THURMAN'S RULES FOR RECKONING TIME

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Thurman's Rules for Reckoning Time by C. T. Thurman

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WITH

EXAMPLES AND ILLUSTRATIONS.

BY

C. T. THURMAN.

FOR USE IN SCHOOLS AND COLLEGES.

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Preface.

In submitting these pages to the public the author wishes to impress the fact at the outset that he seeks to direct attention to but a single idea—Calculation of Time.

Himself a merchant engrossed with the cares of business, he has had neither the time nor the ability to produce anything at all elaborate—nor anything likely to interest one devoted to studies in Higher Mathematics, or engaged in occupations where perfectly accurate calculations of time are not necessary.

But we think a careful perusal of the work will convince all who read it, of what we believe to be a somewhat original idea—that hundreds of honest tombstones state unconscious falsehoods even as to the very ages they record, and that calculations of every sort involving time and date, and which we now concede to be only approximately correct, can be just as easily and simply made with the utmost exactness.

In seeking to illustrate our ideas, we have not manufactured "catches" or interesting puzzles, but have actually taken the examples here given from Arithmetics which are to-day Standard Text Books in the common schools of the country. We have selected the examples from the following well-known works:

Ray's Practical Arithmetic.....American Book Co.
Sutton & Kimbrough's Higher Arithmetic.....D. C. Heath & Co.
Wentworth's Grammar School Arithmetic.....Ginn & Co.
Milne's Standard Arithmetic.....American Book Co.
White's New Complete Arithmetic.....American Book Co.
High School Arithmetic, Wentworth and Hill.....Ginn & Co.
Ficklin's National Arithmetic.....American Book Co.

The author is fully aware that it is dangerous to dispute such high authority as any of the foregoing authors;

but we simply point to the fact that the printed answers to the examples quoted from these books are really erroneous, as can be shown conclusively by *counting up the days*—though they are quoted merely to aid both writer and reader in their respective work, and certainly in no spirit of criticism or detraction.

The author believes that all of these accomplished mathematicians are possibly aware of the errors, and have probably considered the matter unworthy of notice, preferring to follow the methods and rules of established custom and business usage, to the risk of confusing those for whom these school-books are intended.

It is hardly credible that such palpable errors could escape the attention of such scholarly mathematicians as those from whose books we quote, and certainly when the fact is known to all the world that the ordinary rule for computing time is only approximately correct.

In a spirit of genuine modesty, then, we give these unpretentious pages to the public, conscious of grave faults both of style and presentation, sincerely trusting that they will be found of some substantial service to the busy toilers of our country, and of some use to others who are interested in the discovery of Truth, however sought.

We believe the principles laid down to be absolutely true, and the rules announced to be extremely simple and practical.

We are seeking neither notoriety nor wealth, but are prompted purely by a desire to serve our fellow men, however humble the service may be, and if by great good fortune we should give to the world a single new idea, we should be justly proud.

C. T. T.

McMinnville, Tenn., Feb. 15, 1897.

The Thurman Rules

For Reckoning Time.

The calendar is irregular, since the solar year contains the very complex period of 365 days, 5 hours, 48 minutes and 50 seconds. Our present calendar, with twelve months of irregular length, and leap-year occurring once in four years, has four months of 30 days each, seven months with 31 days each, and one month with 28 days for a common year and 29 days for a leap-year.

In reckoning time by this calendar, the universal rule has been to count by a *regular* rule which allows 12 months to the year and 30 days to the month. This only accounts for 360 days, a loss of 5 days for a common year and 6 days for a leap year.

Now, as only four months of the year contain exactly 30 days, it is quite obvious that many calculations based upon this *regular* rule must be at least *slightly* incorrect.

No such regular rule will correctly apply to an irregular calendar—as the months of different lengths are introduced at irregular intervals, and since we must also allow for the extra day in leap years. Hence, it is further apparent that a rule for reckoning time, in order to give perfect results, must adjust itself to the irregularities of the calendar, and to a certain extent depend upon them.

A careful study of the calendar will disclose the fact that one month, in all calculations of time, or expressions of date, seems to be responsible for all errors; it is our purpose to locate that month in any and all prob-

lems that may arise involving calculation of time and expression of date.

Nor must we ignore the fact that this is a matter of actual importance as well as of scientific interest, for, apart from the desire of all men to secure accurate results in all calculations where such results are simply and easily obtainable, and admitting the justice and feasibility of the ordinary Business Rule which allows only 360 days to the year, we cannot ignore the fact that if a man was born on a certain day of a certain year, and died on a certain day of a certain year, he was so many years, so many months and *so many days old*—and if, upon working the problem by an established rule, we find, by *actual count* of years, months and days, that an erroneous result has been obtained, we are forced to admit that some better rule is needed. It is our aim to formulate such a rule.

Partly to show the need of a better rule for calculating time, but chiefly to illustrate our own ideas, we give hereafter a number of examples selected from seven different Arithmetics—standard works now in actual use in American schools, books dating from Ray's Arithmetics, which appeared about 1857, to Milne's, Sutton and Kimbrough's, and Wentworth's, all of which have been issued since 1890. We have, in fact, been unable to find a single text-book in English embodying the principle we seek to establish—nor do we find a single Arithmetic from an English or American press, which has not the same erroneous rule for calculating time, and expressing date, as have the seven from which we quote.

In order to attract the reader's immediate attention, we shall at first confine ourselves to such problems as involve only date, ages and definite periods of time—

discussions and illustrations involving calculations of Interest, Partial Payments and Discount will be briefly treated of later.

We first invite attention to the following definitions and general formulæ, and to the Rules laid down—the application will readily appear from the examples which follow.

TIME is a completed period of duration, whether past or future. Example: 58 years, 2 months and 15 days.

DATE is the point of time at which a transaction, or event takes place. Example: July 4th, 1776, or 1776th year, 7th month and 4th day.

It must be further noted that in expressing all dates of the Calendar—arithmetically or otherwise—we are looking forward to the completion of a duration, and that as written, or expressed, each expression lacks the completion prospected.

Thus, "July 4th, 1776, (or "1776th year, 7th month, and 4th day,") means that since the birth of Christ have elapsed 1775 completed years, 6 completed months, and 3 completed days—and that we are now in the 4th day of the 7th month of the 1776th year since Christ was born.

Therefore, in reckoning time, we may regard expressions of date as an incomplete period of Time anticipating completion.

FORMULÆ.

1. Date—Date=Time.
2. Date—Time=Date.
3. Date+Time=Date.
4. Time—Time=Time.
5. Time+Time=Time.