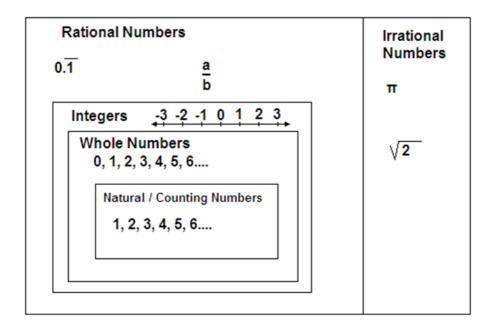
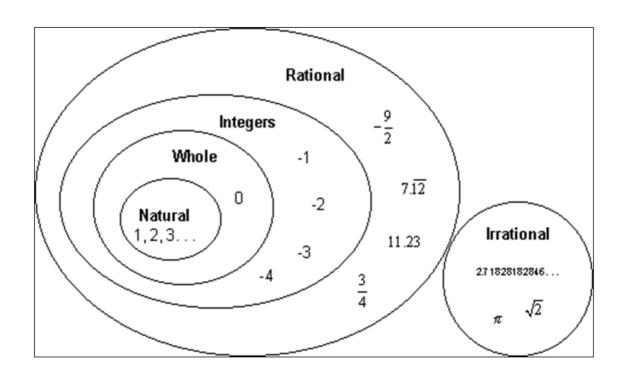
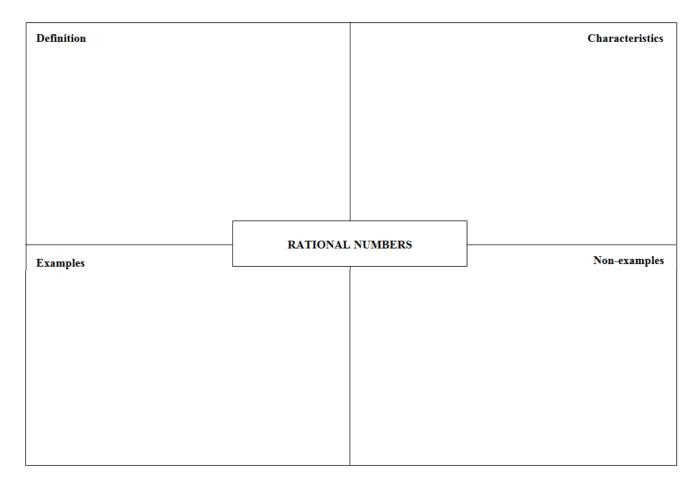
Worksheet 1-1: The Real Number System

Real Numbers







5 > doesn't exist

1 -> Irrational

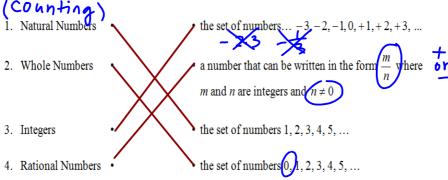
1 + 3.14

3.14 -> rational

Worksheet 1-2: Rational and Irrational Numbers

Matching: (Please use a ruler for the following task.)

Join the dots to match each term in the first column to a definition in the second column.



5. Irrational Numbers \bullet a number that cannot be written in the form $\frac{m}{n}$ where m and n are integers and $n \neq 0$

Rational Numbers:

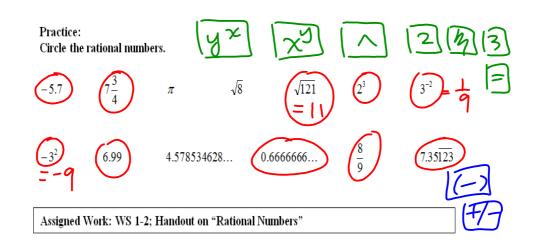
Rational numbers are numbers that can be expressed in fractional form.

You can write any rational numbers as a decimal by dividing the numerator by the denominator, and the result is either a **terminating decimal or a repeating decimal**.

Examples of terminating decimals: -2.875, 3.0, 7.231875622945, 0.25

Examples of repeating decimals: -2.333333333..., 0.7, $3.\overline{142857}$, 5.12121212..., $-23.072311\overline{8945}$ Non-term vating and non-repeating Examples of irrational numbers: decimals that neither terminate nor repeat -2.71828181845904523536..., 1.01001000100001000010..., $\sqrt{5}$, $-\sqrt{31.5}$, π





$$\frac{2}{5} = 0.4 \qquad \frac{25}{100} = 0.25 \qquad \frac{12}{4} = 3.0$$
Terminating decimals.
$$\frac{1}{9} = 0.i \qquad \frac{2}{3} = 0.6 \qquad \frac{1}{11} = 0.09$$
0.1111111.... 0.6666666... 0.09090909...

Repeating decimals.

Thinking:

- 1. Classify the following numbers as natural, whole, integer, rational or irrational. Please note that some of the numbers can belong to more than one of the above sets.
- (a) -1 integer, rational
- (b) $\sqrt{4}$
- (c) π

Check your answers with answer keys on your worksheets.

The Rational Number System Worksheet

- Classify these numbers as rational or irrational and give your reason.

 1. 4. 7329 $\rightarrow \frac{7329}{1}$ $\begin{pmatrix} m \\ n \end{pmatrix}$ 2. \times 0.95832758941... non-terminating and non-terminating $\begin{pmatrix} m \\ n \end{pmatrix}$ 6 0.5287593593593 terminating

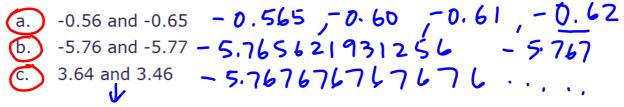
Give an example of a number that would satisfy these rules.

- 3. a number that is: real, rational, whole, an integer, and natural
- 4. a number that is: real and irrational
- 5. a number that is: real, rational, an integer -5, 6, 0

Classify each number as: real, rational, irrational, whole, natural, and integer. Give your reason.

- a. 3/4 rational > fraction, real
 b. -12/4 = -3 > = 3 > rational, intoger real
 a. 0.345 345 345 > rational (terminating), real
 b. -0. 6473490424 > rational (terminating),

8. Give examples of rational numbers that fit between the following sets of numbers.



9. Which two numbers are irrational? How do you know? a.
$$8-\sqrt{56}$$
 | realismal $\sqrt{7} \times \sqrt{8}$ b. $8-\sqrt{25}$ = $8-5=3$ rational $\rightarrow \frac{3}{1}$ c. $2-\sqrt{73}$ | realismal

10. Place the following numbers in the Venn Diagram. Place the following numbers in the Venn Diagram. Note that some numbers may not fit in the diagram.

-0.462	-56	735	0.326	8321	0
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