## **Am I Rational or Irrational?**

## Cubed Roots $\longrightarrow \sqrt[3]{radicand}$

• If the radicand is a perfect cube, it is Rational

$\sqrt[3]{1} = 1$	$\sqrt[3]{8} = 2$	$\sqrt[3]{27} = 3$	$\sqrt[3]{64} = 4$	$\sqrt[3]{125} = 5$
$\sqrt[3]{216} = 6$	$\sqrt[3]{343} = 7$	$\sqrt[3]{512} = 8$	$\sqrt[3]{729} = 9$	$\sqrt[3]{1000} = 10$

○ Examples:  $\sqrt[3]{35} \approx 3.27106631018859...$ 

## Squared Roots $\longrightarrow \sqrt{radicand}$

• If the radicand is a perfect square, it is

$\sqrt{1}$	$\sqrt{4}$	$\sqrt{9}$	$\sqrt{16}$	$\sqrt{25}$	$\sqrt{36}$	$\sqrt{49}$	$\sqrt{64}$	$\sqrt{81}$
=1	=2	=3	=4	=5	=6	=7	=8	=9
$\sqrt{100}$	$\sqrt{121}$	$\sqrt{144}$	$\sqrt{169}$	$\sqrt{196}$	$\sqrt{225}$	$\sqrt{256}$	$\sqrt{289}$	$\sqrt{324}$
=10	=11	=12	=13	=14	=15	=16	=17	=18
$\sqrt{361}$	$\sqrt{400}$	$\sqrt{441}$	$\sqrt{484}$	$\sqrt{529}$	$\sqrt{576}$	$\sqrt{625}$		
=19	=20	=21	=22	=23	=24	=25		

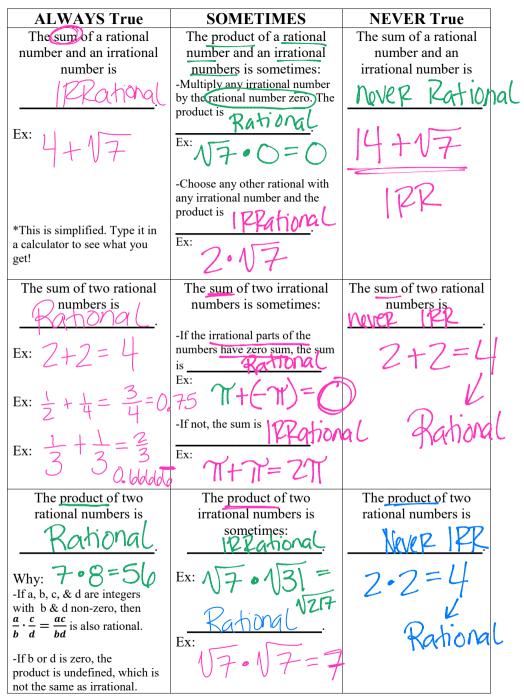
- - o Example:  $\sqrt{38} \approx 6.164414002968976...$

Simple Fractions Written with  $\frac{1}{2}$   $\frac{1}{4}$   $\frac{2}{5}$   $\frac{2}{5}$   $\frac{1}{2}$   $\frac{2}{3}$  ):

Fractions Written with non perfect radicals (Ex: 3):

• They are <u>IPP anonal</u> because you can divide the numerator (top number) by the denominator (bottom number) and the numbers after the decimal do NOT terminate (stop) AND they do NOT repeat.

Non perfect squates



Be careful to read problems carefully! This statement is ALWAYS true: The product of a **nonzero** rational number and an irrational number is irrational.