Section Européenne DNL mathématiques **Get cozy with numbers**	2nde 2012-2013

Mathematical topic: Operations, Order of operations.
Vocabulary: "Sum", "Product", "difference", "4 more", "4 times more", squared, square root…

Exercise 1. A mysterious statement from the 18th century …

Part 1: Each problem below can be simplified so that the answer is an *integer*[1]. Write your answer in the blanks that follow the problems. Next, find each answer in the answer bank, then write the letter of the answer in the blank before each problem. When you are finished with the problems, write the letters in order, starting with the first problem to complete the statement at the end of the activity.

1) _____ The *opposite* of half of forty = _____

2) _____ The *difference* between -6 and -1 = _____

3) _____ 17 decreased by -19 = _____

4) _____ The sum of 19 and -1 = _____

5) _____ $-2\times(5-8)+18\div 3$ =_____

6) _____ The *opposite* of 2 times 6 = _____

7) _____ $-8+3x-2x+5^2-x$ = _____

8) _____ 12 less than the product of 14 and -2 = _____

9) _____ $1+7\times(1-4)$ = _____

10) _____ If $x=6$, then $3x^2+4$ = _____

11) _____ $12\div(4+2)-7$ = _____

12) _____ If $x=-1$, then $(-5x)^2$ = _____

13) _____ the difference between 6 squared and 5 squared = ____

14) _____ -6^2-2^2 = _____

15) _____ The sum of -19 and -1 = _____

16) _____ If $a=5$, then a^2-7 = _____

17) _____ Twice the sum of -3 and 9 = _____

18) _____ 4 more than $\frac{1}{3}$ of 24 = _____

19) _____ 2 times the square root of 81= _____

20) _____ If $x=-1$, then $-5x^2$ = _____

21) _____ The *difference* between 3 *cubed* and 2 *raised to the fourth power* = _____

22) _____ The *difference* between 19 and -1 = _____

23) _____ If $a=3$ and $b=-4$, then $\frac{4a^2}{b}$ = _____

24) _____ 3 more than half of -30 = _____

25) _____ $-(6^2+2^2)$ = _____

26) _____ $-12+2\times 3$ = _____

Useful words

- 0, 1, 2, 3, 4… are ***whole*** [hoʊl] numbers whereas -3 ; 1.6 and 2/3 are not.
- The *whole* numbers together with their *opposites* form the set of ***integers*** ['ɪntɪdʒər]. For example, -3 and +17 are integers whereas 1.6, $-\sqrt{7}$ and 4/3 are not.
- The number -2 (« ***negative*** two») is the ***opposite*** of 2.
- « $5-2=3$ » reads « five ***minus*** two is equal to three». $5-2$ is the ***difference*** between 5 and 2.
- $\sqrt{7}$ is the ***square root*** of 7.
- 5^2 (read « five ***squared***») means 5×5
- 8^3 (read « eight ***cubed***») means $8\times 8\times 8$.
- 7^n (read « seven ***raised to the nth power***») is the number obtained by muliplying 7 by itself *n* times.
- (…) are ***parenthesis*** [pə'rɛnθəsɪs], […] are ***brackets*** and {…} are ***braces***.

[1] Words in italics [ɪ'tælɪk] are explained in the « useful words » box

27) _____ 2 to *the third power* times -5 = _____

28) _____ The number you get if you add 3 *squared* to the *square root* of 4 = _____

29) _____ If $x=-2$, then $-5x^2$ = _____

Answer bank						
$T=-12$	$N=-9$	$A=25$	$E=-40$	$S=-20$	$I=20$	$U=-5$
$M=36$	$O=18$	$G=-6$	$H=17$	$F=12$	$R=11$	$Q=112$

Joseph Louis Lagrange, an 18th-century Italian mathematician, found that every natural number can be written as ___ .

Part 2: Can you find examples that illustrate this statement?

Exercise 2. Check your progress

Part 1: Translate the algebraic expressions below into phrases. Produce as many phrases as you can. The wording of the questions of the previous activity might help you.

1) 5^2-7 ; **2)** $10-2\times4$; **3)** $5\times(12+20)$; **4)** $\sqrt{25}-\sqrt{16}$; **5)** $-[2\times(-4)]$ **6)** $\sqrt{25-16}$

Part 2: Compute those numbers.

Exercise 3. Check your progress

Operations must be carried out according to a precise order. What is the correct order?

Exercise 4. In-class game "Guess what my expression is"

1) Pick an algebraic expression that looks like one in the activity above (it could be 5^2-1 or $\frac{28}{(6+1)}$ or $21-(5+6)$ ... etc) and write it on a piece of paper without letting your neighbour see it. Put the paper face down.

2) Describe orally your expression with a phrase (in English of course!!!) to your neighbour[2] and he/she will write the corresponding algebraic expression down. When he/she is done, show him/her the paper with your algebraic expression on it: Is it the same one? (It should be!)

3) Now it is your turn to guess your neighbour's expression: Switch roles.

4) Finally, assess you team: You get one point for each expression written correctly and one extra point for using English only (A single word of French, Wolof or Spanish and you lose that point!!). What is you score ? . . . . . / 3.

[2] *Neighbor* /ˈneɪbər/ is preferred in American English, and *neighbour* is preferred in all major varieties of English outside the U.S

Adapted from : *Algebra Teacher's activity Kit* by Judith Muscha.

Classe : Seconde, exercice de début d'année.

Objectifs :

- Acquisition des mots «product », « sum »,…etc dans une démarche active.
- Mise en confiance en mathématiques : Je suis capable de faire l'exercice.
- Mise en confiance en anglais : Je suis capable de faire un exercice de mathématiques en anglais (et non un exercice fabriqué pour la section européenne).
- Révision en douceur des règles opératoires

Coin prof

Remarque sur l'Exercice 3: Aux USA, les élèves se rappellent l'ordre des opérations au moyen du "mot" **PEMDAS** ou de la phrase **Please Excuse My Dear Aunt Sally**, where P stands for Parenthesis, E stands for Exponent, M stands for Multiplication, D stands for Division, A stands for Addition and S stands for Substarction.

Présentation pour le site EUROMATH: Une première activité en seconde qui permet de mettre en place le vocabulaire du calcul (somme, fraction, puissance...) adaptée d'un manuel américain *Algebra Teacher's activity Kit* by Judith Muscha.

Dans un premier temps les élèves doivent effectuer des petits calculs décrits par des mots. Les resulats obtenus permettent de décoder une phrase.

Par la suite, des activités de réinvestissement de ce vocabulaire sont proposées (en général en groupe et à l'oral) .

http://mathematoques.weebly.com