal** nth root of a is the nth root having the same sign as a.

The principal nth root of a is denoted by the **radical** expression $\sqrt[n]{a}$.

The positive integer n is the **index** of the radical and a is the **radicand**.



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Sort and Label

- You will receive cards with the 7 properties we have learned so far and 6 new properties involving radicals.
- Your task is to match properties you think correspond to one another (act the same). Use the key vocabulary words and sentence frames to guide your discussion.
- Hint: Not every property has a match, so you can decide that it belongs by itself.
- Once you've matched the properties, give the property a name your partner and you agree on.
- When you're done, let your teacher know.

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Let u and v be real numbers, variables, or algebraic expressions, and m and n be positive integers greater than 1. We assume that all of the roots are real numbers and all of the denominators are not zero.

	Property	Example	
1.	$\sqrt[n]{uv} = \sqrt[n]{u} \cdot \sqrt[n]{v}$	$\sqrt{75}$ =	
2.	$\sqrt[n]{\frac{u}{v}} = \frac{\sqrt[n]{u}}{\sqrt[n]{v}}$	$\frac{\sqrt[4]{96}}{\sqrt[4]{6}} =$	
3.	$\sqrt[m]{\sqrt[n]{u}} = \sqrt[m:n]{u}$	$\sqrt{\sqrt[3]{7}} =$	
4.	$\left(\sqrt[n]{u}\right)^n = u$	$\left(\sqrt[4]{5}\right)^4 =$	
5.	$\sqrt[n]{u^m} = \left(\sqrt[n]{u}\right)^m$	$\sqrt[3]{27^2} =$	
6.	$\sqrt[n]{u^n} = \begin{cases} u & n \text{ is even} \\ u & n \text{ is odd} \end{cases}$	$\sqrt{(-6)^2} = \frac{\sqrt[3]{(-6)^3}}{\sqrt[3]{(-6)^3}} = \frac{\sqrt[3]{(-6)^3}}{$	