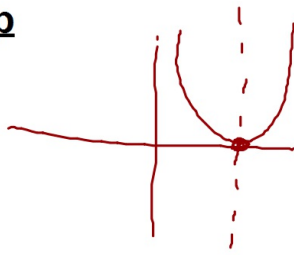


Warm-Up



Simplify:

#1) $4^{-3} = \frac{1}{4^3} = \frac{1}{64}$ 2) $(x^{-2})^5 = x^{-10} = \frac{1}{x^{10}}$ 3) $x^5/x^8 = x^{-3} = \frac{1}{x^3}$

The line of symmetry for a parabola does not always contain which point?

- a. extremum
- b. midpoint of the x-intercepts
- c. vertex
- d. y-intercept

Agenda:

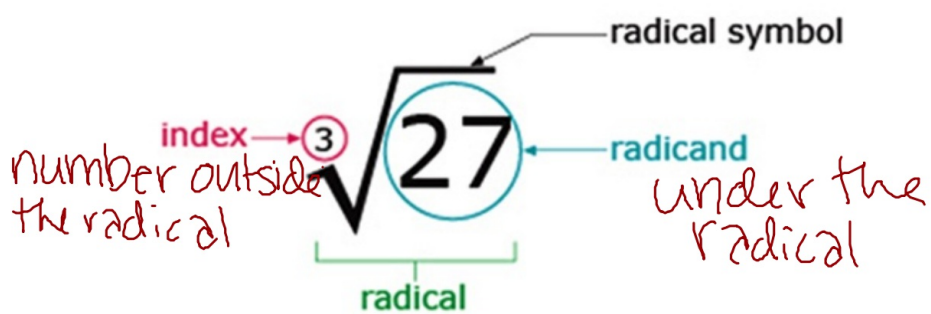
- 1) Simplifying RADicals!!! - Guided Notes.
- 2) Mastery Challenge.



Simplifying Radicals



Radical

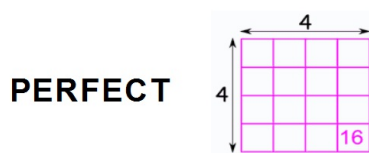


Note: An index of 2 is understood but not written in a square root sign.

Rules and Properties: Square Root Expressions in Simplest Form

An expression involving square roots is in *simplest form* if

1. There are no perfect-square factors in a radical.
2. No fraction appears inside a radical.
3. No radical appears in the denominator.



PERFECT



$$\begin{aligned} 1^2 &= 1 \\ 2^2 &= 4 \\ 3^2 &= 9 \\ 4^2 &= 16 \\ 5^2 &= 25 \\ 6^2 &= 36 \\ 7^2 &= 49 \\ 8^2 &= 64 \\ 9^2 &= 81 \\ 10^2 &= 100 \end{aligned}$$

$$\begin{aligned} \sqrt{1} &= 1 \\ \sqrt{4} &= 2 \\ \sqrt{9} &= 3 \\ \sqrt{16} &= 4 \\ \sqrt{25} &= 5 \\ \sqrt{36} &= 6 \\ \sqrt{49} &= 7 \\ \sqrt{64} &= 8 \\ \sqrt{81} &= 9 \\ \sqrt{100} &= 10 \end{aligned}$$



PERFECT

Simplify $\sqrt{100}$

$10 \cdot 10 = 100$

Simplify $\sqrt{2 \cdot 100}$

$10 \cdot 10 = 10\sqrt{2}$

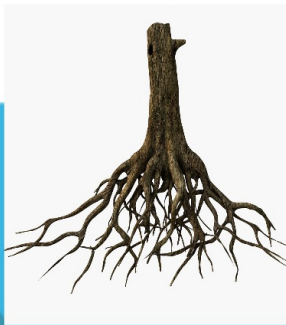
Simplify $\sqrt{64}$

$8 \cdot 8 = 64$

Simplify $\sqrt{3 \cdot 64}$

$8 \cdot 8 = 8\sqrt{3}$

- $1^2 = 1$
- $2^2 = 4$
- $3^2 = 9$
- $4^2 = 16$
- $5^2 = 25$
- $6^2 = 36$
- $7^2 = 49$
- $8^2 = 64$
- $9^2 = 81$
- $10^2 = 100$



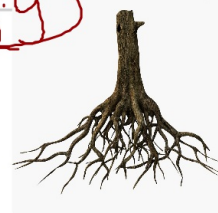
- $1^2 = 1$
- $2^2 = 4$
- $3^2 = 9$
- $4^2 = 16$
- $5^2 = 25$
- $6^2 = 36$
- $7^2 = 49$
- $8^2 = 64$
- $9^2 = 81$
- $10^2 = 100$

Make a prediction: Given the work you did above, how do you think we could simplify the following expression?

$\sqrt{81y^2}$

$9 \cdot 9 \cdot y \cdot y$

$9y$



DISCIPLINE is doing what needs to be done, when it needs to be done, when we don't want to do it.

- $1^2 = 1$
- $2^2 = 4$
- $3^2 = 9$
- $4^2 = 16$
- $5^2 = 25$
- $6^2 = 36$
- $7^2 = 49$
- $8^2 = 64$
- $9^2 = 81$
- $10^2 = 100$

Simplify $\sqrt{200}$

$$\begin{array}{c}
 100 \cdot 2 \\
 \uparrow \\
 10 \cdot 10
 \end{array}$$

$$10\sqrt{2}$$



Simplify $\sqrt{25a^2b^2}$

$$\begin{array}{c}
 5 \cdot 5 \cdot a \cdot a \cdot b \cdot b \\
 \uparrow \quad \uparrow \quad \uparrow \quad \uparrow
 \end{array}$$

$$5ab$$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

Simplify: $\sqrt[2]{75a^3b^7}$

$$\begin{array}{c}
 b \cdot b \cdot b \cdot b \cdot b \cdot b \cdot b \\
 \uparrow \quad \uparrow \quad \uparrow \\
 25 \cdot 3 \\
 \uparrow \\
 5 \cdot 5
 \end{array}$$

$$a \cdot a \cdot a$$

$$5 \cdot 5$$

$$5ab^3\sqrt{3ab}$$

$$\begin{array}{r}
 \textcircled{3} \\
 2 \overline{) 7} \\
 \underline{-6} \\
 \textcircled{1}
 \end{array}$$

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

Stop and jot: Explain, in your own words,

what it means to simplify a radical expression.



Predict: Can we simplify the following? $\sqrt{18} * \sqrt{5}$? Justify your answer!

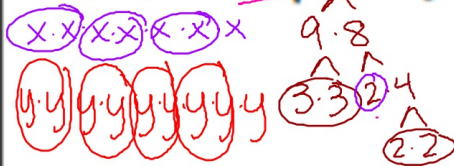
$$\boxed{3\sqrt{2} * \sqrt{5}}$$



$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

$$\sqrt{90}$$

Simplify first! $3\sqrt{72x^7y^9}$

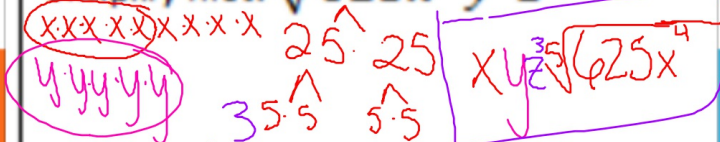


$$\frac{3 \cdot 3 \cdot 2 x^3 y^4 \sqrt{2xy}}{18x^3y^4 \sqrt{2xy}}$$



$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

Simplify first! $5\sqrt[5]{625x^9y^5z^{15}}$



$$\sqrt[5]{xy^{35}(625x^4)}$$



Simplify first! $\sqrt[3]{54x^8y^{12}}$

$3 \overline{)12} \begin{array}{r} 4 \\ -12 \\ \hline 0 \end{array}$

$3 \cdot 3 \cdot 3 \cdot 2$

$3 \overline{)8} \begin{array}{r} 2 \\ -6 \\ \hline 2 \end{array}$

$3x^2y^4 \sqrt[3]{2x^2}$

Simplify first! $2\sqrt{196x^7y^8}$

$2 \cdot 14x^3y^4 \sqrt{x}$

$28x^3y^4 \sqrt{x}$

$2 \overline{)8} \begin{array}{r} 4 \\ -8 \\ \hline 0 \end{array}$

$2 \overline{)7} \begin{array}{r} 3 \\ -6 \\ \hline 1 \end{array}$

$1^2 = 1$
 $2^2 = 4$
 $3^2 = 9$
 $4^2 = 16$
 $5^2 = 25$
 $6^2 = 36$
 $7^2 = 49$
 $8^2 = 64$
 $9^2 = 81$
 $10^2 = 100$

Learn Cubes from 1 to 15

$1^3 = 1$ $6^3 = 216$ $11^3 = 1331$
 $2^3 = 8$ $7^3 = 343$ $12^3 = 1728$



Mastery Challenge!

- If you got the last question correct, start from the "Got it" column. If you didn't, start from the "Not yet" side!
- Solutions are at the front! - Make sure you check before you move onto the next.
- Raise your hand and let Ms. Brady or Ms. Paul know once you're finished!

