

MODULE 7: RADICAL BASICS

"THE DIFFERENCE BETWEEN WHO YOU ARE AND WHO YOU WANT TO BE IS WHAT YOU DO."

6.1 INTRODUCTION TO SQUARE ROOTS

Definition of Square Root of X: _____

$\sqrt{\quad}$: _____ (square root symbol)

What is underneath the radical is called the _____.

_____ is the opposite of square rooting.

_____ is the opposite of squaring.

Know your perfect squares up to 13, [1 ...13]

$1^2 =$

$8^2 =$

$2^2 =$

$9^2 =$

$3^2 =$

$10^2 =$

$4^2 =$

$11^2 =$

$5^2 =$

$12^2 =$

$6^2 =$

$13^2 =$

$7^2 =$

$0^2 =$

Square Roots of Variable Expressions

Square root of a variable: Divide the exponent by _____.

However many times 2 goes into the exponent is the value of the exponent for the variable _____ the radical. The remainder is the value of the exponent left _____ the radical.

Examples: Simplify

$$\sqrt{x^2} =$$

$$\sqrt{x^{20}} =$$

$$\sqrt{x^{14}} =$$

$$\sqrt{x^3} =$$

$$\sqrt{x^{21}} =$$

$$\sqrt{x^{15}} =$$

If there are coefficients (numbers) inside the radical with the variables do the square root of each of them separately.

Numbers _____. Variables _____.

Examples: Simplify

$$\sqrt{49x^{18}} =$$

$$\sqrt{36x^7} =$$

$$\sqrt{25x^{17}} =$$

$$\sqrt{y^{10}x^{28}} =$$

$$\sqrt{81x^8y^2z} =$$

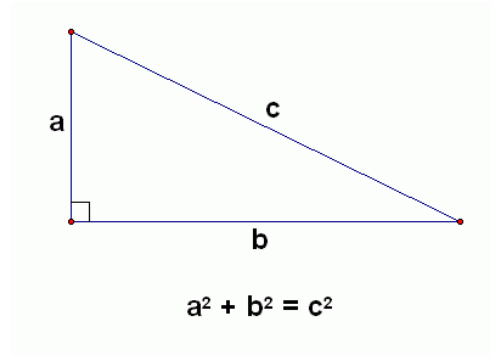
$$\sqrt{169x^3y^{11}z^0} =$$

Pythagorean Theorem

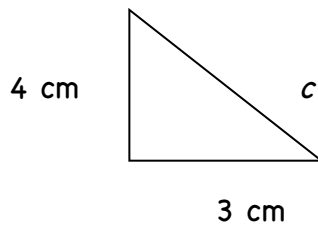
Pythagorean theorem: _____ + _____ = _____

Used to find the sides of a _____.

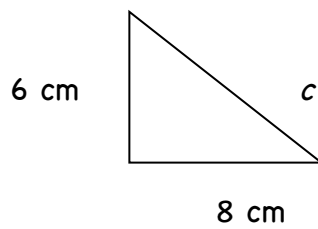
Shorter sides (a,b): _____. Longest side (c): _____



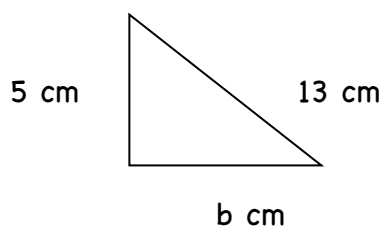
Example: Solve for the missing side.



Example: Solve for the missing side.



Example: Solve for the missing side.



Distance Formula

The distance formula is:

Used to find the distance between _____.

Example: Find the distance between $(2, -7)$ and $(-4, 1)$

Example: Find the distance between $(-2, 9)$ and $(1, 5)$

Example: Find the distance between $(-3, 5)$ and $(-6, -2)$

Simplify square roots using two methods: *outside* $\sqrt{\textit{inside}}$

1. Factor radicand into prime factors and find _____.

For every pair found, that number comes _____ of the radical.

Example: Simplify $\sqrt{18}$

2. Factor radicand into a factors including a _____.

The value of the square root comes of _____ of the radical.

Any remaining values left over stay _____ of the radical.

Example: Simplify $\sqrt{18}$

*Note: Use a combination of these two methods.

Example: Simplify $\sqrt{200}$

Example: Simplify $\sqrt{32}$

_____ values taken out of the radical, to values outside

Example: Simplify $5\sqrt{20}$

Example: Simplify $\sqrt{12x^5}$

Example: Simplify $5\sqrt{45x^7y^{12}}$

Example: Simplify $3x^2\sqrt{15x^6y^2}$

Example: Simplify $2x^2y\sqrt{50x^{14}y^5z}$

Quotient Rule

Square root numerator/denominator separately $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Simplify $\sqrt{\frac{9}{16}} =$

Simplify $\sqrt{\frac{101}{25}} =$

Homework Checklist

- Section 6.1 & 6.2 Square Root Basics