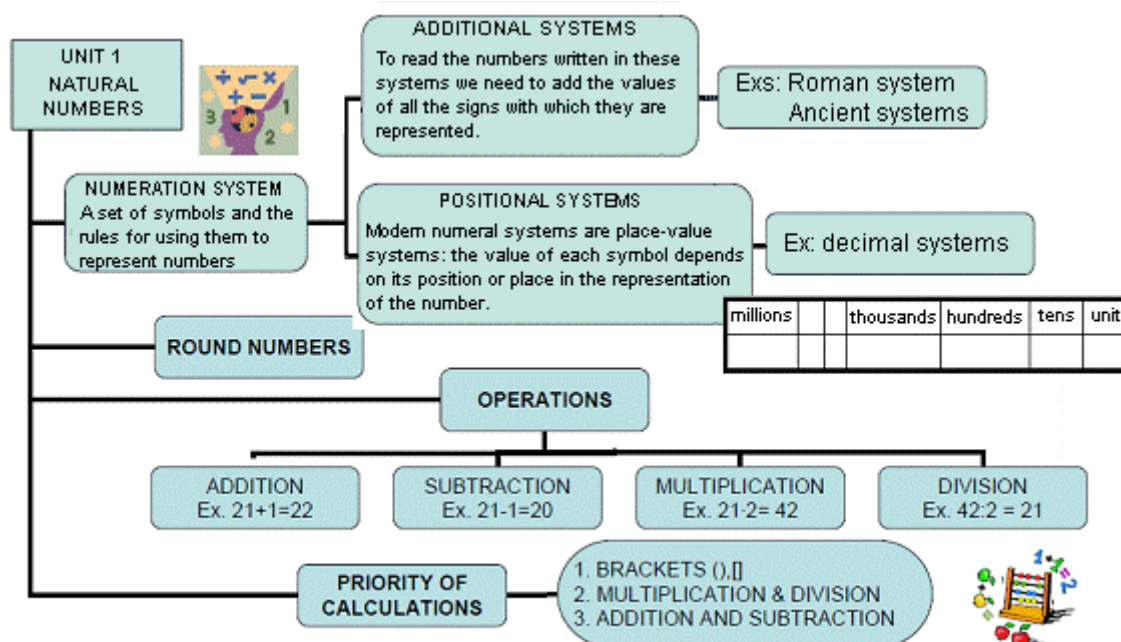


UNIT 1. NATURAL NUMBERS



THE DECIMAL NUMERAL SYSTEM

1.1. The Natural numbers set .

Natural numbers are the numbers used for counting things. Natural numbers are positive numbers (numbers that are more than 0). They are 1, 2, 3, 4, 5... and so on until infinity.

Natural numbers have two main purposes: you can use them for counting ("there are 3 apples on the table"), and for ordering ("this is the 3rd largest city in the country").

Mathematicians use $\mathbb{N}$ or $\mathbb{IN}$ to refer to the set of all natural numbers:

$$\mathbb{IN} = \{0, 1, 2, 3, 4, 5, 6, \dots\}$$

Natural numbers are also called Counting Numbers. In Spanish they are called "números cardinales" if they are used for counting or "números ordinales" if they are used for ordering.

Definition:

Natural numbers are the numbers used for counting or ordering things.

Spanish: Los números naturales son los que se usan para contar y ordenar cosas.

1.2.- The decimal numeral system

A numeral system is the set of rules and symbols that makes it possible to represent numbers.

Spanish: Un sistema de numeración es el conjunto de reglas y símbolos que hacen posible la representación de números.

The Sumerians were the first people with a numeral system. Since then, Egyptians, Mayas, Romans, etc. have had their own numeral systems. But around 773, a positional system began in India. The Indian system was transmitted to Europe by Arabs, so it was named the Hindu-Arabic numeral system. This was the precursor of our numeral system.

Our numeral system is a decimal and a place-value notation system. It is decimal because it uses ten different symbols (0, 1, 2, 3, 4, 5, 6, 7, 8 and 9), and it is positional because the value of each digit depends on its position in the number. For example, in the number 21.320, the first 2 has a value of 20,000 units, but the last 2 has a value of 20 units.

Spanish: Nuestro sistema de numeración es un sistema decimal y posicional. Es decimal porque usa diez símbolos diferentes (0,1, 2, 3, 4, 5, 6, 7, 8 y 9), y es posicional porque el valor de cada cifra depende de su posición en el número. Por ejemplo, en el número 21.320, el primer 2 tiene un valor de 20.000 unidades, pero el último 2 tiene un valor de 20 unidades.

In the decimal system each position represents a power of 10. So, beginning from the right, the first position is equivalent to 1 unit, the second one to 10 units, the third one to 100, etc. Each position gets a name according to its value.

Spanish: En el sistema decimal cada posición representa una potencia de 10. Así, empezando por la derecha, la primera posición equivale a 1 unidad, la segunda a 10 unidades, la tercera a 100, etc. Cada posición recibe un nombre en función de su valor]:

Exercise 1: Write a number with 8 digits over the lines and translate the following words:

Units or Ones: _____

Tens: _____

Hundreds: _____

Thousands: _____

Ten thousands: _____

Hundred thousands: _____

Millions: _____

Ten millions: _____

A number can be decomposed as an addition of products that express the value of each of its digits according to their position, or the other way round:

Spanish: Un número puede descomponerse en suma de productos que expresen el valor de cada una de sus cifras en función de su posición o al revés:



Solved example 1:

Write the number 12,034,152 as an addition:

$$12.034.152 = 1 \cdot 10,000,000 + 2 \cdot 1,000,000 + 3 \cdot 10,000 + 4 \cdot 1,000 + 1 \cdot 100 + 5 \cdot 10 + 2 \cdot 1 =$$

In Spanish: 1 Decena de Millón + 2 Unidades de Millón + 3 Decenas de Millar + 4 Unidades de Millar + 1 Centena + 5 Decenas + 2 Unidades

In English: 1 Ten Millions + 2 Millions + 3 Ten Thousands + 4 Thousands + 1 Hundred + 5 Tens + 2 Units

Solved example 2:

Find out the number represented by 3 Millions + 3 Hundred Thousands + 12 Thousands + 35 Tens + 2 Units.

There are two ways to do this exercise:

- ☐ Calculating the value of each figure according to its position and adding up:

Spanish: calculando el valor de cada cifra según su posición y sumando

$$3 \text{ Millions} = 3 \cdot 1,000,000 = 3,000,000$$

$$3 \text{ Hundred Thousands} = 3 \cdot 100,000 = 300,000$$

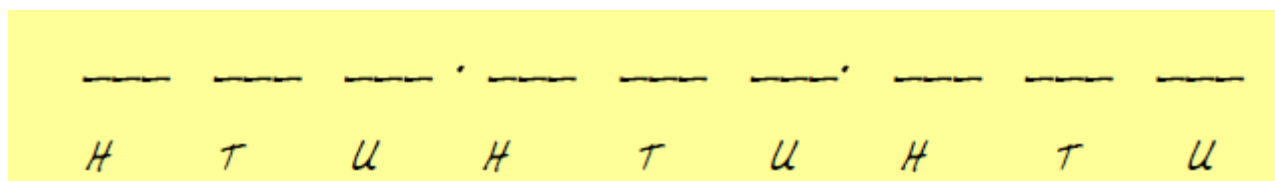
$$12 \text{ Thousands} = 12 \cdot 1,000 = 12,000$$

$$35 \text{ Tens} = 35 \cdot 10 = 350$$

$$2 \text{ Units} = 2 \cdot 1 = 2$$

$$3,312,352$$

- ☐ *Spanish: Dibujando líneas con los nombres de las posiciones y colocando las cantidades una por una. Si una cantidad tiene más de una cifra entonces hay que escribirla empezando en su correspondiente posición pero hacia la izquierda.*



Exercise 2: Write the numbers below as an addition in English and in Spanish, as in the solved example above.

a) 12,004,230:

a)

b) 103,245,023;

b)

Exercise 3: Find out the numbers which are formed by the following values:

a) 13 Unidades de Millón + 52 Unidades de Millar + 3 Centenas + 24 Unidades =

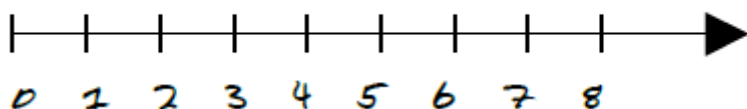
b) 12 Centenas de Millón + 124 Decenas de Millar + 34 Decenas + 5 Unidades =

c) 2 Thousand Millions + 3 Millions + 5 Ten Thousands + 2 Thousands + 3 Hundreds + 5 Units

d) 3 Hundred Millions + 12 Millions + 134 Hundreds + 12 Units =

1.3. Representation and ordering

The natural numbers can be represented on a half line (in Spanish “semirrecta”: a line with a fixed beginning and with no fixed ending) that begins with zero and which is divided into equal segments.



To compare two numbers, we can use three symbols:

> (greater than: mayor que);

= (equal to: igual a);

< (less than: menor que).

Exercise 4: Solve the exercise:

Put the corresponding symbols between the following numbers:

5 ____ 7 1003 ____ 1030 10020 ____ 10200 9898 ____ 9799



2. READING AND WRITING NUMBERS

2.1.- Describing a number in words

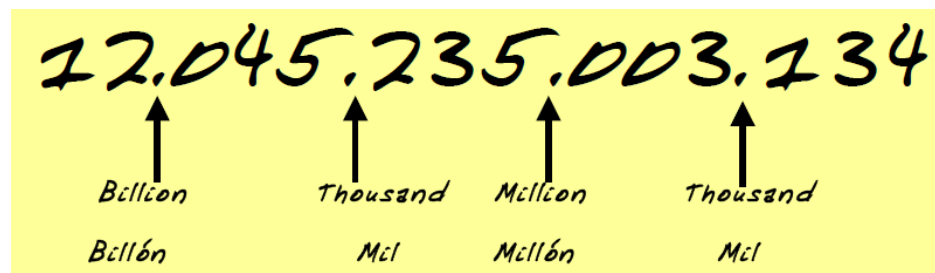
To read a number we read each three-digit group and then the name of the comma.

(Spanish: Para leer el número iremos leyendo cada grupo de tres cifras y a continuación el nombre del punto.)

(Note: In English, numbers are written using commas instead of dots. Example: 12,045,235,003,134)

Solved example:

Describe in words the number 12,045,235,003,134:



Twelve billion forty five thousand two hundred and thirty five million three thousand one hundred and thirty four.

(Spanish: Doce billones cuarenta y cinco mil doscientos treinta y cinco millones tres mil ciento treinta y cuatro).

Exercise 5: Solve the exercise:

Describe the following numbers in words, in Spanish and in English:

- a) 34,000,340,020:
- b) 3,004,000,123,004:
- c) 12,005,000,012,300:
- d) 373,005,000,000,345

2.2.- Writing an amount in figures:

Solved example:

Write *ten billion one hundred thirteen million two thousand twenty three* in figures:

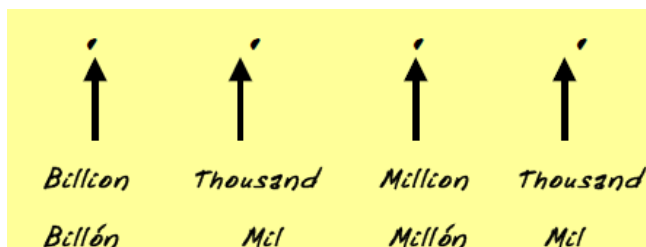
First, we underline all the words that refer to thousand, million, billion, etc:

ten billion one hundred thirteen million two thousand twenty three

(In Spanish: diez billones ciento trece millones dos mil veintitrés)

In Spanish: ahora tenemos que escribir empezando por el mayor (hay que escribirlos todos aunque no se nombren en el número):





Tenemos que escribir las cantidades entre los puntos, siempre completando con ceros para que haya tres cifras entre cada dos puntos:

10.000.113.002.023

Exercise 6: Solve the exercise:

Write the following amounts in figures:

- Cuarenta billones tres mil millones ciento cuarenta mil
- Trece billones, doscientos mil tres millones ciento doce mil cuatro
- Twelve billion two hundred and forty thousand million three hundred thousand and five
- Four billion twenty seven thousand two million five thousand three hundred and fifteen
- Fifteen billion forty five thousand three hundred and twenty four million, two hundred and six

3.- OPERATIONS WITH NATURAL NUMBERS

3.1.- Addition

Adding is the same as putting together or joining two values into one. (= reunir, juntar, añadir). We read $3 + 5 = 8$ as: "Three plus five is equal to eight" or "Three plus five equals eight" or "Three plus five is eight". The terms in the addition are called **addends** and the result is called the **sum**. (In Spanish the addends are the **sumandos**).

Solved Example:

The library lent 45 books last Monday, 50 books on Tuesday and 73 books on Wednesday.
How many books have they lent?

$$45 + 50 + 73 = 168 \text{ books.}$$

Answer: They have lent 168 books



3.2.- The properties of addition

The properties of addition are: closure, commutative, associative, and additive identity.

- **Closure property:** Addition of two natural numbers is always another natural number. For example:

$$6 + 7 = 13 \quad (13 \text{ is another natural number})$$

- **Commutative property:** When we add two natural numbers, the sum is the same no matter what the order of the addends is. $a + b = b + a$. For example $4 + 2 = 2 + 4$.
- **Associative Property:** When we add three or more natural numbers, the sum is the same no matter how we group the addends. $a + b + c = (a + b) + c = a + (b + c)$. For example: $(2 + 3) + 4 = 2 + (3 + 4)$
- **Additive Identity Property:** The sum of any natural number and zero is the original number. For example $5 + 0 = 5$.

Try to translate the properties into Spanish:

Ley de Composición interna: _____

Propiedad Conmutativa: _____

Propiedad Asociativa: _____

Elemento neutro: _____

3.3.- Subtraction of natural numbers

Subtracting is removing or taking away some objects from a group. (= quitar, eliminar).

We read $13 - 7 = 6$ as: "Thirteen minus seven equals six" or "Thirteen subtract seven equals six" (sometimes you can see "thirteen take away seven equals six" but it is better to use the other expressions).

The terms of subtraction are called **minuend** and **subtrahend**, the result is called the **difference**.

- The minuend is the first number, it is the number from which you take something and it must be the larger number. In Spanish it is called *minuendo*.

- The subtrahend is the number that is subtracted and it must be the smaller number. In Spanish it is called *sustraendo*.

- The difference is the result of the subtraction. In Spanish it is called *diferencia*.

To check if the subtraction is correct we add up the subtrahend and the difference. The result must be the minuend.

Solved example:

We have saved 3,520 euros but we have spent € 745 on a computer. How much money do we have left?

$$3,520 - 745 = 2,775.$$

Answer: We have 2,775 euros left.



3.4.- Multiplication

Multiplying is doing an addition of equal addends. (Es hacer una suma de sumandos iguales).

$$3 + 3 + 3 + 3 + 3 = 3 \cdot 5 = 15$$

We read $3 \cdot 5 = 15$ as: “Three times five equals fifteen” or “Three times five is fifteen”.

The factors are the numbers that are multiplied together. The product is the result of multiplying.

Solved Example:

In my living-room I have a bookcase (estantería) with three shelves (estantes). If there are five books on each shelf, how many books are there?

$$5 \cdot 3 = 15$$

Answer: There are 15 books in my bookcase.

3.4.1.- The properties of multiplication

The properties of multiplication are: closure, commutative, associative, and additive identity.

- Closure property: Multiplication of two natural numbers is always another natural number.

For example $6 \cdot 7 = 42$

- Commutative property: When two numbers are multiplied together, the product is the same no matter what the order of the factors is. For example $4 \cdot 2 = 2 \cdot 4$

- Associative Property: When three or more numbers are multiplied, the product is the same no matter how we group the factors. For example: $(2 \cdot 3) \cdot 4 = 2 \cdot (3 \cdot 4)$.

- Multiplicative Identity Property: The product of any number and one is that number.

For example $5 \cdot 1 = 5$.

3.5. Division

Dividing is to share a quantity into equal groups (=repartir en partes iguales). It is the inverse of multiplication. In Spanish we write $6 : 2$, but in English it is always $6 \div 2$, we never use the colon (:).

We read $15 \div 5 = 3$ as: “Fifteen divided by five equals three”.

There are four terms in a division: **dividend**, **divisor**, **quotient** and **remainder**.

- The dividend is the number that is divided. In Spanish it is dividendo.
- The divisor is the number that divides the dividend. In Spanish it is divisor.
- The quotient is the number of times the divisor goes into the dividend. In Spanish it is cociente.
- The remainder is a number that is too small to be divided by the divisor and in Spanish it is called resto.



Solved Example:

There are 72 sweets in a bag. If we want to distribute them among 12 children, how many sweets are there for each child?

$$72 : 12 = 6.$$

Answer: There are six sweets for each child.

The division can be:

a) Exact: the remainder is 0.

b) Non exact (in Spanish “entera”): the remainder isn’t 0.

To check if the division is correct we do the division algorithm (prueba de la división):

Division Algorithm:

$$\text{Dividend} = \text{Divisor} \cdot \text{Quotient} + \text{Remainder};$$

(Spanish: *Dividendo = Divisor · Cociente + Resto*)

Solved example:

Find out the result of the division $237 : 13$ and then check the result with the division algorithm:

$$237 : 13 = 18 \text{ remainder } = 3$$

Dividend = Divisor · Quotient + Remainder; $13 \cdot 18 + 3 = 237$, so it is correct.

4. COMBINED OPERATIONS**4.1.- Distributive property:**

La suma de dos números multiplicada por un tercero es igual a la suma del producto de cada término de la suma por el tercer número.

For example $4 \cdot (6 + 3) = 4 \cdot 6 + 4 \cdot 3.$

So to calculate a number multiplied by a parenthesis which contains an addition:

First, we calculate the brackets, and then the multiplication: $12 \cdot (3 + 5) = 12 \cdot 8 = 96$

Applying the distributive property: $12 \cdot (3 + 5) = 36 + 60 = 96$

Solved example:

Do the operation $5 \cdot (12 + 45)$ in two different ways:

$$5 \cdot (12 + 45) = 5 \cdot 57 = 285 \text{ First, the brackets}$$

$$5 \cdot (12 + 45) = 60 + 225 = 285 \text{ Applying the distributive property}$$

Exercise 7: Solve the exercise: Do the following operations in two different ways:

a) $12 \cdot (12 + 4) =$

b) $3 \cdot (2 + 1 + 7) =$

c) $(12 + 30) \cdot 5 =$



4.2.- Order of the operations

When expressions have more than one operation, we have to follow rules for the order of operations:

- Regla 1: Primero se hace cualquier operación entre paréntesis.
- Regla 2: Después multiplicaciones y divisiones, de izquierda a derecha.
- Regla 3: Por último sumas y restas, de izquierda a derecha.

To remember this you can use the **BODMAS** rule:

B: Brackets

O: Orders (=potencias)

D M: Divisions and Multiplications

A S: Additions and Subtractions

Solved Examples:

- Solve $3 + 6 \cdot (5 + 4) \div 3 - 7$ using the rules for the correct order of operations.

Step 1: $3 + 6 \cdot (5 + 4) \div 3 - 7 = 3 + 6 \cdot 9 \div 3 - 7$ Brackets

Step 2: $3 + 6 \cdot 9 \div 3 - 7 = 3 + 54 \div 3 - 7$ Multiplication

Step 3: $3 + 54 \div 3 - 7 = 3 + 18 - 7$ Division

Step 4: $3 + 18 - 7 = 21 - 7$ Addition

Step 5: $21 - 7 = 14$ Subtraction

- Calculate $9 - 5 \div (8 - 3) \cdot 2 + 6$ using the correct order of operations.

Step 1: $9 - 5 \div (8 - 3) \cdot 2 + 6 = 9 - 5 \div 5 \cdot 2 + 6$ Brackets

Step 2: $9 - 5 \div 5 \cdot 2 + 6 = 9 - 1 \cdot 2 + 6$ Division

Step 3: $9 - 1 \cdot 2 + 6 = 9 - 2 + 6$ Multiplication

Step 4: $9 - 2 + 6 = 7 + 6$ Subtraction

Step 5: $7 + 6 = 13$ Addition

Como ves en los ejemplos anteriores, las multiplicaciones y divisiones o las sumas y las restas se van realizando de izquierda a derecha, nunca de dos en dos. Si dentro de un paréntesis hay varias operaciones volveremos a aplicar la regla BODMAS a su vez dentro del paréntesis como se ve en el siguiente ejemplo:

- Calculate $150 \div (6 + 3 \cdot 8) - 5$ using the order of operations.

Solution:

Step 1: $150 (6 + 3 \cdot 8) - 5 = 150 (6 + 24) - 5$ Multiplication inside brackets

Step 2: $150 \div (6 + 24) - 5 = 150 \div 30 - 5$ Addition inside brackets

Step 3: $150 \div 30 - 5 = 5 - 5$ Division

Step 4: $5 - 5 = 0$ Subtraction



Exercise 8: Solve the exercise:

Solve using the correct order of operations:

a) $5 + 2 \cdot (10 - 2 \cdot 5 + 1) - 3 =$

b) $10 - 3 \cdot 2 + 35 : (5 - 4 + 3 \cdot 2) =$

5.- SOLVING PROBLEMS

In order to solve problems you must follow the rules below:

1. **Start with a first reading of the problem to know what it is about.**
2. **Then you do a second reading more slowly, in order to understand the problem and find out what data it provides.**
3. **Write down the data of the problem clearly. If it is a geometry problem, then you can make a drawing. You must also check that the units are all the same. If they are not, then you will have to change them to the appropriate ones.**
4. **Now you can do all the necessary operations to solve the problem.**
5. **Finally, answering: Reread** the question of the problem and answer it with a sentence.

Don't forget to mention the correct unit and check that the answer makes sense:

Spanish:

- 1.- *Empieza por una primera lectura del problema para saber de qué va.*
- 2.- *Luego haces una segunda lectura más despacio, para entender el problema y averiguar los datos que proporciona.*
- 3.- *Escribe claramente los datos del problema. Si es un problema de geometría, entonces puedes hacer un dibujo. También debes comprobar que todas las unidades son las mismas. Si no lo son tendrás que cambiarlas a las unidades apropiadas.*
- 4.- *Ahora puedes hacer todas las operaciones necesarias para resolver el problema.*
- 5.- *Finalmente, responder: relea la pregunta del problema y contéstala con una frase. No olvides mencionar las unidades correctas y comprueba que la respuesta tiene sentido*



**Solved example:**

John has 350 euros in his bank account. He has received 37 euros as a birthday present and then, he has bought 4 DVDs which cost €15 each. How much money does he have now?

<u>DATA</u>	<u>SOLVE</u>	<u>ANSWER</u>
Saved: 350 euros	$350 + 37 = 387$ euros	
Gift: 37 euros	$4 \times 15 = 60$ euros	A: Now, he has 327 euros
Spent: 4×15 euros	$387 - 60 = 327$ euros	

Exercise 9: Solve the exercise:

A bookshop buys 50 books at 11 euros each. If they sell them at €15 each, how much money will they make?

Traslation: Una librería compra 50 libros a 11 euros cada uno. Si los vende a €15 cada uno, ¿cuánto dinero ganará?

EXERCISES

UNIT 1. THE NATURAL NUMBERS

Exercise 1: Work out in your head.

a) $5 + 7 - 3 - 4$

b) $18 - 4 - 5 - 6$

c) $10 - 6 + 3 - 7$

d) $8 + 5 - 4 - 3 - 5$

e) $12 + 13 + 8 - 23$

f) $40 - 18 - 12 - 6$

Answer: a) 5; b) 3; c) 0; d) 1; e) 10; f) 4;

Exercise 2: Solve:

a) $15 - 6 + 8$

b) $15 - (6 + 8)$

c) $12 - 7 - 2$

d) $12 - (7 - 2)$

e) $27 - 11 + 12$

f) $27 - (11 + 12)$

g) $54 - 22 - 16$

h) $54 - (22 - 16)$

Answer: a) 17; b) 1; c) 3; d) 7; e) 28; f) 4; g) 16; h) 48;

Exercise 3: Calculate the quotient and the remainder for each case:

a) $2647 : 8$

b) $1345 : 29$

c) $9045 : 45$

d) $7482 : 174$

Answer: a) $c = 330$; $r = 7$; b) $c = 46$; $r = 11$; c) $c = 201$; $r = 0$; d) $c = 43$; $r = 0$;

Exercise 4: Work out and check the solution.

a) $30 - 4 \cdot (5 + 2)$

b) $5 + 3 \cdot (8 - 6)$

c) $5 \cdot (11 - 3) + 7$

d) $3 \cdot (2 + 5) - 13$



e) $2 \cdot (7 + 5) - 3 \cdot (9 - 4)$

f) $4 \cdot (7 - 5) + 3 \cdot (9 - 7)$

g) $3 \cdot 5 - 3 \cdot (10 - 4 \cdot 2)$

h) $2 \cdot 3 + 5 \cdot (13 - 4 \cdot 3)$

Answer: a) 2; b) 11; c) 47; d) 8; e) 9; f) 14; g) 9; h) 11;

Exercise 4: Solve and prove that the position of the parenthesis affects the result.

a) $5 \cdot (8 - 4) : 2$

b) $(5 \cdot 8 - 4) : 2$

c) $5 \cdot (8 - 4 : 2)$

Answer: a) 10; b) 18; c) 30;

Exercise 5: Work out the following operations:

a. $4 + 3 \cdot 2 =$

b. $24 : 4 \cdot 6 - 10 + 3 \cdot 2 =$

c. $7 \cdot 2 + (7 + 3 - 4) \cdot 5 - 1 + 3 \cdot 9 =$

d. $[(5 + 10) \cdot 6] : 3 + 6 \cdot 4 - (2 + 8) \cdot 2 =$

e. $(210 - 40) \cdot 25 - (110 - 15) \cdot 12 =$

f. $8 \cdot [13 - (10 - 3)] + 20 : 10 - 5 =$

Exercise 6. Work out the following operations:

a) $[(425 + 680 - 142) \cdot 12] : 107 =$

b) $5 + 4 \cdot 3 + 24 : 12 =$

c) $4 : 2 + 3 \cdot 5 =$

d) $15 + 5 \cdot (20 + 15) =$



e) $42 \cdot 3 - 124 : 4 - (180 : 9) : 5 =$

f) $(241 - 100 + 44) : 5 + 20 \cdot 7 =$

g) $7 + 8 \cdot (17 - 5) - 28 : 2 =$

h) $(12 + 3 \times 5) : 9 + 8 - 11 =$

i) $[(286 + 729 - 215) \times 45] : 120 =$

j) $[(549 + 286) \times 15] - [(925 + 275) : 150] =$

k) $[(2 + 2^3 : 4) : 4 + (2 + 1) \times 3] : 10 - 1 = 0$

l) $6^3 - 5 \times (3^3 - 2) =$

m) $2^4 - 2^3 + 2^2 - 2 =$

Exercise 4. (Page 22, EXERCISE 41). Three friends have € 1,300 and they spend € 655 on a trip. How much does each one have left after the trip?

spend = *gastar*
trip = *viaje*
each = *cada*
have left = *quedarle*



Exercise 5. (Page 22, EXERCISE 42). In a warehouse (deposit) there are 14 tons of wheat. If we take out 415 sacks with 15 kilograms each one, how many kilograms are there left in the warehouse?

1 ton = 1,000 Kg
wheat = *trigo*
there be left = *quedar*

Exercise 6. (Page 22, EXERCISE 43). A person earns € 325 a week and spends € 490 a month on food, € 79 on clothes, and € 45 on other expenses. How much does he save in a month? (1 month = 4 weeks).

earn = ganar
(trabajando)
save = ahorrar

Exercise 7. (Page 22, EXERCISE 44). 50 shirts were sold for € 10 each. What was the benefit if the shirts were bought for € 7 each?

Exercise 8. (Page 22, EXERCISE 45). A merchant bought 1,125 CDs for € 12 each. He earned € 200,250. Calculate the price of each CD.

Exercise 9. (Page 24, EXERCISE 62). Ruth has 24 CDs, her three friends have 3, 5 and 8 CDs, respectively. How many CDs have they all got?

Page 24, EXERCISE 63. Write the instructions in English and solve it.

Page 24, EXERCISE 64. Write the instructions in English and solve it.



UNIT 1: THE NATURAL NUMBERS SET. REVISION SHEET

• To master the definitions and theory of the unit / Dominar las definiciones y aspectos teóricos del tema:

1. What are natural numbers used for? What numbers are they? What are they called in Spanish?
2. What is a numeral system? (¿Qué es un sistema de numeración?)
3. Our numeral system is decimal and positional, what does it mean? (Answer in Spanish if you prefer)
4. Write the name of the different place-values in a number in English and in Spanish.
5. What properties do the addition and multiplication of natural numbers have? Write the name in Spanish and English and the definition only in Spanish.
6. The operation $6 \cdot (2 + 3)$ can be done in two different ways. What is the name of this property? Answer in Spanish and in English.
7. If you have several combined operations, what is the order you have to follow? Try to answer in English.



8. What are the two operations related to an addition? And to a division? Try to answer in English.

- **To know how to describe a number in words or how to write it in figures, with at least nine digits / Saber leer y escribir números de al menos nueve cifras.**

9. Describe the following numbers in words in Spanish and English:

- a) 15,002,365
- b) 152,365,001
- c) 636,004,600,003

10. Write the following numbers in figures:

- a) Dos billones trescientos mil millones ciento uno
- b) Trece mil doscientos millones treinta y una mil cuarenta y cinco
- c) Fourteen thousand twenty million five hundred four thousand and three
- d) Two billion three hundred forty five thousand twenty million ten thousand and two hundred.

- **To write the decimal decomposition of a number and to write a number knowing its decimal decomposition / Obtener la descomposición decimal de un número y escribir un número a partir de su descomposición decimal**

11. Write the decomposition of the following numbers. Write the place values in English and in Spanish.

- a) 25,062,123
- b) 159,001,153
- c) 354,078,001,023

12. Write the numbers described by:

- a) 132 Miles de millón + 32 Unidades de millar + 45 Decenas + 3 Unidades:
- b) 2 Decenas de millón + 23 Decenas de millar + 362 Decenas:
- c) 24 Thousands of Millions + 5 Hundreds of Thousands + 124 Thousands + 3 Units
- d) 5 Hundreds of Millions + 23 Millions + 55 Tens of Thousands + 34 Hundreds + 5 Units



- **To do the four basic operations with natural numbers / Realizar las cuatro operaciones básicas con números naturales**

13. Find out the result of the following operations:

a) $23,754 + 751,908 + 5,737 + 837 =$

b) $746,883 - 12,888 =$

c) $7,366 \cdot 778 =$

d) $8,438 \cdot 2,004 =$

e) $37,563 : 705 =$

f) $73,747 : 3,200 =$

- **To solve combined operations with and without brackets / Realizar operaciones combinadas con y sin paréntesis**

14. Do the following combined operations following the rules for the order of operations:

a) $2 - 10 : 10 + 3 \cdot (1 + 3) =$

b) $25 - 3 \cdot 4 + 2 \cdot 5 - 1 =$

c) $(4 + 5) : 3 - (1 + 2) + 2 \cdot 4 =$

d) $36 - 10 : 2 + 4 \cdot (8 - 3 \cdot 2 + 5) =$

e) $(34 - 12) \cdot 3 + 36 : (4 + 8) =$

f) $6 - 3 \cdot (2 + 3 \cdot 2 - 5) - 10 : 2 =$

- **To solve problems that use operations with natural numbers / Resolver problemas que usen operaciones con números naturales**

15. One cyclist has cycled 78 km of a 153 km long stage. How many kilometres does he still have to cycle?



16. Milo has bought 10 tickets for the theatre and Gloria buys another 8 for the pupils who have decided to come at the last minute. How much do they have to pay between them if each tickets costs € 9?

17. Five brothers and sisters receive € 24,300 each as an inheritance from their uncle Tom. How much would they receive if there were only three of them?

18. The sum of three numbers is 450. The two smallest ones are 75 and 124. What is the other number?

Maths is the mother of all sciences

