Order of Operations

Apply the properties of Real numbers to simplify expressions.

Link to section in textbook

Now that we have the terminology for the different sets of numbers, we can review their properties. We'll start with the Real numbers first. Watch the video below to review the properties of Real numbers. You can print out these notes to follow along and keep notes to organize your thoughts. *Note: You won't be asked to define a property or know the property by name. However, you **will** need to know how to use the properties to simplify in order.*

YouTube link: `https://www.youtube.com/watch?v=xi49NNR2v04`

We'll focus on Order of Operations here as many students were taught an order that **does not align with how most calculators/computers simplify expressions.** Think about PEMDAS as:

Question 1 *P:* $\boxed{\textit{Parentheses}}$

E: $\boxed{\textit{Exponents}}$

M or D: $\boxed{\textit{Multiplication}}$ *or* $\boxed{\textit{Division}}$

A or S: $\boxed{\textit{Addition}}$ *or* $\boxed{\textit{Subtraction}}$

If they are on the same level, you complete them from left-to-right.

Question 2 *Let's take a closer look at why M/D is written on the same level.*

$7 \div 5 \times 4 = \boxed{5.6}$

$7 \times \frac{1}{5} \times 4 = \boxed{5.6}$

Multiplying by $\frac{1}{5}$ *is the same as dividing by* $\boxed{5}$*. Now let's see what happens if we did multiplication first.*

$7 \div (5 \times 4) = \boxed{0.35}$

By changing everything to multiplication, we can see why it is so important to read from left-to-right when operations are on the same level!

Learning outcomes: Understand the different sets of numbers along with the properties of these sets.

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Now try to simplify the more complicated expressions below.

Exercise 3 *Simplify the expression* $?? - ?? \div ?? * ?? - (?? * ??)$.

$\boxed{??}$

Hint: *Did you get* **??** *as your answer? If you did, you are not treating multiplication and division as being on the same level. You need to complete these from left-to-right!*

Exercise 4 *Simplify the expression* $?? - ?? - ?? + ?? - ?? + ??$.

$\boxed{??}$

Hint: *Did you get* **??** *as your answer? If you did, you are not treating addition and subtraction as being on the same level. You need to complete these from left-to-right!*

Exercise 5 *Simplify the expression* $?? \div ?? - ?? + ?? \div ?? + ??$.

$\boxed{??}$

Hint: *Did you get* **??** *as your answer? If you did, you are not treating addition and subtraction as being on the same level. You need to complete these from left-to-right!*