**Rational Numbers**

If a number can be written as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it is a rational number.

**Circle the rational numbers.**

 -3 0.19 $\sqrt{7}$ $\frac{1}{2}$

 0.$\overbar{2}$ $\sqrt{36}$ $-\sqrt{9}$ 0.123451497…

**In summary, which kind of these numbers are rational numbers?**

Integers \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fractions\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decimals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Square Roots \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Irrational Numbers**

An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number can’t be written as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Decimals will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Circle the irrational numbers**

$\sqrt{16}$ $\sqrt{20}$ $\sqrt{10}$ $\sqrt{2}$ $\sqrt{9}$ $ \sqrt{0}$ 0.353535….

0.76 0.7621… 0.767 $2π$

**In summary, the only irrational numbers are:**

Square roots \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Decimals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Numbers that have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Closure Property**

If performing an operation on any two numbers in a set **ALWAYS** results in a number in that set, the set is closed under that operation.

**True or False. If false give a counterexample.**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. The set
 | {-1, 0, 1} | is closed on | addition. |
| 1. The set
 | {even numbers} | is closed on | division. |
| 1. The set
 | {even numbers} | is closed on | division by 2. |
| 1. The set
 | {multiples of 5} | is closed on | doubling. |
| 1. The set
 | {positive numbers} | is closed on | subtraction. |

Determine if the following is rational or irrational.

1.   7. 
2.  9. 
3.  11. 
4.  13. 
5. Which of the following is a rational expression. Explain your reasoning.
6.  B.  C. 

**What kind of number would you get if……………**

You added a rational and a rational number RATIONAL IRRATIONAL BOTH

You added a rational and an irrational number RATIONAL IRRATIONAL BOTH

You multiplied rational and a rational number RATIONAL IRRATIONAL BOTH

You multiplied a rational and an irrational number RATIONAL IRRATIONAL BOTH

You added an irrational and an irrational number? RATIONAL IRRATIONAL BOTH

You multiplied an irrational and an irrational number? RATIONAL IRRATIONAL BOTH

**Answer “True” or “False” for the following questions. If the statement is false, provide a counterexample.**

* 1. The product of two rational numbers is always rational.
	2. The sum of a rational number and an irrational number is always a rational number.
	3. The product of a rational number and an irrational number is always irrational.
	4. The difference of two rational numbers is irrational.
	5. The sum of two rational numbers is always an integer