

M10 - 4.1 - Entire to Mixed Radicals Notes

Simplify

$$\sqrt[2]{12} = \sqrt[2]{2 \times 2 \times 3}$$

$$= 2\sqrt[2]{3}$$

Check Answer
3.46 = 3.46 ✓

$$\sqrt[2]{18} = \sqrt[2]{3 \times 3 \times 2}$$

$$= 3\sqrt[2]{2}$$

Check Answer
4.25 = 4.24 ✓

$$\sqrt[2]{54} = \sqrt[2]{3 \times 3 \times 3 \times 2}$$

$$= 3\sqrt[2]{3 \times 2}$$

$$= 3\sqrt[2]{6}$$

Check Answer
7.35 = 7.35 ✓

$$\sqrt[2]{72} = \sqrt[2]{3 \times 3 \times 2 \times 2 \times 2}$$

$$= 3 \times 2\sqrt[2]{2}$$

$$= 6\sqrt[2]{2}$$

Check Answer
8.49 = 8.49 ✓

$$\sqrt[3]{24} = \sqrt[3]{2 \times 2 \times 2 \times 3}$$

$$= 2\sqrt[3]{3}$$

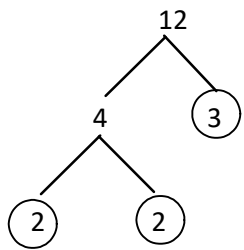
Check Answer
2.88 = 2.88 ✓

$$\sqrt[3]{54} = \sqrt[3]{3 \times 3 \times 3 \times 2}$$

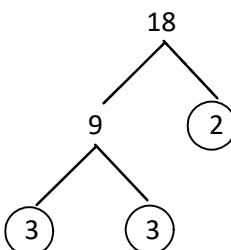
$$= 3\sqrt[3]{2}$$

Check Answer
3.78 = 3.78 ✓

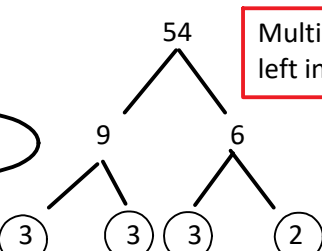
Prime Factorization



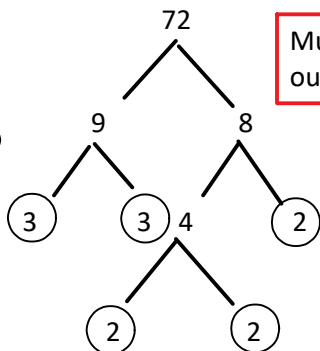
$\sqrt[2]{2 \times 2} = \sqrt[2]{4} = 2$
Two Identical Numbers Under a Square Root: One on Outside



Check on Calculator
2nd $\sqrt{\square}$ $\sqrt[3]{\square}$
Ti84 Math $\sqrt{\square}$



Multiply what's left inside.



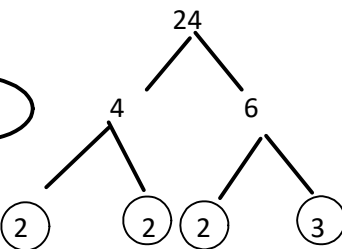
Multiply numbers outside of root.

$$5\sqrt[2]{12} = 5\sqrt[2]{2 \times 2 \times 3}$$

$$= 5 \times 2\sqrt[2]{3}$$

$$= 10\sqrt[2]{3}$$

Check Answer
17.32 = 17.32 ✓



$\sqrt[3]{2 \times 2 \times 2} = \sqrt[3]{8} = 2$
Three Identical Numbers Under a Cube Root: One on Outside.

$$\sqrt[3]{8} = 2$$

Three Identical Numbers Under a Cube Root: One on Outside.

Perfect Cubes
 $\sqrt[3]{24} = \sqrt[3]{8 \times 3}$
 $= \sqrt[3]{8} \times \sqrt[3]{3}$
 $= 2\sqrt[3]{3}$
Perfect Cubes
1,8,27,64,125,216 ...
What are Two Numbers that Multiply to the Number Underneath the Cube Root that you know the Cube Root of One of them.

Perfect Squares
 $\sqrt[2]{12} = \sqrt[2]{4 \times 3}$
 $= \sqrt[2]{4} \times \sqrt[2]{3}$
 $= 2\sqrt[2]{3}$
 $\frac{12}{4} = 3$
Find Two Numbers that Multiply to the Number Underneath the Square Root such that you know the Square Root of One of them.
Perfect Squares
1,4,9,16,25,36,49 ...

Cant Even Root a Negative
 $\sqrt[2]{-9} = \text{No Solution}$
Can Odd Root a Negative
 $\sqrt[3]{-27} = \sqrt[3]{-3 \times -3 \times -3}$
 $= -3$