1.1.1 Operations

There are four basic operations that are carried out with numbers as well as different types of **brackets**

Addition	$+$	to find the **sum**	**parentheses(US) round brackets**	( )
Subtraction	$-$	to find the **difference**	**square brackets**	[ ]
Multiplication	$\times$	to find the **product**	**curly brackets**	{ }
Division	$\div$	to find the **quotient**	minus ten (UK and US) negative ten (US)	-10

Exercise 14 Can you **find out** the **algebraic expressions** matching the following **word expression**?

five take away sixteen	7 divided by x .....
ten more than twelve	p decreased by 11 .....
divide x by 6	**ratio** of length to time .....
times six by seven	one fifth of x .....
two by four	two plus five all squared .....
7 divides x	two times all of three minus seven .....

Exercise 15 — . Write down expressions as said by the teacher. Don't do any of the **computations(US)**[2]

Exercise 16 — **Work in pairs.** One of you will read and expression and your partner will write it down and evaluate it. Don't show your paper. Spell when necessary. Then change roles.

Student A reads and student B writes	**Student A writes and student B reads**
	$5(3+2) =$
	$10-(5+3) =$
	$12^2-5^2 =$
	5^3-2^3
	$(5\times 2)^2 =$
	$(7-3)^4-10 =$

Exercise 17 — **Riddle.** Swap two digits to restore the correct equation.

1	+	6	×	6	÷	3	=	6	+	4

[2] calculations(UK)

Let's watch "Order of Operation" with Phd Kelsey Houston-Edwards https://youtu.be/r1cw3Yc6DZo.

Exercise 18 **American** students learn the acronym **PEMDAS** to remember the order of operations:

P stands for: perform operations within ..... first.

E stands for: calculate any part involving ..... (powers and roots)

MD stands for: starting from the left, perform all .....as you come to them.

Finally **AS** stands for: working from the left, perform all .....

A way to remember the order of operations is with the sentence:

"Please Excuse ..... ".

Furthermore

- If an expression contains more than one set of brackets, evaluate the innermost brackets first.
- The division line of fractions behaves like a set of brackets.

R Students in the UK use **B**rackets and **I**ndices, the order of operations rule is referred to as **BIDMAS**.

Exercise 19 — A viral math problem. People argued on social media whether the result of $6 \div 2(1+2)$ is 9 or rather 1. Can you explain the different resutls? How would PEDMAS apply?

Exercise 20 — . Read out loud then evaluate:

$A = 5 - 8 \times 4$ $B = 4(5-8)^2$ $C = 2 \times 3^3 - |7-11|$ $D = 2 - |2-3| - 11 \times 2$

Let's watch "Real numbers" with Phd Kelsey Houston-Edwards https://youtu.be/eTcUg8YoTTA.

Exercise 21 Complete

$\mathbb{N}^* = \{1,\ 2,\ 3, \ldots\}$ is the set if ..... $\mathbb{N} = \{0,\ 1,\ 2,\ 3, \ldots\}$ is the set of .....

$\mathbb{Z} = \{\ldots\ -3,\ -2,\ -1,\ 0,\ 1,\ 2,\ 3, \ldots\}$ is .....

$\mathbb{R}$ is ..... $\mathbb{Q}$ is .....

π (to be pronouced "pie") is .....

Exercise 22 — Riddle. Using all characters one time each, write down a true equation.

2	3	4	5	+	=