

Name: _____

★ LET'S LEARN ABOUT THE TYPES OF NUMBERS ★

✓ **Objective:** You will be able to...

- ~ classify numbers
- ~ identify what types of numbers would be most appropriate in certain situations

✧ **Why is learning about the types of numbers important?**

- they tell us amounts
- they appear in many places in everyday life
- helpful in activities such as baking, situations with money (taxes, tips, discounts/deals), determining gas mileage, many occupations, etc.
- without numbers we would not even have technology!
- important to recognize & understand vocabulary

➡ What do you know about numbers?

- can be natural
- can be prime (no factors other than 1 & themselves)
- can be irrational
- can be never-ending
 - pos./neg.
- fractions, decimals

➡ What would you like to know/learn about when it comes to numbers?

- adding/sub.
- multiplying/dividing
- fractions & decimals
- scientific notation

1

★ Let's Look at the Types of Numbers...

Real NumbersRational

- * can be written as fractions
- ex. $\frac{1}{2}$, $\frac{2}{3}$, 4 , -3 , 1.28 , $0.\overline{3}$
- * includes ending or repeating decimals

Integers

- positive & negative whole #s
- ... $-3, -2, -1, 0, 1, 2, 3, \dots$

Whole #s

- no fractions/decimals
- whole $0, 1, 2, 3, \dots$

Natural #s

- counting #s
- $1, 2, 3, 4, \dots$

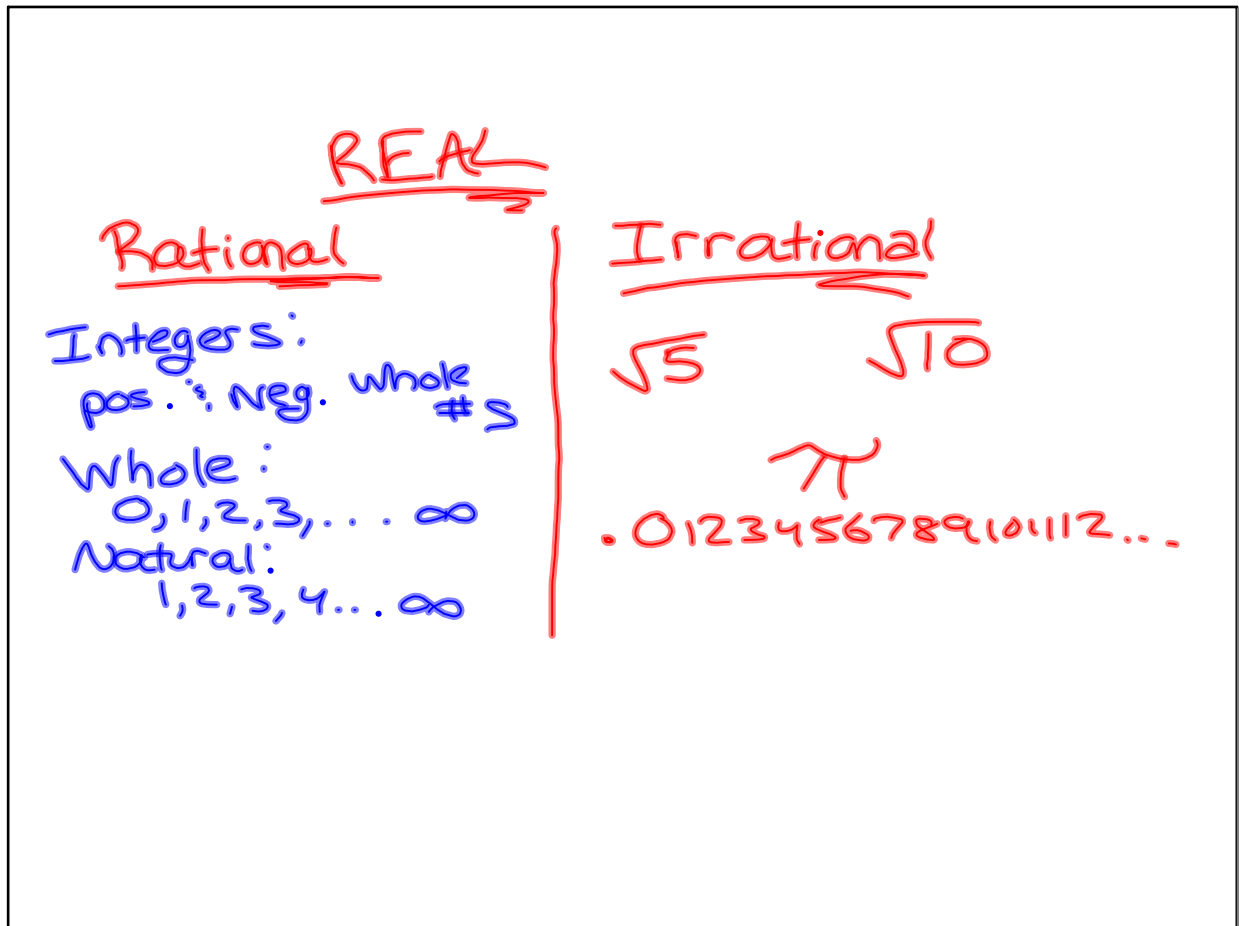
There are also imaginary numbers!
(Algebra II)

Irrational

- * cannot be written as fractions
- ex. π , e , $0.123456789101112\dots$, $\sqrt{10}$
- square roots of non-perfect squares

Hw: page 20
#1-13

2



Sep 9-11:29 AM

1) -1: rational, integer

2) $\frac{1}{3}$: rational

3) -4.8: rational

4) 7: rational, integer, whole, natural

5) $-\frac{32}{95}$: rational

6) $\frac{32}{4}$: rational, integer (-5)

7) 0: rational, integer, whole

8) -7.34: rational

9) $\frac{7}{1239}$: rational

10) $\sqrt{5}$: irrational

11) neg. integer
-4, -1, -2

12) whole #
0, 1, 2, 3
5000, 1238

13) pos. real #
98, 42, $\frac{1}{4}$, 7.2,

rational | irrational

↓

integers

↓

whole #s

↓

natural

* whole #s start from zero
0, 1, 2, 3, 4, ...
Natural #s start at 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Sep 9-11:35 AM

Practice Applying the Skills You Learned!

1. Name the set(s) to which each real number belongs. (rational, irrational, integer, whole, natural)

a. 3.82 rationalb. -2 rational integerc. 17 rational, integer, whole, naturald. 0 rational, integer, wholee. π irrationalf. -201 rational, integerg. $\sqrt{5}$ irrational

2. Write any number that meets each classification:

a. rational, but not an integer: $\frac{1}{2}, 3.72$ b. whole, but not natural: 0 c. an integer, but not a whole number: $-2, -3, -10$ 3. What types of numbers are best to use for each real world situation? (rational, irrational, integers, whole) **Support your answer.** ☺

a. The price of a ticket to a concert.

EX. \$100, \$65.99, \$42.99, \$35.40

rational numbers

b. The number of friends you are inviting to a party.

EX. 476, 300, 22, 14

whole numbers

c. The temperature anywhere in the world on the Weather Channel App.

EX. $-30, 2, 78, 0$.

integers

d. The exact area of a circular field. Remember, the formula for area of a circle is $A = \pi r^2$.

irrational, pi is in the formula

4. Sonja says that all rational numbers are whole, but Jimmy says that all natural numbers are whole. Who do you agree with, and why?

I disagree with Sonja. .01 is rational but not whole. I agree with Jimmy.

3

5. Determine if each statement is always, sometimes, or never true.

a. a rational number multiplied by a rational number is rational

ex. $\overset{\text{rat.}}{3.42} * \overset{\text{rat.}}{3} = \overset{\text{rat.}}{10.26}$ ex. $1.5 * 0 = 0$

⋮

Always

b. an irrational number multiplied by an irrational number is rational

ex. $\overset{\text{irr.}}{\pi} * \overset{\text{irr.}}{.12345\dots} = \overset{\text{irr.}}{.123456\dots * \pi}$ ex. $\sqrt{3} * \sqrt{5} = \sqrt{15}$ irr.ex. $\sqrt{3} * \sqrt{3} = \sqrt{9} = 3$ rat.
Sometimes

c. a rational number multiplied by an irrational number is rational

rat. * irr.

ex. $4 * \pi = 4\pi$ irr.ex. $2 * \sqrt{5} = 2\sqrt{5}$ irr.
Never

4

Exit Activity:



On a post-it note, Write a "Tweet" about anything you learned today. (40 characters or less!)

Post it on the board when you are done, and draw a star on your "favorite!"

★ MORE PRACTICE WITH CLASSIFYING NUMBERS (HOMEWORK)

Please use a blank sheet of paper to show your work and record your answers.
Be sure to number each problem correctly. ☺

1.
 - a. What is the difference between rational and irrational numbers?
 - b. What is the difference between whole numbers and integers?
2. Name the set(s) to which each real number belongs. (*rational, irrational, integer, whole, natural*)

a. -99	b. 1.83	c. $\sqrt{2}$	d. $\sqrt{9}$
e. π	f. 21	g. 0	
3. Write any number that meets each classification:
 - a. rational, but not a whole number
 - b. integer, but not natural
4. What types of numbers are best to use for each real world situation?
(*rational, irrational, integers, whole*) **Support your answer.** ☺
 - a. Your shoe size at any point in your life
 - b. How many followers you have on Instagram
 - c. The cost of your dream vacation
 - d. The exact circumference of a circular field.
5. Kyle claims that all natural numbers must be whole numbers. John states that all integers must be whole numbers. Who do you agree with, and why?

Some important notes/reminders/tips/hints from this lesson were...

(Try to think of what you would tell a classmate if he/she were absent from class today.)

5

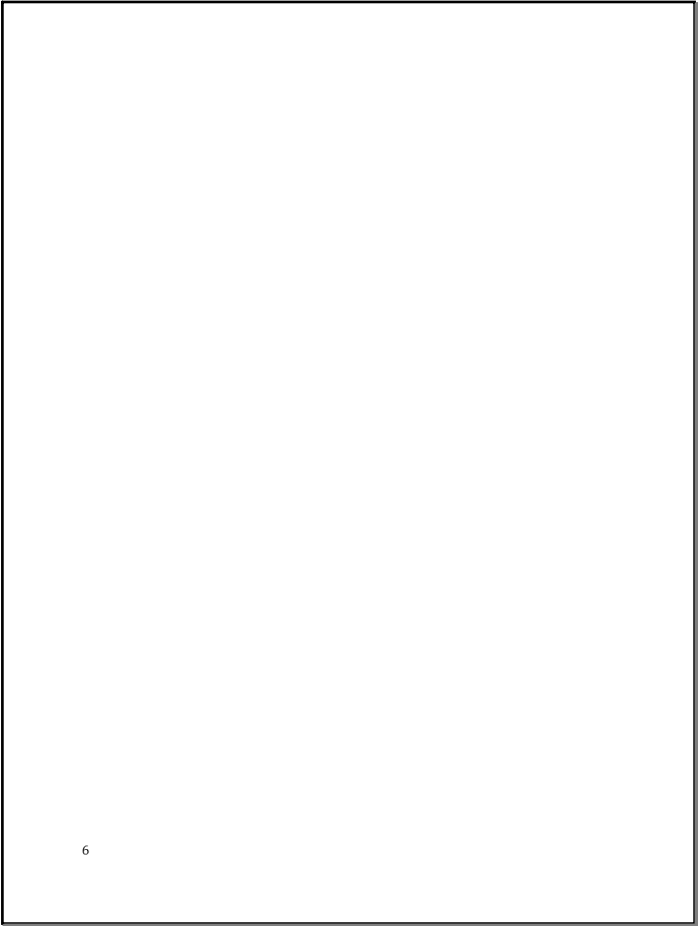
1.
 - a. Rational numbers can be written as fractions, while irrational numbers cannot. Irrational numbers are non-repeating, never-ending decimals.
 - b. Whole numbers are 0 and the natural counting numbers. Integers are the opposites (negatives) of the natural counting numbers.
2.

a. -99: rational, integer	b. 1.83: rational	c. the square root of 2: irrational
d. square root of nine: this is actually 3!		

rational, integer, whole, natural
3.

e. π : irrational	f. 21: rational, integer, whole, natural
g. 0: rational, integer, whole	
3.
 - a. will vary: any decimal or fraction that is not a whole number will be acceptable!
 - b. will vary; any negative whole number is acceptable!
4.

a. rational	b. natural or whole
c. rational	d. irrational
5. I agree with Kyle. All natural numbers are whole numbers. All integers are not whole numbers, because the integers include negative numbers.



6