

FRENCH
MATHEMATICS CURRICULUM

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FRENCH PRIMARY SCHOOL COMMON BASEMENT OF KNOWLEDGE AND SKILLS FOR MATHEMATICS

Valid for Primary schools and Collège (2 – 15 years old)

The aim of the **”Common basement knowledge and skills”** is to give students the mathematical culture necessary for a coherent world representation and understanding of their daily environment; They must seize that complexity can be expressed by fundamental laws.

The main elements of mathematics

In each of the areas that are computing, geometry, and the management of data, mathematics provide tools for action, choose and decide in daily life. They develop logical thinking, the capacity of abstraction and vision in the plane and in space by the use of formulas, models, charts and diagrams. It is also to develop logical reasoning and the taste of the demonstration.

Control of the key elements of mathematics is acquired and is essentially exercised by the resolution of problems, including from close situations of reality.

The skills acquired in mathematics influence the acquisition of a scientific culture.

Knowledge

It is necessary to create as soon as possible to the primary school of the automation in calculation, in particular the control of four which allows the mental calculation. It is also essential to learn to demonstrate and to reason.

He must also understand concepts and techniques (computation, algorithm) and remember them to be able to use.

Students should know:

+ With regard to numbers and calculation:

- decimal numbers, the relative numbers, fractions, powers (order, compare);
- four operations and their meaning;
- basic techniques of mental calculation;
- the elements of the simple literal calculation (the first degree to a variable expressions);
- the calculation of the value of a literal expression for different values of the variables;
- the remarkable identities;

+ With regard to the Organization and management of data and functions:

- proportionality: property of linearity, graphical representation, proportionality table, "cross product" or "rule of 3", percentage, scale;
- the usual representation: charts, diagrams, graphics;
- tracking on a plane and in the plan;
- the fundamental concepts of descriptive statistics (maximum, minimum, average frequency);
- the concepts of chance or probability;

+ With regard to geometry:

- the basic geometric properties of plane figures and the solid following: square, rectangle, lozenge, parallelogram, triangle, circle, cube,

rectangular parallelepiped, cylinder, sphere;

-notions of parallel, perpendicular, mediator, bisector, tangent (in a circle);

-transformations: symmetries, expansion and reduction;

-theorems of plane geometry: sum of the angles of a triangle, triangular inequality, Thales (in the triangle), Pythagoras.

It is necessary to know how interpret a planar representation of an object of space and a pattern (cube, rectangular parallelepiped);

+ **With regard to the quantities and measures:**

-the main quantities (units of measurement, formulas, calculations and conversions): length, area, capacity, volume, mass, angle, duration, speed, density, number of revolutions per second.

-measures with instruments, taking into account the measurement uncertainty.

Capacity

After leaving compulsory school, the student must be able to apply the principles and mathematical core processes in daily life, in his private life as in his work. To do this, it must be able to:

-of thinking logically, to practice the deduction, demonstrate;

-to communicate in written and oral, using mathematical language adapted;

-to perform:

-by hand, a calculation isolated on numbers to decimal writing of reasonable size (addition, subtraction, multiplication, division);

-for Calculator, a calculation isolated on relative numbers in decimal writing: addition, subtraction, multiplication, Decimal division at 10 - n close, calculation of the square, the cube of a relative number, root square of a positive number.

-mentally of simple calculations and quickly determine an order of magnitude;

-to compare, add, subtract, multiply and divide numbers fractional write in simple situations;

-to make paths by using the usual instruments (rule, square, compasses, rapporteur):

- parallel, perpendicular, mediator, bisector;
- circle given by its centre and its radius;
- image of a figure by axial symmetry by central symmetry;
- to use and build tables, diagrams, charts and move to a mode of expression to another.
- to use tools (tables, forms, drawing tools, calculators, software);
- to seize when a situation of life lends itself to mathematical treatment, analyze it by asking the data and then emitting assumptions, engage in reasoning or to its resolution, and, for this calculation:
 - know when and how to use basic operations;
 - control the likelihood of a result;
 - recognize situations under the proportionality and treat them by choosing a way adapted;
 - use graphical representations;
 - use the theorems of plane geometry;
 - to identify the space: use a map, a plan, a schema, a coordinate system.

Attitudes

The study of mathematics enables students to understand the existence of logical laws and develops:

- the rigour and accuracy;**
- respect for the truth rationally established;**
- the taste of the reasoning based on arguments whose validity is to prove.**

FRENCH PRIMARY SCHOOL MATHEMATICS OFFICIAL PROGRAMMATION

Valid for Elementary school (8 – 11 years old)

The practice of mathematics developing taste research and reasoning, imagination and capacity for abstraction, rigour and accuracy. Of the CE2 to the CM2, in the four areas of the program, the student enriches his knowledge, acquires new tools, and continues to learn to solve problems. It reinforces his mental calculation skills. **He acquires new automatisms.** The acquisition of the mechanisms in mathematics is always associated with an intelligence of their meaning.

The main mathematical elements control helps act in everyday life and prepares the pursuit of studies at the College.

1 – Numbers

The organized study of the numbers continued to \$ 1 billion, but large numbers may be encountered.

Natural integers:

- principles of decimal count of position: value of figures according to their position in the writing of numbers.
- oral designation and write in figures and letters;
- comparison and storage of numbers, tracking on a graduated line, use of the signs $>$ and $<$.
- arithmetic relations between numbers in common use: half double, quad, quarter, triple, third..., the concept of multiple.

Decimals and fractions:

- simple and decimal fractions: write, coaching between two consecutive integers, writing as the sum of an integer and a fraction less than 1,

sum of two decimal fractions or two fractions of same denominator;

-decimal numbers: oral designations and encrypted entries, value of the figures according to their position, passage of the entry point to a fractional writing and vice versa, comparison and storage, tracking on a right graduated; value approached to the nearest for a decimal number.

2 – Calculation

-mental: addition and multiplication tables. The daily mental calculation training on four operations promotes ownership of numbers and their properties.

-asked: control of a surgical technique for each of the four operations is essential.

-Calculator: calculator is a reasoned use depending on the complexity of the calculations to which students are facing.

The resolution of problems related to everyday life to deepen knowledge of the numbers studied, to strengthen the control of the meaning and practice of operations, to develop the rigour and the taste of the reasoning.

3 – Geometry

The main objective of the teaching of the geometry of the CE2 to the CM2 is to allow students to move gradually from a perceptual recognition of objects in a study based on the use of alignment and measurement instruments.

Geometric properties and relations : alignment, perpendicularity, parallelism, equal lengths, axial symmetry, medium of a segment.

The use of instruments and techniques : rule, square, compasses, layer, grid paper, paper pointed, folding.

Flat figures : the square, rectangle, the lozenge, parallelogram, triangle and its special cases, the circle:

-description, reproduction, construction;

-specific vocabulary to these figures: side, Summit, angle, diagonal, axis of symmetry, centre, RADIUS, diameter;

-expansion and reduction of plane figures, in line with proportionality.

The usual solids : cube, paved, cylinder, pyramid, Prism.

-recognition of these solids and study a few patterns;

-specific vocabulary to these solids: Summit, edge, face.

Problems of reproduction construction of geometric configurations or mobilize the knowledge of the usual figures. They are used wisely specific vocabulary and approaches of measurement and alignment.

4 - Quantities and measures

Lengths, masses, volumes : measurement, estimation, legal units of the metric system, calculation on quantities, conversions, perimeter of a polygon, formula for the perimeter of the rectangle and the square of the length of the circle, the volume of the right keypad.

Areas : comparison of surfaces according to their areas, common units, conversions; formula for area of a triangle and a rectangle.

Angles : comparison, using a template and the square; right, acute, obtuse angle.

Time tracking : reading time and the calendar.

Durations : units of measure of durations, calculation of the elapsed time between two particular moments.

The currency

Concrete **problem solving** helps to consolidate the knowledge and relating to quantities and their measurement capabilities, and give them meaning. On this occasion estimates of measurement can be provided then validated.

5 - Organization and management of data

Organization and data management capabilities developed by the resolution of problems of everyday life or taken other lessons. It is gradually learn to sort data, to classify them, to read or to produce tables, graphs and analysis.

The proportionality is discussed from situations involving the concepts of percentage, scale, conversion, expansion or reduction of figures. For this, several procedures (in particular the so-called "rule of three") are used.

FRENCH PRIMARY SCHOOL CONCEPT TABLE

Valid for Elementary school (8 – 11 years old)

**Year
9**

**Year
10**

**Year
11**

NUMERATION

Integer numbers

-Know, write and appoint the integers to the million.

F

F

F

- Know, write and appoint integers to 1 billion.

F

F

-Compare, arrange, surround the integers to the million.

F

F

F

-Compare, arrange, surround the integers to 1 billion.

F

F

-Know and use expressions such as: double, half or a half, triple, quarter of a whole number.

F

F

F

- Know and use certain relationships between the numbers of common use: between 5, 10, 25, 50, 100, 15, 30 and 60.

F

F

F

-The concept of multiple: recognise multiples of numbers in common use: 5, 10, 15, 20, 25, 50.

F

F

Fractions

-Appoint the single and decimal fractions, using vocabulary: a half, third, quarter, 10th, 100th.		F	F
-Use these fractions in straightforward cases sharing or coding of measures of sizes.		F	F
-Provide a simple fraction by two consecutive integers...			F
-Write a fraction as a sum of an integer and a fraction less than 1.			F
-Add two decimal fractions or two simple fractions of same denominator			F

Decimal numbers

-Know the value of each of the digits of the decimal part based on its position (to 1/100ème).		F	F
-Know the value of each of the digits of the decimal part based on its position (to the 1/10 000ème).			F
-Knowledge for numbers (up to 1/100ème): . identify, place on a graduated right decimal numbers . compare, store decimal numbers, . Mentor decimal numbers by two consecutive integers, . pass a fractional entry to an entry point and vice versa.		F	F
-Knowledge for numbers (up to 1/10 000ème): . identify, place on a graduated right decimal numbers . compare, store decimal numbers, . produce decompositions related to an entry point, using 10; 100; 1,000... and 0.1; 0.01; 0.001...			F
-Give a value approximate to unity, to the tenth, ...			F

CALCULATION

Calculate mentally

-Save and mobilize the results of the addition and multiplication tables.

F

F

F

-Calculate mentally sums, differences, products.

F

F

F

-Consolidate the knowledge and capabilities in mental arithmetic on integers.

F

F

-Multiply an integer or decimal number by 10, 100, 1,000 mentally.

F

F

-Estimate mentally an order of magnitude of the result

F

F

-Consolidate the knowledge and capabilities in mental calculation on whole and decimal numbers.

F

-Divide an integer or decimal number by 10, 100, 1 000.

F

Perform a calculation referred

-Addition, subtraction, and multiplication.

F

F

F

-Know a surgical technique of the division and the implementation with a divider to a figure.

F

F

F

-Organize its calculations to find a result by calculation mental, placed, where using the calculator.

F

F

F

-Use the keys of the calculator operations.

F

F

F

-Addition and subtraction of two decimal numbers.

F

F

-Multiplication of a decimal number by a whole number.

F

F

-Euclidean division of two integers.		F	F
-Decimal division of two integers.		F	F
-Know a few of the calculator useful features to perform a sequence of calculations		F	F
-Addition, subtraction, multiplication of two whole or decimal numbers.			F
-Division of a decimal number by a whole number.			F
-Use the calculator to good use			F
Problems			
-Resolve problems of the four operations.	F	F	F
-Solve problems engaging approach to one or more stages.		F	F
-Solve more complex problems.			F
GEOMETRY			
In the plan			
-Recognize, describe, name and reproduce, draw geometric figures: square, rectangle, lozenge, triangle.	F	F	F
-Verify the nature of a plane figure using the rule and the square.	F	F	F
-Build a circle with a compass.	F	F	F
-Use in situation vocabulary: side, summit, angle, medium.	F	F	F

-Recognizing that a figure has one or more axes of symmetry, by folding or paper layer.	F	F	F
-Draw, on paper grid, symmetric figure a figure given from a given line.	F	F	F
-Recognize that lines are parallel.		F	F
-Use in situation geometric vocabulary: points aligned, right, perpendicular lines, parallel lines, segment, environment, angle, axis of symmetry, centre of a circle, RADIUS, diameter...		F	F
-Check the nature of a simple plane figure by using the rule, the square, the compass.		F	F
-Describe a figure to identify it among other figures or to reproduce		F	F
-Use the instruments to check the parallelism of two lines (rule and square) and to draw parallel lines.			F
-Verify the nature of a figure using the instruments.			F
-Build a height of a triangle.			F
-Reproduce a triangle with instruments.			F
In space			
-Recognize, describe and name: a cube, a right pad.	F	F	F
-Use in situation vocabulary: face, edge, summit.	F	F	F
-Recognize, describe and name the solid rights: cube, paved, Prism.		F	F
-Recognize or complete a cube or keypad pattern.		F	F
-Recognize, describe and name the solid rights: cube, paved, cylinder, Prism.			F
-Recognize or complete a solid right pattern.			F

Reproductive problems, construction

-Reproduce figures (on paper United, graph, or dotted), from a model.	F	F	F
-Build a square or a rectangle of given dimensions.	F	F	F
-Complete a figure by axial symmetry...		F	F
-Draw a simple figure from a program of construction or by following instructions		F	F
-Draw a figure (on solid paper, grid or pointed), from a program of construction or drawing freehand (with indications regarding the properties and dimensions).			F

MEASURES AND QUANTITIES

Measures

-Knowledge of the following units of measurement and relations that bind: . Length: per meter, kilometer, centimeter, millimeter; . Mass: kilogram, gram; . Capacity: litre, centilitre . Currency: the euro and the cent. . Time: hour, minute, second, month, year.	F	F	F
-Use instruments for measuring lengths, masses, capabilities, then express it by a whole number or a mentoring by two integers.	F	F	F
-Verify that an angle is right using the bracket or a template.	F	F	F
-Calculating the perimeter of a polygon.	F	F	F
-Read the time on a watch to needles or a clock.	F	F	F

-Awareness and use common units of measurement of durations, and units of the metric system for lengths, masses and the capacities, and their relations.		F	F
-Reporter of the lengths using the compass.		F	F
-Forms of the perimeter of the square with the rectangle.		F	F
-Calculate a duration from the data of the initial moment and the final moment.			F
-The length of a circle formula.			F
-Formula for the volume of the right keypad (introduction to the use of metric units of volume).			F
Areas			
-Measure or estimate the area of a surface with an effective pavement using a reference surface or through the use of a grid network.		F	F
-Classifying and storing surfaces according to their area.		F	F
-Calculate the area of a square, rectangle, of a triangle using the formula appropriate.			F
-Awareness and use the usual area (cm ² , m ² and km ²) units.			F
Angles			
-Compare the angles of a figure using a template.		F	F
-Estimate and check using the square, that an angle is right, acute or obtuse.		F	F
-Reproduce a given angle using a template.			F

Problems.

-Solve problems whose resolution involves quantities above	F	F	F
-Solve problems whose resolution may involve conversions.		F	F
-Solve problems whose resolution involves conversions.			F
-Solve problems whose resolution involves simultaneously different units of measure.			F

ORGANIZATION AND MANAGEMENT OF DATA

-Organize data of a problem to resolution.	F	F	F
-Use a table or a chart to a data processing.	F	F	F
-Build a table or a chart.		F	F
-Interpret a table or a chart.		F	F
-Read the coordinates of a point.		F	F
-Place a point with known coordinates.		F	F
-Use a table or the "rule of three" in simple situations of proportionality.		F	F
-Solve problems under proportionality, including issues related to the percentages, scales, mean speeds or unit conversions, using procedures varied (including the "rule of three").			F