7.2/7.3 Operations on Decimals/Nonterminating Decimals

There are three types of decimals.

1. Terminating

2. Repeating, non-terminating

3. Non-repeating, non-terminating

Which of these types are rational numbers?

For the type(s) of decimals that are not rational, what do we call those numbers?

Arithmetic with decimals

Examples:

1. 1.36475002 + 0.0007819

2. 1.36475002 - 0.0007819

3. 362.14 (4.3)

4. 129.31 ÷ 3.2

Express 0.111.... as a fraction.

How about 0.22222... ? 0.33333....? 0.4444....?

Then, what's 0.9999.....?

Can we express 0.51515151..... as a fraction? If so, what is its fraction form?

More Examples:

Convert these repeating decimals to fractions (notice patterns).

5. 0.272727....

6. 0.027272727....

7. 0.002727272727....

8. 0.527272727....

9. 0.327272727....

Scientific Notation

Express these decimals in scientific notation.

(a) 5678.0021

(b) -0.00000000962

Express these numbers, given in scientific notation, as decimals.

(a) 3.456009×10^{9}

(b) -8.7765×10^{-4}

Order these decimals from smallest to largest.

$-5.16,\ -5.\overline{16},\ -5.1\overline{6},\ -5.1\overline{61},\ -5.6\overline{16}$