Name: ______________________________________________ Period: __________ Date: _______________

# Identifying Irrational Numbers Guide Notes **Math 8**

**An irrational number** is a number that cannot be written as the ratio of two integers.

A decimal form of irrational numbers does not stop and does not repeat.

The most common example of this is the number $\boldsymbol{\pi}$ which you may know is approximately $\mathbf{3.14159}$ … ….

**Sample Problem 1: Determine whether each number is rational or irrational.**

**a.** $\mathbf{3.246\overline{7}}$

**b.** $\mathbf{12.14567890098765432}$ … … ..

**c.** $\mathbf{\frac{78}{936}}$

**d.** $\mathbf{\frac{14}{85}}$

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# Identifying Irrational Numbers Guide Notes **Math 8**

## ***Square Roots and Irrational Numbers***

A square root is the inverse operation of squaring a number.

The symbol for square root is $\sqrt{\ }$ and you should remember some basics such as $\sqrt{\mathbf{25}} = \mathbf{5}$ or $\sqrt{\mathbf{0.81}} = \mathbf{0.9}$ when we take the principal (or positive) square root.

Square roots of perfect squares are always whole numbers, so they are rational.

But the decimal forms of square roots of numbers that are not perfect squares never stop and never repeat, so these square roots are irrational.

Sample Problem 2: **Determine whether each square root is rational or irrational number.**

**a.** $\sqrt{\mathbf{324}}$

**b.** $\sqrt{\mathbf{12}}$

**c.** $\sqrt{\mathbf{3,136}}$

**d.** $\sqrt{\mathbf{34}}$