

**Q: What is arithmetic?**

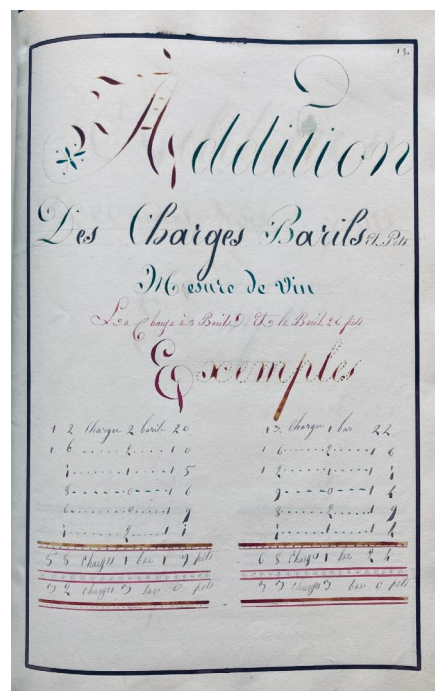
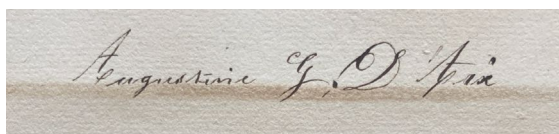
**A: Arithmetic is nothing other than the correct & faithful science of numbers**

**A Female student's arithmetic primer: learning to calculate commercial business transactions**

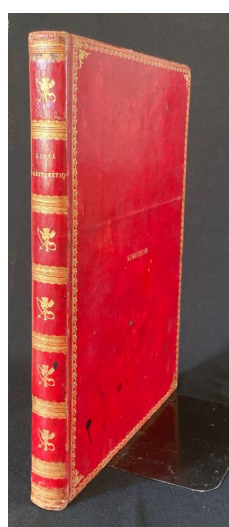
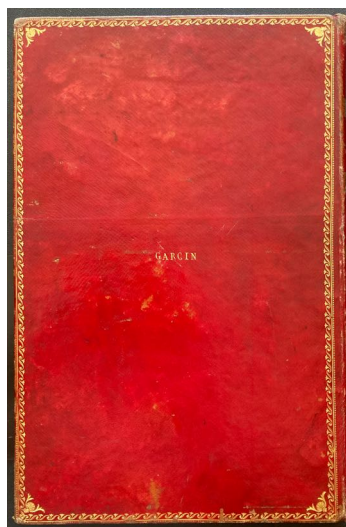
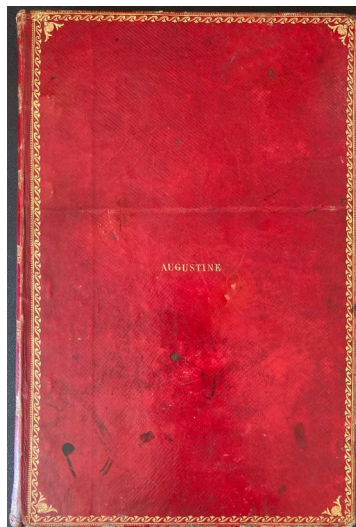
**Augustine Garcin. *Livre d'arithmetique*, manuscript**  
[Aix-en-Provence?, early 19th century?].

Folio: (34 x 22 cm). [5] blank leaves, 88 leaves (text), [4] leaves (table), 16 blank leaves—with text and exercises written on rectos only. Contemporary red morocco with gilt frames on the boards, flat gilt spine, and former owner / student's name "Augustine" on the front cover and "Garcin" on the back cover, all edges gilt. A few scuffs and ink spots to an otherwise lovely binding, internally the volume is excellent. Written on Dutch paper with the D&C Blauw watermark, commonly found in France, and elsewhere, during the eighteenth and nineteenth century; all text rectos with black ink borders, and one leaf (7) with ornamental borders.

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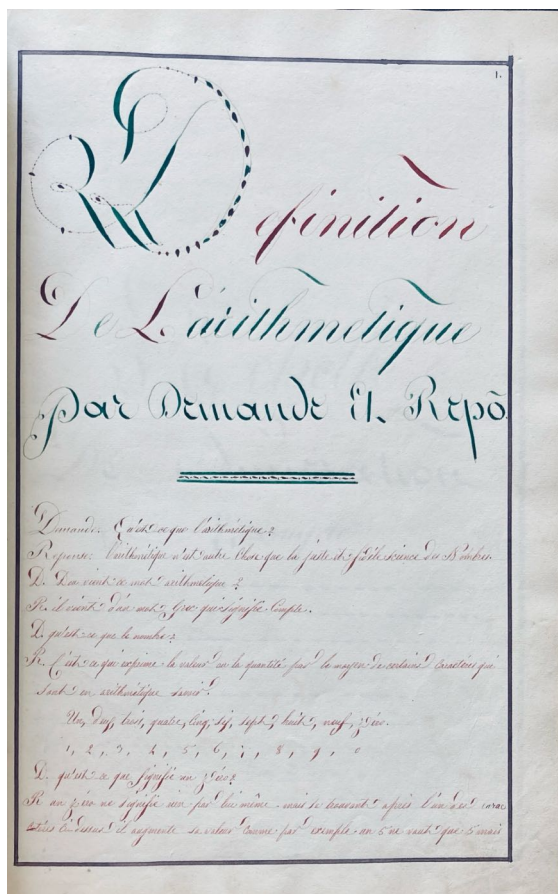


A young girl's large folio arithmetic textbook, with the text written in a neat at times ornamental hand, occasionally using more than one color of ink, in a formal layout that is free from doodles, idle pen-trails, or unrelated content as is often common in such textbooks. The focus here is on mathematical exercises for addition, subtraction, multiplication, and division, but set in the context of weights & measures and business operations. Matching the names on the cover of the binding, the signature "Augustine G. D'Aix" appears on the verso of the last page of the table of contents. The luxurious binding, formal production, and the large format suggests that Augustine was from a well-educated, wealthy family, and invested in the study of mathematics.



As an object, the folio format and the morocco binding are unusual for this type of textbook, and it is further noteworthy that a young woman's education in the early 19th century would include exercises in commercial business as seen here.

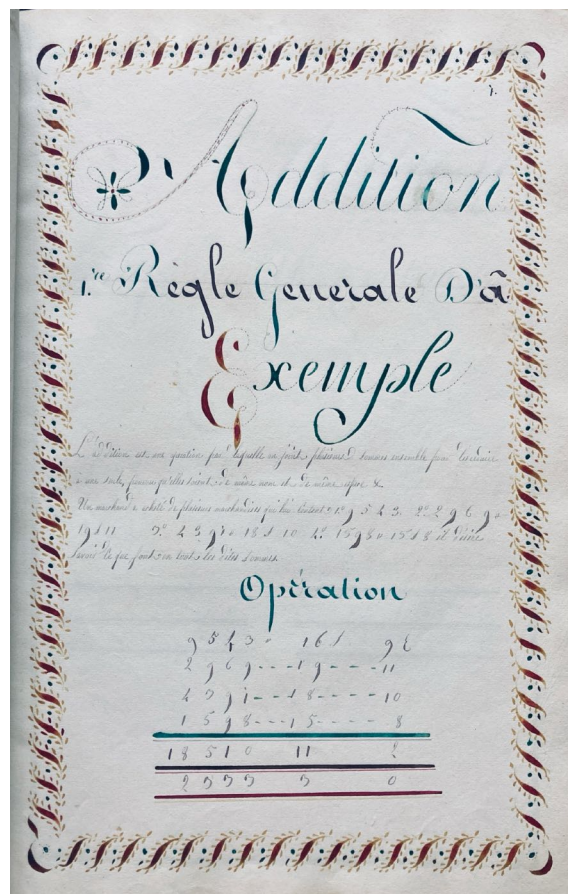
The work opens with a Question-Answer pedagogical exercise aimed at teaching the principles of arithmetic: "Definition de l'Arithmétique, par demande et Répo[nse]," a series of 32 questions [*demandes*] and answers [*réponses*], beginning with the question: "Qu'est ce que l'arithmétique [*what is arithmetic*]?" Written in the student's hand, the questions consider the definition of arithmetic, its etymology from Greek, whole numbers 1-9, and zero, fractions, addition, subtraction, multiplication, and division, and so forth. The question-answer section runs from leaf 1-6. There then follows sections for each operation—addition, subtraction, multiplication, and division—with multiple examples of each, ranging from the simple to the complex, with instructions of how to perform these operations.



Included in the textbook are over 60 essential exercises that demonstrate arithmetic rules. Frequently the given example is accompanied by an explicit statement of the relevant rule, for example:

"L'addition est une opération par laquelle on joint plusieurs sommes ensemble pour les réduire à une seule, pourvu qu'elles soient du même nom et de même espèce", that is, "*Addition is an operation by which several sums are united to reduce them to a single sum, provided that they are of the same denomination and the same nature.*"

Undoubtedly, students would have been instructed to write out these rules as a means of committing them to memory.



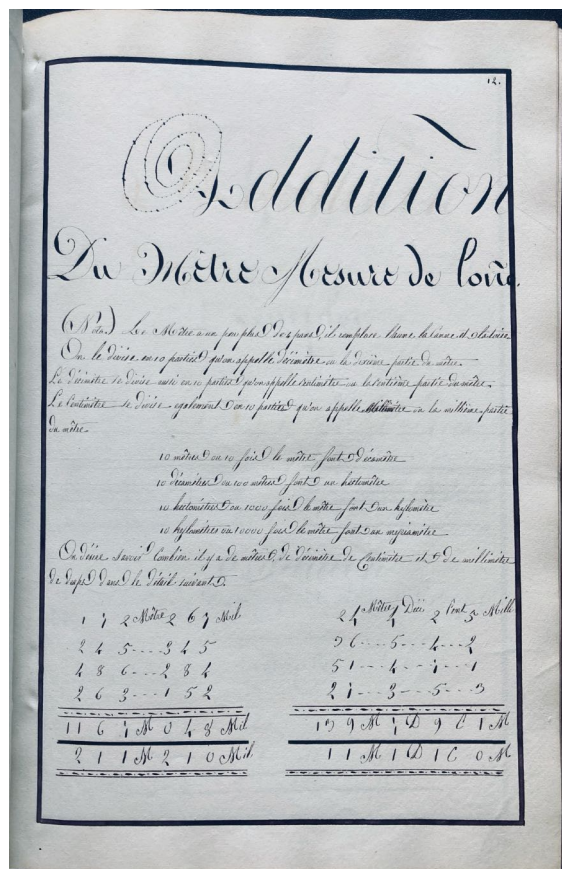
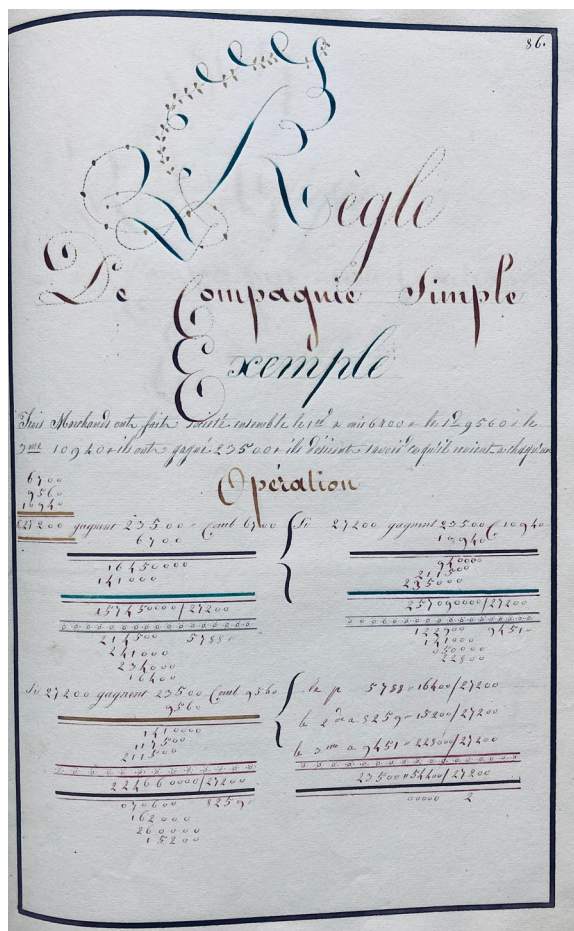
## Augustine learns standards of weights & measures, and business practices:

Understanding of basic math, whole numbers and fractions make up most of the exercises, but many of them rely on units of weights & measures that predate the metric system (officially adapted in France in 1799) for the



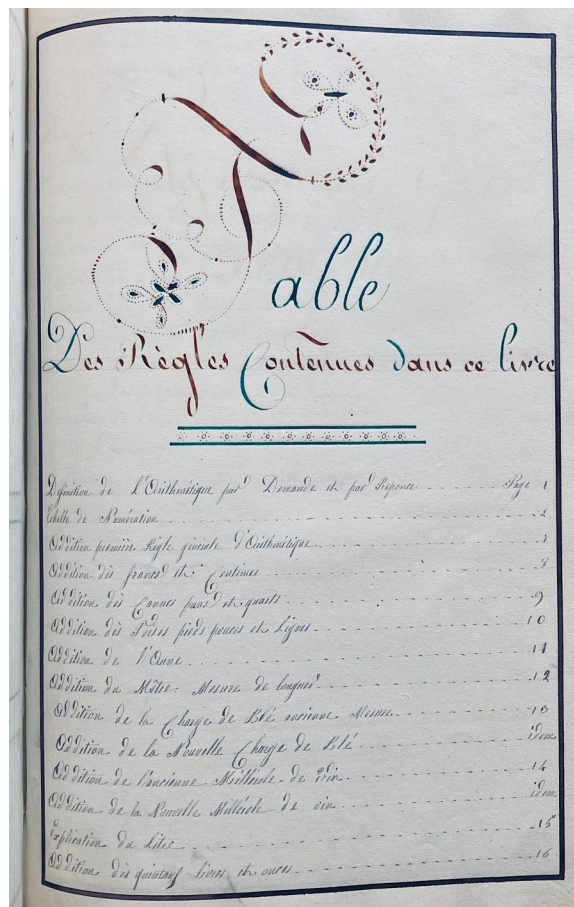
context of the lessons presented, thus providing Augustine with a second topic of learning. In addition to the practicality of learning arithmetic simultaneous to weights & measures, **Augustine also learned a number of fundamental business operations, such as how to calculate three-way profit sharing based on unequal initial investment, how to calculate interest accruals, how to convert costs for individual units based on bulk purchases and projecting the desired profit margin based on initial investment.** Thus, Augustine's arithmetic lesson was integrated into a broader and rather sophisticated introduction to commercial business and merchant transactions.

Leaf 12 (*right*), "Addition du metre, Mesure de longueur", introduces addition for *the meter as a unit of linear measure* that replaces the aune, the canne, and the toise, and describes this new system of measure that comprises meters, decimeters, hectometers, and kilometers, and how to add different values. Similarly, leaf 15 explains the liter, deciliters, hectoliters, and kiloliters; operations for the kilogram appear on leaf 17. Many of the Exercises in this undated textbook include operations using cannes, panes, toises, menus, pieds, pices, aunes, quintales, milliers, sols, deniers, écus, etc., thus dating it to the end of the 18th or perhaps the beginning of the 19th century when such units were either still in use or familiar. There are also exercises for francs and centimes, months, days, and years.



Toward the end of the text there are a number of word problems, mostly involving business transactions, for calculating averages and more complex equations—leaf 86 (*left*), "Règle de compagnie simple [Rule for a simple partnership]," demonstrates how to calculate a three-way profit based on each partner's initial investment. Other exercises are concerned with projecting costs, calculating unit costs, interest accruals, and other commercial business transactions.

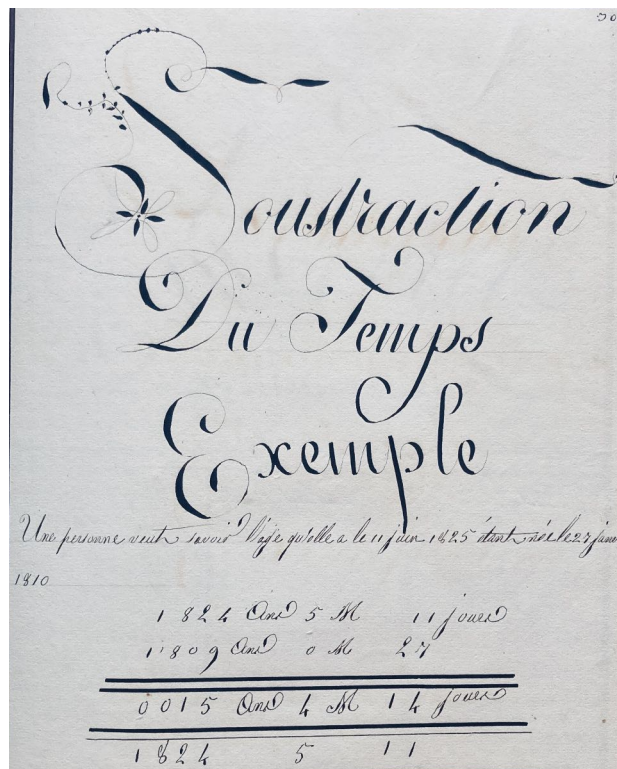
The textbook also includes a detailed table of contents (below) listing all 60 plus exercises and giving the leaf number where it appears.



**Table**  
Des Règles Contenus dans ce livre

Explication de l'Orthographe par l'Alphabet de l'Alphabet	Page 1
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One hint as to the composition date of the work may be found on leaf 30, on which the rule for “Soustraction du Temps”, or “Subtraction of Time” for calculating dates appears. The dates mentioned in the exercise are 1810 and 1825, shown below.



**Soustraction Du Temps Exemple**

Une personne veut savoir l'âge qu'elle a le 11 juin 1825 étant née le 23 juin 1810.

1825	05	11	jours
1810	00	23	jours
<hr/>			
0015	05	11	jours
<hr/>			
1624	05	11	jours

The text provides researchers with a valuable source for understanding contemporary and ancient (or soon to be outdated) units of measure and the manner in which students such as Augustine were taught to make arithmetical calculations for non-standard system of weights & measures, as well as applying that understanding to commercial transactions.

Augustine’s textbook is therefore a testament not only to arithmetic instruction and the manner students of the period learned to add, subtract, multiply, and divide, but through its calligraphic qualities and formal graphic organization it also shows the importance given to penmanship and the pedagogy of the written word.