

Name: _____

Irrational Numbers: Numbers that *cannot* be written as the quotient of two integers.

Examples of irrational numbers: $\sqrt{5}$, $\sqrt{6}$, 1.4142135... , π

Recognizing irrational numbers in decimal form:

*If a decimal does NOT terminate (end) or repeat, it is an irrational number.

Check the appropriate boxes. Choose Rational or Irrational and then choose ONE reason to support your answer.

Number	Rational	Irrational	Terminating	Non-terminating & repeating	Non-terminating & Non-repeating
0.25	✓		✓		
0.3	✓		✓		
* 1.45 1.4545...	✓			✓	
* 3.3166... 3.16	✓			✓	
π		✓			✓
2.65	✓		✓		
* 1.09 1.0909...	✓			✓	
0.8315...		✓			✓

Topic two continued

Recognizing irrational numbers in square root form:

*If the square root of a number is not equal to a whole number or a terminating decimal then it is irrational. The numbers that have square roots equal to a whole number are called "*Perfect Squares*".

The Perfect Squares are: (You will need to memorize these)

1, 4, 9, 16, 25, 36, 49, 64
81, 100, 121, 144, 169, 196, 225

For the following examples, first find which two perfect squares these would fall between then tell which two consecutive whole numbers the answer to the square root will fall between. Use your list of Perfect Square to help!

$\sqrt{12}$ Falls between $\sqrt{9}$ and $\sqrt{16}$ Answer between 3 and 4

$\sqrt{26}$ Falls between $\sqrt{25}$ and $\sqrt{36}$ Answer between 5 and 6

$\sqrt{45}$ Falls between $\sqrt{36}$ and $\sqrt{49}$ Answer between 6 and 7

$\sqrt{106}$ Falls between $\sqrt{100}$ and $\sqrt{121}$ Answer between 10 and 11

REMEMBER: NATURAL numbers, WHOLE numbers, FRACTIONS and MIXED NUMBERS (whole number with a fraction) can **NEVER** be classified as irrational numbers because they can all be written as ratios- the quotient of two integers