Part 4: Number-terms in the *Book of Mormon*

4.1 Images

Like the year- and time-terms of a year-related expression, the number-term of such an expression is a component that may be symbolized by the yellow center of the circular archery target mentioned in previous Parts of this Division. These three components, year-, time- and number-terms, make up the principal focal point of this inquiry. All 418 express number-terms and their references in the extant text of the *Book of Mormon* are presented with the year- and time-terms listed in Table 3.A of this Division.

Parts 2 and 3 of this Division also compared year-related expressions to Christmas ornaments bedecking a grove of evergreen trees. The colorful ornaments were divided into four types. Eight gold or silver stars represented year-related expressions consisting of a single express word, either *year* or *years*. The other 418 multicolored ornaments (balls, figurines and toys) symbolized year-related expressions with number-terms. Some of the colors that decorate the 418 ornaments symbolize the various analytical types of number-terms that are discussed in this Part 4. Year- and time-terms cannot be fully understood without a concurrent awareness of the use and meanings of number-terms in the *Book of Mormon*.

Before discussing the various types of number-terms, however, this Part begins their introduction by examining four more fundamental topics related to numbers in the *Book of Mormon*: the names of numbers; the sequence of numbers; the system used for grouping numbers; and the arithmetic operations associated with numbers. The brief examination of these four topics provides a textual foundation for analyzing the composition, use and meanings of number-terms. The number-related texts used in this initial examination occur throughout the *Book of Mormon* and often are not related to the topic of time. Following the discussion of the four initial topics, the analysis then addresses the various types of number-terms and their placement and meanings in the extant text of the *Book of Mormon*.

4.2 Names of numbers and their sequence

The singular noun *number* in the *Book of Mormon* sometimes occurs in association with general measures of quantity such as great, vast, many, large and considerable,[1] or sufficient, goodly, a very few or small.[2] Sometimes *number* relates to quantitative comparisons such as greater, greatest, did exceed, more than or double,[3] and still other times, *number* appears with definite or approximate numbers such as eight, twelve, twenty and two, six thousand or about four hundred and fifty.[4] The noun *number* appears to mean "[a]n assemblage … collection or multitude of units or individuals, and therefore … indefinite, unless defined by other words or by figures or signs of definite signification".[5] The plural noun *numbers* apparently means one or more of such assemblages or collections.[6] The adjective *numberless* also occurs in the text,[7]

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1 E.g., Mosiah 2:2; Alma 56:10; 1 Nephi 12:3; Omni 1:27, 29.

2 E.g., Mosiah 11:17; 18:7: Alma 17:34; Mosiah 28:1.

3 E.g., Alma 48:9; 24:28; Mormon 4:13; Alma 24:26; 43:51.

4 E.g., Ether 3:1; 3 Nephi 12:1; Ether 6:20; Alma 57:6; Mosiah 18:35.

5 Webster, *An American Dictionary of the English Language*, II: [190] (number).

6 E.g., 1 Nephi 14:12; Mosiah 11:16; Alma 2:13; 17:8; Helaman 11:25, 31; 15:6; 3 Nephi 6:3; Mormon 5:6; 6:8

apparently meaning "[t]hat cannot be counted [or] innumerable".[8] The verb *number* occurs in many different grammatical forms.[9] The first definition of the verb *number* in Webster's 1828 dictionary seems appropriate: "[t]o count; to reckon; to ascertain the units of any sum, collection or multitude".[10] Similarly, the past participle *numbered* is defined as "[c]ounted [or] enumerated".[11] The "sacred and solemn"[12] verb *numbereth*, a third person present indicative form of the regular verb *number*, occurs in two instances where Deity performs the action.[13] The use of the word *number* in so many forms and narratives suggests that *Book of Mormon* writers were familiar with and often used the operation that, at least among the English by 1730, was "commonly look'd upon as the first Rule or Operation in Arithmetick",[14] the foundation of all the other arithmetic operations. This essential operation involves two corresponding actions: the naming of numbers and the representation of numbers with written characters or figures.[15]

4.2.1 Number names

When the *Book of Mormon* was first published, the ten arithmetic figures and their corresponding simple English names used in numeration were: 0 (*cipher, zero, nothing, naught* or *nought*), 1 (*unit* or *one*), 2 (*two*), 3 (*three*), 4 (*four*), 5 (*five*), 6 (*six*), 7 (*seven*), 8 (*eight*) and 9 (*nine*). Beyond these ten figures, larger numbers were composed of multiple figures, even though some larger numbers could be represented by a simple numerical name, such as: 10 (*ten*), 11 (*eleven*), 12 (*twelve*), 20 (*twenty*), 30 (*thirty*) and so forth.[16]

The *Book of Mormon* expresses numbers with written names, rather than figures. Sometimes the written names are simple ones like those listed above, but larger numbers are usually composed of two or more simple names with the conjunction *and*. For example, the multipart name of the largest definite number in the *Book of Mormon* is "twelve thousand five hundred thirty and two".[17] The largest year-related cardinal number recorded in the *Book of Mormon* is "six hundred and nine"[18] and the largest year-related ordinal number is "three hundred and eightieth".[19] The multipart numbers in these three quotations are composed of simple numerical

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[7] E.g., 1 Nephi 1:8; Alma 51:27.

[8] Webster, *An American Dictionary of the English Language*, II: [191] (numberless).

[9] E.g., 3 Nephi 15:24 (are numbered); Alma 45:13 (are … numbered); Mosiah 4:29 (cannot number); Alma 2:35 (could not be numbered); Mosiah 26:35 (did number); 1 Nephi 12:3 (did not number); Ether 6:21 (had numbered); Ether 6:19 (may number); 3 Nephi 21:6 (may be numbered); Mosiah 18:9 (may … be numbered); Mosiah 25:12 (might … be numbered); Alma 56:55 (numbered); Alma 26:37 (numbereth); Helaman 15:13 (shall again … be numbered); 1 Nephi 14:2 (shall be numbered); 3 Nephi 21:22 (shall … be numbered); 2 Nephi 10:18 (shall be … numbered); Alma 45:13 (shall no more be numbered); 3 Nephi 18:31 (shall not be numbered); Moroni 7:39 (to be numbered); Mosiah 14:12 (was numbered); Moroni 6:4 (were numbered); Alma 30:2 (were … numbered); Moroni 6:7 (were not numbered).

[10] Webster, *An American Dictionary of the English Language*, II: [191] (number).

[11] Ibid., II: [191] (numbered).

[12] Webster, *An American Dictionary of the English Language*, I: [67-69].

[13] 1 Nephi 22:25; Alma 26:37.

[14] Alexander Malcolm, *A New System of Arithmetick, Theorical and Practical* (London: J. Osborn and T. Longman; F. Fayram and E. Symon, 1730), 6; capitalization and spelling in the original; accessed at archive.org.

[15] Malcolm, *A New System of Arithmetick*, 6-7; Frederick A.P. Barnard, *A Treatise on Arithmetic* (Hartford: Packard & Butler, 1830), 24-35; É. Bézout, F. Peyrard; Noble Heath (trans.), *Theoretical and Practical Arithmetic* (New York: Samuel Wood & Sons and Baltimore: Samuel S. Wood & Co., 1825), 6-7; both American books accessed at archive.org.

[16] Barnard, *A Treatise on Arithmetic*, 24-29; Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 5-9. Compare Webster, *An American Dictionary of the English Language*, II: [170] (naught), [187-88] (nothing), [189] (nought); and *The Compact Edition of the Oxford English Dictionary*, I: 1901, 1947, 1949.

[17] Alma 2:19.

[18] 3 Nephi 2:6.

[19] Mormon 5:6.

names (two, three, five, six, nine, twelve, thirty, eightieth, hundred, thousand) to which the conjunction *and* has been added.

Table 4.A lists all the simple names of definite numbers expressed in the Yale text of the *Book of Mormon* and separates them into two principal lists, one for cardinal numbers and the other for ordinal numbers. A cardinal number "answers the question 'how many?'" An ordinal number "refer[s] an object to a certain place in a series of such objects".[20] A few names are missing from each list, but where one list is deficient, the other provides a corresponding name. The sequence of names for cardinal numbers consists of positive integers[21] equal to or greater than one and the sequence increases in value with each succeeding point being the next larger integer. The sequence of names for ordinal numbers matches that of the cardinal numbers. A single reference for each numerical name is included in Table 4.A to provide an example, but many of the names appear dozens of times in the *Book of Mormon*. If a simple numerical name appears in the small plates of Nephi, the reference is its first use as the name of a number.[22]

The plural names *tens*, *thousands* and *millions* also occur in the *Book of Mormon*[23] and they are listed separately in Table 4.A. The plural word *ones* also appears in the *Book of Mormon*;[24] however, the noun *ones* seems to refer only to multiples of a "[s]ingle … individual" or "[a] single person [or] thing",[25] rather than to multiples of the cardinal number *one*. The noun *unit*, with the arithmetic meaning of "the least whole number" or *one*,[26] does not occur in the *Book of Mormon*. However, the words *unity*, *united* and *reunited* do occur;[27] so, the concepts of "being one", "oneness" and "singleness"[28] are suggested in the text.

4.2.2 The quantitative meaning of *many*

The word *many* is used as an adjective in 30 number-terms in the extant text of the *Book of Mormon*. Webster's 1828 dictionary defined the adjective to mean "[n]umerous [or] comprising a great number"[29] Similarly, the *Oxford English Dictionary* expressed the meaning as "[t]he adjectival designation of great indefinite number".[30] In some number-terms, these definitions appear to be appropriate. For example, Nephi_1 prophesies a future day when "Satan hath no power ... for the space of many years".[31] Presumably, this condition will exist for "a great number" of years because people "dwell in righteousness and the Holy One of Israel reigneth".[32] Likewise, when Nephi_2 expressed his understanding of the prophecies of the coming of a Savior, he stated that "there were many before the days of Abraham which were called by the order of

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[20] *The Compact Edition of the Oxford English Dictionary*, I: 339 (cardinal), 2005 (ordinal).

[21] In arithmetic, an integer is "a whole number, in contradistinction to a fraction." Webster, *An American Dictionary of the English Language*, I: [984] (integer).

[22] The noun *one* first appears in 1 Nephi 1:9, but refers to a single being rather than a number.

[23] E.g., Alma 3:26; 51:11; Ether 15:2.

[24] E.g., 1 Nephi 22:31; Mosiah 20:18; Alma 10:17.

[25] Webster, *An American Dictionary of the English Language*, II: [208] (one).

[26] Webster, *An American Dictionary of the English Language*, II: [844] (unit).

[27] E.g., Mosiah 18:21; 2 Nephi 1:21; Alma 40:19.

[28] Webster, *An American Dictionary of the English Language*, II: [844] (unite, unity); *The Compact Edition of the Oxford English Dictionary*, II: 3516.

[29] Webster, *An American Dictionary of the English Language*, II: [97] (many).

[30] *The Compact Edition of the Oxford English Dictionary*, I: 1721 (many).

[31] 1 Nephi 22:26.

[32] Ibid.

God, yea, even after the order of his Son—and this that it should be shewn unto the people a great *many* thousand years before his coming that even redemption should come unto them".[33] Thus, while still indefinite, "a great number" of thousands of years of expectation appear to have been intended by $Nephi_2$.

Nonetheless, the number-terms of the *Book of Mormon* also use the adjective *many* in a way that Webster's 1828 dictionary does not address. In 1 Nephi 17:4, $Nephi_1$ states that "we did sojourn for the space of many years, yea, even eight years in the wilderness". While the adjective *many* in this clause seems to be used to express an indefinite number, one may well question whether that number is a "great" number. Also, in Jacob 4:1-4, $Nephi_1$'s younger brother $Jacob_2$ states their intention for the things they wrote on the small plates—that their "beloved brethren and our children ... may know that we knew of Christ, and we had a hope of his glory many hundred years before his coming". Since $Jacob_2$'s birth occurred less than 600 years before the prophesied birth of Christ,[34] the adjective *many* in this statement would seem to represent the definite number five. $Jacob_2$ only "knew of Christ" a full 500 years before his coming. Again, in Jacob 7:7, $Jacob_2$ quotes the Nephite apostate Sherem referring to Christ as "a being which ye say shall come many hundred years hence". Again, the adjective *many* in this statement would seem to represent the definite number five. Hundreds of years later, $Mormon_2$ added his brief comments to the small plates of Nephi and included the chronological statement, "it is many hundred years after the coming of Christ".[35] Since $Mormon_2$'s birth occurred more than 300 years after the coming of Christ and his death occurred before 400 years had passed away,[36] the adjective *many* in his statement appears to represent the definite number three. What does the adjective *many* mean if it represents numbers as small as eight, five and three?

The last of the definitions of the adjective *many* in the *Oxford English Dictionary* is a definition reflecting the word's use in a philosophical sense: "A multitude, a plurality. Opposed to *one*."[37] Alexander Malcolm's 1730 treatise on "Arithmetick" expressed this same distinction: "every Number is either Unity, or a Collection of Units", "either *Unity*, or a *Multitude* of Units"; "*Unity*, or *One*" or "*many*, in distinction from one".[38] Thus, the use of *many* in some number-terms in the *Book of Mormon* seems to be grounded in a philosophy of numbers. When any number greater than one is classified as a multitude or many, then numbers as small as eight, five and three are many. In this sense, the adjective *many* appears to be intentionally indefinite, but technically precise; i.e., more than one.

4.2.3 Cipher and zero

The names *cipher* and *zero* do not appear in the *Book of Mormon*, but their definitions suggest possible substitutes that do appear. Webster's 1828 dictionary defined the noun *cipher* as the arithmetic character 0 "which, standing by itself, expresses nothing, but increases or

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[33] Helaman 8:18, italics added.

[34] 1 Nephi 2:1-5; 10:1-4; 18:17; 2 Nephi 2:1-2.

[35] Words of Mormon 1:2.

[36] 4 Nephi 1:47-49; Mormon 1:1-2; 6:1-15; 8:1-6.

[37] *The Compact Edition of the Oxford English Dictionary*, I: 1722 (many), italics in the original.

[38] Malcolm, *A New System of Arithmetick*, 1, 4; capitalization, spelling, italics and punctuation in the original.

diminishes the value of other figures, according to its position".[39] Webster also defined the noun *zero* to mean "[c]ipher; nothing".[40] Thus, in defining each noun, the key word *nothing* was used.

Webster defined *nothing* to mean "[n]ot any thing; not any being or existence; a word that denies the existence of any thing; non-entity; opposed to *something*." With respect to value, he defined *nothing* as "[n]o importance; no value; no use" and with respect to quantity as "[n]o part, portion, quantity or degree". He did not, however, expressly define *nothing* as an arithmetic figure.[41] Unlike Webster, the *Oxford English Dictionary* recognizes such a meaning for the noun *nothing*. In addition to being defined as "[t]hat which is not any number, and possesses neither quantity nor value", *nothing* can mean "the figure or character representing this". The earliest *Oxford English Dictionary* example for the word *nothing* representing the arithmetic figure is dated about 1425 and three of the other cited examples were published prior to Webster's 1828 dictionary.[42] Thus, when the *Book of Mormon* was first published, the word *nothing* appears to have been used for centuries in England as a synonym or substitute for the word *cipher* or *zero*.

The noun *nothing* appears dozens of times in the *Book of Mormon*; however, it does not appear to be used as a synonym or substitute for *cipher* or *zero*. Instead, its meaning is consistent with non-arithmetic definitions. *Book of Mormon* narratives tell about those who answer, do, doubt, eat, have, hear, know, preach, say, speak, take, teach and work … nothing.[43] Sometimes, there is, was, can be and could be … nothing.[44] I am, he is, ye are and they were … nothing.[45] Nothing … shall harm or disturb, shall overthrow, come upon, could bring, doth corrupt, can come, can save or entereth into.[46] Some things, of course, profiteth or availeth … nothing;[47] they are "good for nothing".[48] Finally, Jesus' disciples taught "nothing varying from the words which Jesus had spoken"[49] and Moroni_2 concluded that "nothing that is good denieth the Christ".[50] In none of these cases is the word *nothing* a clear substitute or synonym for an arithmetic figure or for the word *cipher* or *zero*.

The noun *naught*, a synonym of *nothing*,[51] occurs 18 times in the text. In the 1830 edition, the word was consistently spelled with a letter *o* rather than a letter *a*.[52] Whether spelled naught or nought, Webster's 1828 dictionary defined the noun to mean "[n]othing", the adverb to mean "[i]n no degree" and the adjective to mean "[b]ad; worthless; of no value or account".[53] While maintaining similar definitions for *naught* and *nought*, the *Oxford English Dictionary* again

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[39] Webster, *An American Dictionary of the English Language*, I: [383] (cipher).

[40] Ibid., II: [951] (zero).

[41] Ibid., II: [187-88] (nothing).

[42] *The Compact Edition of the Oxford English Dictionary*, I: 1947 (nothing).

[43] E.g., 1 Nephi 2:4; Enos 1:20; Mosiah 1:5; 7:1; 18:19-20; Alma 11:22; 14:19; 60:11; Helaman 8:3; 3 Nephi 4:19; 4 Nephi 1:5; Mormon 9:21.

[44] E.g., 1 Nephi 18:20; 2 Nephi 30:17; Alma 34:12; 3 Nephi 19:25.

[45] E.g., 2 Nephi 26:30; Alma 26:12; Moroni 7:44, 46.

[46] E.g., 2 Nephi 1:31; Mosiah 2:14; 27:13; Alma 30:52; Helaman 8:25; 13:6; 3 Nephi 27:19.

[47] E.g., Jacob 5:32; Mosiah 3:15.

[48] E.g., Jacob 5:42.

[49] 3 Nephi 19:8.

[50] Moroni 10:6.

[51] Webster, *An American Dictionary of the English Language*, II: [170] (naught); *The Compact Edition of the Oxford English Dictionary*, I: 1901.

[52] Smith, *Book of Mormon* (1830), 46, 50-51, 54, 64, 94, 107, 112-13, 121, 417, 440, 498, 527, 567, 582. The spelling *nought* is recognized by Webster as an alternative spelling for the word *naught*. Webster, *An American Dictionary of the English Language*, II: [189] (nought). See also *The Compact Edition of the Oxford English Dictionary*, I: 1949 (nought).

[53] Webster, *An American Dictionary of the English Language*, II: [170] (naught); [189] (nought).

expressly adds an arithmetic definition, "[a] cipher", and cites four instances of such use between 1649 and 1825.[54]

The *Book of Mormon* refers to people who set the Messiah, his atonement, and the counsels and commandments of God "at naught",[55] apparently meaning "to slight, disregard or despise".[56] People and things also are created, turned aside, judged and esteemed as a thing or things "of naught".[57] The *Oxford English Dictionary* defines a thing of nought as "a mere nothing". The use is identified as obsolete, with five examples cited, beginning about 1425 and ending in 1743.[58] In the *Book of Mormon*, people are said to have spent or sold themselves "for naught",[59] presumably meaning "[w]ithout payment or recompense; gratis".[60] The counsel of the wicked "shall come to naught" and "the terrible one is brought to naught";[61] certain others are esteemed or shall be "as naught", or "should be counted as naught".[62] These expressions seem to mean becoming or at least being thought, judged or considered to be "[o]f no worth or value; good for nothing; worthless, useless".[63]

The phrase *counted as naught* in Mormon 5:9 (noted above) might be proposed as a case where *naught* is to be considered a synonym or substitute for *cipher* or *zero*. Presumably, Mormon_2 could have used another verb such as *set* or *esteem* instead of *count* because both "set at naught" and "esteemed ... as naught" are attested elsewhere in the *Book of Mormon*.[64] According to Webster's 1828 dictionary, the basic meanings of the verb *count* include "[t]o number; to tell or name one by one, or by small numbers, for ascertaining the whole number of units in a collection".[65] Thus, one might propose that Mormon_2 chose to indicate the existence of a *cipher* or *zero* in Nephite arithmetic names by using the phrase *counted as naught*.

This proposal lacks persuasion for several reasons. First, Webster's dictionary also defined the verb *count* to mean "[t]o esteem ... to think, judge or consider"[66] and, thus, the past participle *counted* does not, by itself, require the word *naught* to be defined arithmetically as *cipher* or *zero*. Second, the word *counted* occurs in just two other contexts in the *Book of Mormon*[67] and, in each of those contexts, the word appears to have a non-arithmetic meaning. Third, as noted above, the words *number* and *numbered* are the ones that are most often used for arithmetic purposes in the *Book of Mormon*. Thus, the word *counted* in Mormon 5:9 cannot be assumed to have an arithmetic meaning solely because it is used with *naught*. Finally, in the associated narrative of this verse, Mormon_2 prophesies that "the Lord hath said [the Gentiles] should scatter this people [the Lamanites]—and this people should be counted as naught among them". Most likely, this is not a prophecy about a Gentile census that numbers the people and finds the

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[54] *The Compact Edition of the Oxford English Dictionary*, I: 1901 (naught); 1949 (nought).

[55] 1 Nephi 19:7; Helaman 4:21; 12:6; Moroni 8:20.

[56] Webster, *An American Dictionary of the English Language*, II: [170] (naught). See also *The Compact Edition of the Oxford English Dictionary*, I: 1949 (nought).

[57] 1 Nephi 19:9; 2 Nephi 2:12; 27:32; 28:16; 33:2.

[58] *The Compact Edition of the Oxford English Dictionary*, I: 1949 (nought).

[59] 1 Nephi 21:4; 2 Nephi 26:10.

[60] *The Compact Edition of the Oxford English Dictionary*, I: 1949 (nought).

[61] 2 Nephi 18:10; 27:31.

[62] 1 Nephi 17:48; Mormon 5:9; Ether 13:13.

[63] *The Compact Edition of the Oxford English Dictionary*, I: 1901 (naught); 1949 (nought).

[64] 1 Nephi 19:7; Ether 13:13.

[65] Webster, *An American Dictionary of the English Language*, I: [484] (count).

[66] Ibid.

[67] 2 Nephi 15:28; Moroni 7:6-9.

Lamanite population has reached zero. Rather, this seems to be a prophecy about Gentiles using their contempt for Lamanites to rationalize uprooting and scattering them. The arithmetic figure 0 or the name *cipher* or *zero* would appear to be out of place in this narrative context. Indeed, none of the 18 uses of the word *naught* appears to require the conclusion that it is a substitute for the figure 0 or that it must be given an arithmetic meaning.

The meanings of the words *nothing* and *naught* may suggest that the word *none* also should be examined. This word also occurs dozens of times in the *Book of Mormon*,[68] typically meaning "[n]ot one [when] *used of persons or things*"; "[n]ot any; not a part [or] not the least portion". As a substitute, the word *none* may fill in for an omitted noun or it may be "used for *nothing*, or *no concern*".[69] These different definitions in Webster's 1828 dictionary often seem to overlap when they are applied to the *Book of Mormon*. For example, the word *none* in the clause "none of us knoweth"[70] might be defined as "not one" or "not any". Likewise, the word *none* in the Lord's statement "I will accept none of your sacrifices and your burnt offerings"[71] could be defined as "not one", "not any", "not a part" or "not the least portion", or it could be seen as a substitute for the noun *nothing*.

Near the end of the *Book of Mormon*, the noun *none* and the phrase *no, not one* are used as substitutes: "And woe be unto the children of men … for there shall be *none* that doeth good among you—*no, not one*".[72] The emphatic statement "no, not one" expressly places the potentially arithmetic word *one* into the definitional mix. Does its use indicate a "not one" digit, something smaller than "a hundredth part"[73], a *naught, nothing* or *none* representing *cipher* or *zero*? Neither the associated narrative nor the definition of *one* requires a positive answer to this question. In Moroni 10:24-25, Moroni_2 prophesies "unto all the ends of the earth" concerning the dire consequences for all people "if the day cometh that the power and gifts of God shall be done away among you ... because of unbelief. And woe be unto the children of men if this be the case, for there shall be none that doeth good among you—no, not one". The word *none* and the phrase *no, not one* occur in a context of prophecy and rhetorical contrast. Future "children of men" in "all the ends of the earth" appear to be contrasted, not with an arithmetic *zero*, but with the absence of any person who is doing good. In this context, the word *one* most likely means "any person" or "[a] single person",[74] rather than the cardinal number *one*. Perhaps if Moroni_2 had used some type of a number in describing the children of men, even "numberless"[75] children of men, the case for an arithmetic meaning for *none* in this context might seem more persuasive. But as Moroni 10:25 exists, it seems unlikely to be evidence for the existence of the concept of *cipher* or *zero* in the *Book of Mormon*.

In summary, Table 4.A lists the names of the cardinal and ordinal numbers for which there is firm evidence in the *Book of Mormon*. The names *cipher*, *zero*, *nothing*, *naught* and *none* do not appear in the table because, in the case of *cipher* and *zero*, they are absent from the *Book of*

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[68] E.g., 1 Nephi 22:4; 2 Nephi 1:6; Jacob 2:27; Mosiah 3:12; Alma 1:1; Helaman 13:19; 3 Nephi 5:4; 4 Nephi 1:46; Mormon 5:24; Ether 1:43; Moroni 6:3.

[69] Webster, *An American Dictionary of the English Language*, II: [184-85] (none), italics in the original.

[70] 1 Nephi 22:4.

[71] 3 Nephi 9:19.

[72] Moroni 10:25, italics added.

[73] Words of Mormon 1:5.

[74] Webster, *An American Dictionary of the English Language*, II: [208] (one); *The Compact Edition of the Oxford English Dictionary*, I: 1989.

[75] 1 Nephi 1:8; 8:21; Alma 36:22; 51:27.

Mormon and, in the case of *nothing*, *naught* and *none*, they do not seem to be used as words describing the arithmetic figure 0, the digit that has no value in itself. The names in the two principal lists in Table 4.A represent definite, but simple numbers. To understand the composition and use of multipart numbers in the *Book of Mormon*, the system for grouping simple number names must be examined next.

4.3 Number grouping system

In many instances, the simple names in Table 4.A are joined with each other to form the multipart names of larger numbers. The configurations of simple and multipart names follow a specific order, as indicated by the following examples: three,[76] seventy and two;[77] an hundred and two;[78] an hundred and forty and two;[79] a thousand and five;[80] two thousand and sixty;[81] five thousand and four hundred;[82] and six thousand five hundred sixty and two.[83] These examples depict an ascending order of number groups based on units or ones, tens, hundreds and thousands. This is a base-10 grouping system that uses units (1-9) in conjunction with powers of ten (10^1, 10^2 and 10^3). Higher powers of ten are depicted with even larger numbers; e.g., "ten thousand" (10^4) and "millions" (10^6).[84]

Three issues related to the *Book of Mormon* base-10 grouping system require explanation. The first issue derives from the list of ordinal numbers *eleventh* through *nineteenth* in Table 4.A and the corresponding list of existing cardinal numbers that indicate the same number sequence. The names for these numbers might be thought to depart from a base-10 system, but they actually indicate the antiquity of such a system in the English language. The ordinal number *eleventh* and the cardinal number *eleven* appear to be derived from an Old English type ***ainlifun*; and the ordinal number *twelfth* and the cardinal number *twelve* stem from an Old English *twelf*. These words respectively indicate "one left" and "two left" after the first ten have been counted.[85] Likewise, the names for the ordinal numbers 13th through 19th and for the cardinal numbers 14, 15 and 16 follow the sequence three-and-ten (13) through nine-and-ten (19). The suffix *–teen* is a modified form of *ten*.[86] The words *thirteen* and *fifteen* further contract *three* and *five*.[87] Thus, the origins of these simple numerical names are consistent with, and show the ancient use of, a base-10 system for naming and grouping numbers in English.

A second issue related to the base-10 system is that of ellipsis, a customary method for compressing English diction in which a word or phrase that would provide total clarity is omitted from an expression because the context supplies the meaning.[88] This issue was noted in previous

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[76] 1 Nephi 2:6.

[77] 3 Nephi 28:3.

[78] Ether 9:24.

[79] Ibid.

[80] Alma 24:22.

[81] Alma 57:19.

[82] Alma 63:4.

[83] Alma 2:19.

[84] Mormon 6:10; Ether 15:2.

[85] *The Compact Edition of the Oxford English Dictionary*, I: 844 (eleven; eleventh); II: 3446 (twelve; twelfth).

[86] Ibid., II: 3249 (-teen).

[87] Ibid., I: 994 (fifteen); II: 3294 (thirteen).

[88] Baldick, *The Concise Oxford Dictionary of Literary Terms*, 77 (ellipsis); *The Compact Edition of the Oxford English Dictionary*, I: 845 (ellipsis).

Parts of this Division in connection with missing year-terms that are implied by nearby year-related expressions and other narrative language, and the omission of standard time-term words in some altered time-terms.[89] The issue of ellipsis with respect to number-terms occurs with multipart numbers in three separate *Book of Mormon* contexts. The first of these contexts involves a couple of similar expressions in which the number-terms each combine two multipart numbers into a single phrase. In one expression, two coordinated single years are identified by number and era name: "the fifty and eighth and ninth years of the reign of the judges".[90] In the other expression, two coordinated single years are identified by number: "the twenty and sixth and seventh years";[91] however, the NC era must be inferred from other year-related expressions. The preceding and following year-related expressions[92] make it clear that the years mentioned in these expressions are, respectively, the 58th and 59th Judges calendar years and the 26th and 27th NC calendar years. If the omitted words were to be reinserted in italics, the expressions would read as follows: "the fifty and eighth *and fifty* and ninth years of the reign of the judges" and "the twenty and sixth *and twenty* and seventh years". Each of the existing year-related expressions, as understood in its temporal context, is consistent with a base-10 grouping system and with ellipsis, a common technique in English for removing a word or phrase that need not be repeated.

The second context where ellipsis compresses multipart numbers occurs where the conjunction *and* is omitted and sometimes replaced by a hyphen. The addition of ones, tens, hundreds and thousands in a multipart number is usually indicated by the word *and*, but there are exceptions. In large numbers, the conjunction *and* between adjacent thousands and hundreds sometimes is omitted.[93] Grouped hundreds and tens are separated by *and*, except in two instances of large numbers that appear in a single verse.[94] Multiples of ten adjacent to ones usually are separated by *and*, except when the conjunction *and* has been omitted.[95] When the conjunction *and* was omitted between multiples of ten and ones in the manuscripts, the typesetter of the 1830 edition apparently replaced it with a hyphen.[96] Thus, the occasional omission of the conjunction *and* between thousands and hundreds, or hundreds and tens, or tens and ones all serve to compact multipart numbers while simultaneously indicating that the component numbers larger than nine are based on powers of ten. Furthermore, whether indicated by the word *and* or by the typesetter's hyphen, each multipart number implies that its component numbers are to be added together and understood as a single whole number.

The third context where ellipsis affects multipart numbers occurs when a power of ten is missing entirely. For example, the number "a thousand and five"[97] mentions thousands (10^3) and ones, but does not mention hundreds (10^2) or tens (10^1). In figures, this number is written as 1005 and, in words, these figures could be replicated as "one thousand, zero hundreds, zero tens

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[89] See Section 2.2 in Part 2 and Sections 3.5.1 and 3.5.2 in Part 3 of this Division.

[90] Helaman 4:8.

[91] 3 Nephi 6:4.

[92] Helaman 4:5, 9; 3 Nephi 2:8; 3:1; 5:7-8; 6:1, 9; 4 Nephi 1:21.

[93] Alma 2:19 (twelve thousand five hundred); 4:5 (three thousand five hundred); 63:4 (five thousand and four hundred); 3 Nephi 17:25 (two thousand and five hundred).

[94] Alma 2:19 (five hundred thirty; five hundred sixty).

[95] Mosiah 6:4 (seventy six) and Omni 1:3 (seventy and six); Mosiah 9:18 (forty three) and Ether 10:8 (forty and two); Mosiah 9:19 (seventy nine) and Mormon 5:5 (seventy and nine); and Alma 37:21 (twenty four) and Mormon 6:11 (twenty and four).

[96] Mosiah 6:4 (seventy-six); Mosiah 9:18 (forty-three); Mosiah 9:19 (seventy-nine); and Alma 37:21 (twenty-four). Smith, *Book of Mormon* (1830), 168, 175, 328.

[97] Alma 24:22.

and five". Nonetheless, the ellipsis of "zero hundreds, zero tens" is completely expected. Needless repetition in an English multipart number is deleted. This custom of ellipsis apparently has been followed for hundreds of years.[98] In conformity with this custom, the names of multipart numbers in the *Book of Mormon* never include the word *cipher, zero, nothing*, *naught* or *none*.

4.4 Arithmetic Operations

The *Book of Mormon* expresses numbers only with names; so, arithmetic operations using figures do not appear in its pages. Also absent from its pages are many well-known words with arithmetic meanings, such as *difference, dividend, divisor, excess, factor, figure, fraction, minus, multiplication, multiplier, multiplicand, plus, product, quotient, subtract* and *sum*. A few words such as *add, addition, divide, equal, multiply* and *remainder*, and a few phrases like *as great as, take away* and *take from*, appear in *Book of Mormon* narratives where the use of a definite or general arithmetic operation seems to be meant. These narratives possibly indicate the existence of "four fundamental operations of arithmetic"[99] in the *Book of Mormon*: addition, multiplication, subtraction and division. The first two of these operations augment numbers; the second two operations diminish them.[100] The operations can be performed mentally or in writing, but they depend on a previous operation, numeration or notation, "*the Method or Art of Expressing Numbers:* which is done two ways; by certain *Words* or *Names*, and also by certain *Signs* or *Characters*, called *Figures*; the one corresponding to the other in the Representation of the same Numbers, and both equally necessary".[101] Since the names of numbers in the *Book of Mormon* have been introduced already, this Section 4.4 examines texts conceivably indicating the operations of addition, multiplication, subtraction and division.

4.4.1 Addition

An implied operation of addition was noted above with regard to the combining of simple numbers into a single multipart number. For example, the number name "three hundred and eighty and four"[102] describes a single cardinal number that may also be represented by the combined figures 384. The multipart name and figure indicate both a base-10 system for grouping numbers and an addition of numbers (300+80+4 = 384). Similarly, when one calendar year expression follows another with the next larger ordinal number, the addition of another calendar year may be assumed (x+1 = y).[103] One might think that this latter equation is merely a function of the name sequence of ordinal numbers; however, in eight instances, cardinal and

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[98] "[E]very Number is distinguished by the very Expression into as many parts as there are significant Figures in it." Malcolm, *A New System of Arithmetick*, 14; pages 6-15 use the figures 1 through 9 as "significant Figures". See also Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 6-7, where the expression rule is followed implicitly by not stating the ciphers in the places of "the tens which are wanting".

[99] Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 13. Almost a century earlier, Malcolm defined the notation of numbers as the first of five fundamental operations. Malcolm, *A New System of Arithmetick,* 6.

[100] Barnard, *A Treatise on Arithmetic*, 46-47, 60, 94, 99-100; Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 13; Malcolm, *A New System of Arithmetick,* 5.

[101] Malcolm, *A New System of Arithmetick*, 6 (italics, capitalization and punctuation in the original).

[102] Mormon 6:5.

[103] E.g., Alma 1:1, 23 (1st + 1 = 2nd); 3:27; 4:1, 5 (5th + 1 = 6th and 6th + 1 = 7th); Helaman 1:13-14, 34 (40th + 1 = 41st).

ordinal number-terms are comingled in texts that suggest the operation of addition.[104] In four more instances, cardinal numbers greater than one indicate the addition of years.[105] As an example of the comingling of cardinal and ordinal numbers, Mormon 2:28 states that "in the three hundred and fiftieth year [the Nephites] made a treaty" with their enemies. The result of this treaty was that "the Lamanites did not come to battle again until ten years more had passed away." Then, "after this tenth year had passed away, making in the whole three hundred and sixty years from the coming of Christ … the king of the Lamanites sent an epistle" to $Mormon_2$ to let him "know [the Lamanites] were preparing to come again to battle". The battle commenced in the 361st year.[106] Thus, two simple additions that mix the names of cardinal and ordinal numbers are suggested by the year-related expressions in these narratives: 350th + 10 or 10th = 360 and 360 + 1 = 361st. As another example, the narratives associated with Alma 17:6 explain that the sons of king $Mosiah_2$ left for their mission to the Lamanites "in the first year of the reign of the judges". They worked "for the space of fourteen years among the Lamanites" before returning to the land of Zarahemla during "the fifteenth year of the reign of the judges over the people of Nephi".[107] Basic addition comingling the names of ordinal and cardinal numbers is suggested by these texts: 1st + 14 = 15th.

Thus, it would appear that three inferences may be drawn from these examples and similar ones listed in the footnotes of the previous paragraph. First, in the context of a year-related expression that includes a numerical name larger than one or first, a pre-existing operation of addition (at a minimum, x + 1 = y) is implied. Second, the express intermixing of the names of cardinal and ordinal numbers in the description of an addition of numbers included in multiple year-related expressions appears to be a function of the writer's choice of expressions for his narratives, rather than a function of some kind of underlying arithmetic principle. Third, the implied addition of numbers represented by equations with intermixed names of numbers, such as 350th + 10 or 10th = 360 and 1st + 14 = 15th, may be symbolized for purposes of abstract arithmetic analysis by simple equations using only cardinal numbers, e.g., 350+10 = 360 and 1+14 = 15.

Not only is the operation of addition implied by narratives related to time, but the verb *add* and the noun *addition* also appear in the text. According to Webster's 1828 dictionary,[108] the meanings of the verb *add* appear to be: "[t]o augment" (e.g., joy or stature[109]), "[t]o set or put together, join, or unite" (e.g., baptized converts or things[110]) and "[t]o increase number" (e.g., converts[111]). Webster's dictionary[112] also defined the noun *addition* as "[a]ny thing added, whether material or immaterial" (e.g., warriors or dissenters[113]). In two of these instances of *add* and *addition*, the increase explicitly refers to "their numbers" and in a third instance, the increase

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[104] Alma 16:9, 12, 21 (11th + 3 = 14th); Alma 17:4, 6; 28:7 (1st + 14 = 15th); Alma 28:9-10; 46:38; 48:20; 49:29 (15th + 4 = 19th); Helaman 13:1; 14:2; 16:9; 3 Nephi 1:1 (86th + 5 = 91st); 3 Nephi 2:8, 10 (9 + 1 = 10th); 3 Nephi 4:1, 4;5:7-8; 6:1 (18th + 7 = 25th); 3 Nephi 5:7-8; 7:1, 8 (25th + 5 = 30th); Mormon 2:28; 3:1, 4 (350th + 10 or 10th = 360).

[105] Mosiah 29:46; 3 Nephi 2:5-6 (509+100 = 609); 3 Nephi 1:1; 2:6-7 (600+9 = 609); 4 Nephi 1:18, 20-21 (110+84 = 194); Mormon 1:6, 12, 15 (11+4 = 15).

[106] Mormon 3:1, 4, 7.

[107] Alma 16:21; 17: heading, 1-6; 27:4-28:8.

[108] Webster, *An American Dictionary of the English Language*, I: [111] (add).

[109] Alma 17:2; 3 Nephi 13:27.

[110] Mosiah 18:17; 3 Nephi 13:33.

[111] Helaman 15:6.

[112] Webster, *An American Dictionary of the English Language*, I: [111] (addition).

[113] Alma 57:6; Helaman 11:25.

to an army was "the number of six thousand men".[114] The operation of addition seems clearly indicated by these three instances, even though it is not stated in abstract terms.

Finally, in the Nephite valuation table presented in Alma 11:5-19 (Table 3.B of this Division), a description of the values of "pieces" of silver and gold refers to "a senine of gold", "a seon of gold [that] was twice the value of a senine", "a shum of gold [that] was twice the value of a seon" and "a limnah of gold [that] was the value of them all". Apparently, one limnah of gold was equal to seven senines of gold (1+2+4 = 7). Also, the description of the values of pieces of silver refers to "a senum of silver", "an amnor of silver [that] was as great as two senums", "an ezrum of silver [that] was as great as four senums", and "an onti [of silver that] was as great as them all". Presumably, one onti of silver was equal to seven senums of silver (1+2+4 = 7). In each of these lists, numerical values appear to be added to reach a sum.

Hence, whether a particular narrative expressly uses cardinal or ordinal numbers or mixes such numbers, or uses the general word *number* or *numbers* with a form of the verb *add* or with the noun *addition*, or uses a phrase like *was as great as them all* or *was the value of them all*, the extant text of the *Book of Mormon* appears to indicate an underlying comprehension and use of the operation of addition. This operation is vital to an understanding of the use of number-terms in the *Book of Mormon*.

4.4.2 Multiplication

The operation of multiplication is not indicated in the text by words like *factor, multiplication, multiplicand, multiplier* or *product*. In ten instances where the verb *multiply* is used, the narratives are about people prospering or flourishing, waxing strong, growing rich or spreading in the land.[115] In these instances, the word *multiply* appears to mean "to make more by natural generation or production, or by addition; as, to *multiply* men, horses or other animals".[116] In the other two instances where the verb *multiply* is used, the narratives are about the disciples of Christ not multiplying "many words" when they prayed and a certain apostate church that "did multiply exceedingly".[117] In these latter contexts, the word *multiply* seems to mean just "[t]o increase in number".[118]

Like addition, the use of multiplication might be suggested by large multipart numbers. For example, a massive army of "fifty thousand" men is mentioned in Mormon 2:25 and the size alone may suggest that a "thousand" warriors were identified in some manner[119] and the army total then was calculated by a method that included multiplication ($5x10^1x10^3 = 50{,}000$). Similarly, smaller multipart numbers such as "three hundred and eighty and four"[120] may assume multiplication so as to calculate hundreds ($3x10^2 = 300$) and eighties ($8x10^1 = 80$). Of course, the problem with this evidence is that the same numbers of thousands, hundreds and tens also could be reached by lengthy processes of addition. Multiplication is a shorter method of doing certain

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[114] Alma 57:6; Helaman 11:25; 15:6.

[115] 2 Nephi 5:13; Mosiah 9:9; 23:20; Alma 50:18; 62:48; Helaman 3:8; 6:12; 11:20; 4 Nephi 1:10; Ether 6:18.

[116] Webster, *An American Dictionary of the English Language*, II: [159] (multiply), italics in the original.

[117] 3 Nephi 19:24; 4 Nephi 1:28.

[118] Webster, *An American Dictionary of the English Language*, II: [159] (multiply).

[119] 1 Nephi 4:1; Alma 3:26; 28:2; 56:28; 60:22; 3 Nephi 3:22; 4:21; Mormon 6:10-15.

[120] Mormon 6:5.

kinds of addition,[121] but this method is not necessarily indicated when words are used instead of figures.

The adjective *double* may provide evidence for multiplication. This word occurs in Alma 43:51, where Lamanite warriors are described as "more numerous, yea, by more than double the number of the Nephites". For a context such as this one, Webster's 1828 dictionary appears to define the adjective *double* as "[t]wice as much; containing the same quantity or length repeated".[122] In other words, the expression could be paraphrased as "more than twice the number of the Nephites". Webster's dictionary also includes a definition of *double* based on addition ("[h]aving one added to another; as a *double* chin"),[123] but this definition does not seem consistent with the narrative. The expression in Alma paraphrased as "more than having one number of Nephites added to another" is awkward, confusing and wordy. The view that *double* is evidence of abstract multiplication may be bolstered by the existence of the adverbs *twice*[124] and *thrice*[125] in the *Book of Mormon*. In these instances, Webster's definitions, "[t]wo times" and "[t]hree times", respectively, appear to be suitable.[126] Nonetheless, these examples deal with numbers that are so small and simple that they may evidence addition rather than multiplication. In light of this equivocal evidence, it would appear that multiplication, though perhaps suggested, is not decisively attested in the *Book of Mormon*.

4.4.3 Subtraction

When the *Book of Mormon* was first published, subtraction was understood to be "a process exactly the *reverse of Addition*. For, as Addition teaches to bring several numbers together into *one sum*, so Subtraction teaches to separate a *single number* into *two others*."[127] In other words, "[s]ubtraction is the operation by which we take one number from another. The result of this operation is called *remainder*, *excess*, or *difference*."[128] The words *subtract, subtraction*, *excess* and *difference* do not appear in the *Book of Mormon*, but the operation of subtraction appears to be demonstrated by the word *remainder*.

Webster's 1828 dictionary defined the noun *remainder*, in general, to mean "[a]ny thing left after the separation and removal of a part". As to time, *remainder* meant "[t]hat which is left after a part is past" and as to numbered quantities, it meant "[t]he sum that is left after subtraction or after any deduction".[129] The word *remainder* occurs nearly 60 times in the *Book of Mormon*, in every case with respect to the whole of something that is being separated physically or mentally by removing a portion, thereby leaving a remainder. Subtraction is applied to days, years and lives,[130] to provisions, possessions, cities, lands and kingdoms,[131] to plates, records, words and commandments,[132] and even to things seen and heard in visions.[133] Subtraction also is

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[121] Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 25; Barnard, *A Treatise on Arithmetic*, 60.

[122] Webster, *An American Dictionary of the English Language*, I: [615] (double).

[123] Ibid.

[124] Alma 11:8-9; 3 Nephi 28:22.

[125] 3 Nephi 28:21; Mormon 3:13.

[126] Webster, *An American Dictionary of the English Language*, II: [763] (thrice); [816] (twice).

[127] Barnard, *A Treatise on Arithmetic*, 94, italics in the original.

[128] Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 19, italics in the original.

[129] Webster, *An American Dictionary of the English Language*, II: [451] (remainder).

[130] Mosiah 1:1; 5:5; 29:11; Alma 44:19; 62:43; Helaman 3:32; 5:4; Ether 10:30; 11:3, 18.

[131] 1 Nephi 16:11; Alma 59:4; 60:24; 61:8; Helaman 4:19; Ether 10:32.

[132] 2 Nephi 9:54; Words of Mormon 1:5-6; Mosiah 4:4; 13:11; Mormon 1:4; Ether 13:14.

applied to the people of Nephi being separated into the humble (poor and needy) and their wealthy persecutors, to Nephite missionaries being cast into prison or fleeing the land, to a crowd separating into those who want to murder $Nephi_2$ and those who favor him, to Lamanites being separated into those converted and those not yet converted, and to elite Nephite leaders who, with the remainder of their privileged friends and kinsmen, hide and protect certain murderous judges.[134] In many instances, subtraction is applied to groups of people (usually armies) in periods leading up to, during or following military conflicts, when the separation of a larger group into smaller groups has tactical implications.[135]

Additional evidence of subtraction might include phrases like *take from* and *take away*. The phrase *take from* was defined in Webster's 1828 dictionary to mean "[t]o deprive of".[136] The phrase *take from* occurs just three times in the *Book of Mormon*. In Alma 14:22, captives endure a complete taking of their clothing when they are stripped and left naked. In this instance, the remainder is nothing. In the other two instances, $Mormon_2$ refers to his process of abridgment as one where the "*remainder* of my record I shall *take from* the plates of Nephi. And I cannot write *a hundredth part* of the things of my people".[137] A few verses later, he states, "I Mormon proceed to finish out my record which I *take from* the plates of Nephi".[138] Despite the use of *take from* in the context of abridgment, the subtraction of *a hundredth part* is merely mental and the narratives thus taken continue to exist on the official plates of Nephi. Moreover, $Mormon_2$'s use of the word *remainder* in this context does not refer to what was left in the official plates of Nephi, but to his originally proposed writings being divided into a completed part and a remainder yet to be finished. Thus, the phrase *take from* appears in contexts where there is total and tangible deprivation, where there is a physically completed part and a *remainder* that is merely proposed, and where there is just a mental subtraction with no deprivation at all. Was $Mormon_2$ consciously playing with the language of subtraction? Or was the phrase *take from* used without any implication of the operation of subtraction? This evidence seems ambiguous.

Webster's 1828 dictionary defined the phrase *take away* to mean "to deprive of; to bereave ... [t]o remove".[139] This phrase appears more than 50 times in the *Book of Mormon*.[140] In most instances, the deprivation or removal of life, property, land, and so forth is complete and there is no remainder. However, in five closely related instances, an angel prophesies to $Nephi_1$ that "the fullness of the gospel of the Lamb" is to be diminished when "many parts which are plain and most precious" and "many covenants of the Lord" are taken away for a time (they are to be later restored or added back).[141] The "fullness" or whole of the gospel will be diminished when plain and precious parts are subtracted in an operation that leaves other parts behind. Certainly, a fundamental comprehension and use of the operation of subtraction appears in the *Book of Mormon*.

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[133] 1 Nephi 14:21, 24, 28.

[134] Alma 4:12-15; 21:13; Helaman 8:1-10; 15:6; 3 Nephi 6:23-27.

[135] Mosiah 19:1-2; 21:6-11; 23:36-38; Alma 2:10-12; 3:22-23; 25:5; 43:25, 32; 44:16; 46:24, 33; 51:20; 52:26, 36; 56:33, 57; 57:20, 33; 58:17; 59:8; 61:15; 62:3, 25; 3 Nephi 4:27; Mormon 4:2-3; 6:5.

[136] Webster, *An American Dictionary of the English Language*, II: [728] (take).

[137] Words of Mormon 1:5, italics added.

[138] Words of Mormon 1:9, italics added.

[139] Webster, *An American Dictionary of the English Language*, II: [728] (take).

[140] E.g., 1 Nephi 1:20; 2:1, 13; 17:44; 2 Nephi 1:9, 11, 24, 29; 5:2, 4, 19; 31:4; Jacob 4:14; 5:8; Mosiah 11:26; Alma 5:48; 24:10-12, 18; 39:15; Helaman 13:8; 3 Nephi 12:40; Mormon 1:13, 16; Ether 10:30; 12:35.

[141] 1 Nephi 13:24-40.

4.4.4 Division

The operation of division "consists, simply, in finding how often one number is contained in another". The process is "repeated Subtraction" or, more precisely, "a concise method of performing many subtractions of the same number. Of course, it is exactly the reverse of Multiplication.… [T]wo numbers are always given; one to be repeatedly subtracted: and another, from which the repeated subtractions are to be made: or, in other words, one to divide by, and another, to be divided."[142] In performing this operation, "[t]he number which we divide is called *dividend*: that by which we divide, *divisor*; and that which shows how many times the dividend contains the divisor, is called *quotient*."[143] A fourth term, "[t]he excess sometimes left, after performing Division," is the same term used with a single operation of subtraction, *remainder*, "which must always be less than the Divisor."[144]

The words *dividend*, *divisor* and *quotient* do not appear in the *Book of Mormon*. The noun *remainder* occurs many times, as discussed above in connection with subtraction, but only once does it occur in a narrative where the verb *divide* also is used. Moroni_1 "divided his army" in the land of Manti by placing separate groups on either side of the river Sidon.[145] This instance of separation immediately follows a separation in which Moroni_1 left another part of his army to guard the land of Jershon.[146] These consecutive narratives about a Nephite army being diminished seem more likely to evidence repeated subtractions of numbers of men, together with a physical division by a river in the latter narrative, rather than a concise arithmetic operation where many subtractions of the same number occur.

The verb *divide* occurs about two dozen times in the *Book of Mormon*.[147] In every instance, the verb seems to mean either "[t]o cause to be separate" or "[t]o open [or] to cleave",[148] rather than to perform an abstract arithmetic operation. The singular noun *division* occurs four times in the *Book of Mormon* in each instance with reference to people being separated into two groups: the "poor" and "meek" separated from the "wicked"; the rebellious "lesser part" of the people of king Noah separated from those who still supported the king; "freemen" separated from "kingmen"; and "Nephites" separated from "Lamanites".[149] In two more instances, the divisions of people appear to have involved multiple groups. When the chief judge Parhoron died, three of his sons competed for the judgment seat and "did cause three divisions among the people".[150] When Nephi_2 prophesied the eventual confession of a certain murderer, he and five other accused men were set free. Some of the people "believed on the words of Nephi", others "believed because of the testimony of the five", some "said that Nephi was a prophet", and others said "he is a god". Thus, "there arose a division among the people, insomuch that they

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142 Barnard, *A Treatise on Arithmetic*, 99, italics and small capitalization omitted.

143 Bézout, Peyrard; Heath (trans.), *Theoretical and Practical Arithmetic*, 41, italics in the original.

144 Barnard, *A Treatise on Arithmetic*, 100, italics and small capitalization omitted; Malcolm, *A New System of Arithmetick*, 52.

145 Alma 43:31-32.

146 Alma 43:25.

147 E.g., 1 Nephi 4:2; 13:10; 15:30; 17:26, 45; 2 Nephi 19:3; Mosiah 14:12; Alma 11:45; 22:27; 27:14; 43:31; Helaman 3:29; 5:33; 10:1, 18; 3 Nephi 7:2, 14; 8:6; 4 Nephi 1:26; Mormon 2:28; Ether 7:20; 10:20; 14:20. The spiritual and physical divisions described in 1 Nephi 12:18 and Ether 2:13 (divideth) represent the actions of God and, thus, use another of the "sacred and solemn" verb forms. Webster, *An American Dictionary of the English Language*, I: [68].

148 Webster, *An American Dictionary of the English Language*, I: [607] (divide).

149 2 Nephi 30:8-10; Mosiah 19:2-3; Alma 51:5-6; 4 Nephi 1:35-39.

150 Helaman 1:1-4.

divided hither and thither and went their ways, leaving Nephi alone".[151] In all of these instances, the word *division* appears to mean "[t]he state of being divided" or "[d]isunion; discord; variance; difference",[152] rather than an abstract arithmetic operation.

The noun *fraction* does not occur in the *Book of Mormon*; however, as noted above, the whole of something could be "divided" into its parts.[153] The text refers to "the first part", "one fifth part", "a fifth part", "one tenth part" and "a hundredth part".[154] Other fractions of a whole also are mentioned: "half", "a half", "one half" and "the half";[155] and "all quarters" and "the four quarters".[156] Only one year-related expression uses the noun *part* in reference to a segment of a single year; the phrase *the more part of the year*[157] appears to mean more than half of a year.[158] The table equating values of pieces of gold and silver in Alma 11:5-19 refers to halves of smaller values as being part of "the value of the lesser numbers of their reckoning" and mentions "an antion of gold" as being "equal to three shiblons" of silver.[159]

Thus, the *Book of Mormon* text clearly evidences an understanding of the division of a whole or unit into parts, some of which were the same quantity. The divisions evidenced in the text involve two, three, four, five, ten and a hundred parts. These divisions, however, may have been accomplished just by repeated subtractions of similar parts, rather than by a short process for doing many subtractions of the identical quantity. Perhaps, an exception might be evidenced by divisions into tenths and hundredths. While one might speculate that the word *hundredth* is merely a general quantitative term meaning a very small part, rational interpretation of the text cannot be founded on speculation. Webster's simple definition of *hundredth* ("[t]he ordinal of a hundred"[160]), when combined with the use of both tenths and hundredths, the base-10 grouping system, and the many references to numbering or not numbering people that sometimes occur in the context of other arithmetic operations,[161] all may suggest the existence of some type of a system for executing many identical subtractions in a concise manner. The text seems just too meager, however, to permit a definitive conclusion about the existence of, or methods involved in, any such concise process.

This concludes the introduction of the names of numbers expressed in the *Book of Mormon*, the sequence of those number names, the system used for grouping numbers, and the arithmetic operations that used numbers. These four numerical topics provide a textual foundation for analyzing the composition and use of number-terms. The number-related texts on which the discussion of these topics has been based were drawn from throughout the *Book of Mormon* and often did not relate to time. Now, the discussion of number-terms focuses on the 426 year-related expressions.

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[151] Helaman 9:25-10:1.

[152] Webster, *An American Dictionary of the English Language*, I: [608] (division).

[153] Compare Alma 43:25-33 and Ether 14:20.

[154] Ether 1:3; Mosiah 11:3; Alma 13:15; Jacob 3:13; Words of Mormon 1:5.

[155] Alma 11:15-16; Mosiah 19:15; Alma 11:17; 20:23; Helaman 4:10.

[156] Mosiah 27:6; 3 Nephi 5:24.

[157] 3 Nephi 7:26.

[158] Helaman 16:10, where "the more part" of the people are contrasted with "the lesser part".

[159] Alma 11:14-17.

[160] Webster, *An American Dictionary of the English Language*, I: [917] (hundredth).

[161] E.g., Mosiah 21:17; Alma 2:13; 3:1; 21:13; 43:21, 51; 44:21; 46:33; 52:5, 7, 12, 22-23, 40; 56:10, 55; 57:19, 33; 58:16; 62:3, 17, 19; Helaman 15:6, 13; 3 Nephi 4:4; 6:3; Mormon 4:13, 17; 6:8.

4.5 Stated number-terms

As defined in Part 1 of this Division, a number-term is an adjective consisting of definite or general language that states or implies a year-term's quantity or quantitative position. Because most of these adjectives express or refer to the names of ordinal and cardinal numbers, this component of a year-related expression has been labeled a "number-term". Like a time-term, a number-term is an optional component of a year-related expression and may be a single word (e.g., "thirty"[162]) or many words (e.g., "the two hundred and thirty and first"[163]). Except for two expressions where a part of each number-term appears to occur after the year-term,[164] these 418 adjectives precede their year-terms in the text.

Three hundred thirty-eight (79.3%) of the 426 year-related expressions have number-terms that state definite ordinal or cardinal numbers. This kind of number-term is sometimes called a "stated" number-term and the year-related expression in which it occurs is at times identified as a "stated number" expression. Stated number-terms represent a broad category that may be divided into number-terms that state ordinal numbers and those that state cardinal numbers; however, occasionally in the following analysis, stated number-terms are considered as a distinct group, and are distinguished from and compared with other types of number-terms. This Section 4.5 begins by examining the two types of stated number-terms used to quantify time.

4.5.1 Stated ordinal number-terms

Within the 338 stated number expressions, 245 number-terms include simple or multipart ordinal names. These stated number-terms constitute the largest type of number-terms in the *Book of Mormon* (57.5% of the 426 year-related expressions). A number-term that includes a simple or multipart ordinal name is usually called a "stated ordinal" number-term and the year-related expression in which it occurs may be identified as a "stated ordinal number" expression. For example, Mosiah 9:14 includes a stated ordinal number expression, "the thirteenth year of my reign", in which the determiner *the* and simple ordinal name *thirteenth* constitute the time-term that helps to identify this specific year. The determiner *the* is integral to the stated ordinal number-term because it relates the ordinal name to the personalized time-term and specifies that this is the 13th year in the reign of the Nephite king writing or prescribing this phrase.[165]

An example of a typical multipart stated ordinal number-term occurs in the expression "the three hundred and twenty and seventh year" in Mormon 2:3. This stated ordinal number expression includes the determiner *the*, the simple cardinal names *three*, *hundred* and *twenty*, two conjunctions (*and*) and the simple ordinal name *seventh*. A multipart ordinal name in the *Book of Mormon* ends with a simple ordinal name. In this stated ordinal number expression, no time-term is present; so, the era context in which this year-term is placed by the number-term can only be inferred from nearby texts; e.g., 4 Nephi 1:48; Mormon 3:4 ("from the coming of Christ"). The determiner is an integral part of the number-term because it relates the multipart ordinal name to the NC era context and indicates that this is the 327th year "from the coming of Christ". The 245 stated ordinal number-terms are listed in Table 4.B.

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[162] 2 Nephi 5:28.

[163] 4 Nephi 1:35.

[164] Helaman 14:2; Mormon 3:1

[165] Nephite kings apparently wrote things themselves and "caused [things] to be written". E.g., Jarom 1:14; Mosiah 2:9; 28:11.

4.5.2 Atypical stated ordinal number-terms

Table 4.B also notes the 12 stated ordinal number-terms that are associated with atypical features. For example, at two places in the extant original manuscript,[166] multipart ordinal numbers were written by Oliver Cowdery just with the determiner *the*, two simple ordinals and the conjunction *and*: "the twentieth and seventh" and "the thirtieth and seventh".[167] Based on the typical form of other multipart ordinal numbers in the manuscripts, simple cardinal number names "twenty" and "thirty" would be expected in these texts. When these ordinal number-terms were transcribed into the printer's manuscript, Cowdery changed the initial ordinal in each phrase into a simple cardinal number: "the twenty and seventh" and "the thirty and seventh".[168] These rare departures in the original manuscript from the typical form of multipart ordinal numbers were examined by Skousen as possible transmission errors, but he found that multipart ordinal numbers that only use ordinals were attested in Early Modern English.[169] His resolution of these issues (by returning the number-terms to their forms in the original manuscript, as set forth in the Yale text) is followed in this study.[170]

In five ordinal number-terms in the plates of Mormon, the determiner *the* has been replaced with the determiner *this*. In three of these atypical instances, the number-term is preceded in the text by a typical number-term identifying the same ordinal year: "the eighth" and "this eighth"; "the thirteenth" and "this thirteenth"; and "the nineteenth" and "this nineteenth".[171] In the other two atypical instances, the number-term is preceded in the text by a related cardinal number-term: "two hundred" and "this two hundred and first"; and "ten" and "this tenth".[172] In a sixth ordinal number-term in the plates of Mormon, the determiner *the* has been replaced with the possessive pronoun *my* in the number-term "my sixteenth".[173]

In four more atypical instances in the plates of Mormon, the determiner *the* has not been replaced, but the number-term has been expanded by the addition of other words. Unlike 243 stated ordinal number-terms that modify the singular noun *year*, two of these expanded number-terms combine multipart numbers into a single phrase that modifies the plural noun *years*: "the fifty and eighth and ninth" and "the twenty and sixth and seventh".[174] These two number-terms were discussed above in connection with the use of ellipsis in number-terms. The other two expanded number-terms are "all the sixteenth" and "this the thirtieth".[175] In these instances, the words *all* and *this* appear to have been added as predeterminers to typical stated ordinal number-terms. The possible purposes or symbolism of the changes in diction in these number-terms are considered in Division 3, where year-related expressions in the plates of Mormon are analyzed.

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[166] Skousen, ed., *The Original Manuscript of the Book of Mormon*, 421, 484.

[167] Alma 52:15; 63:4.

[168] Skousen, ed., *The Printer's Manuscript of the Book of Mormon, Part Two*, 653, 708.

[169] In 2009, Royal Skousen noted that "[o]ne of the most remarkable findings of the [Book of Mormon] Critical Text Project is the frequent occurrence of vocabulary from Early Modern English." Skousen, "Editor's Preface" in Skousen, ed., *The Book of Mormon: The Earliest Text*, xxxvii. By 2018, he had concluded that "virtually all the language of the original text of the book dates from the 1530s through the 1730s". Royal Skousen, "Summary" in Royal Skousen with Stanford Carmack, *The History of the Text of the Book of Mormon, Part Three* (Provo, Utah: BYU FARMS and BYU Studies, 2018), iv.

[170] Skousen, *Analysis of Textual Variants of the Book of Mormon, Part Four*, 2658-62; *Part Five*, 2721-22, 2919-20.

[171] Alma 4:6, 9; 3 Nephi 2:11, 13; 4:5, 15.

[172] 4 Nephi 1:22, 24; Mormon 3:1, 4.

[173] Mormon 2:2.

[174] Helaman 4:8; 3 Nephi 6:4.

[175] Alma 30:4; 3 Nephi 6:17.

4.5.3 Stated cardinal number-terms

The other 93 stated number expressions (21.8% of the 426 year-related expressions) include number-terms stating simple or multipart cardinal numbers. Typically, these number-terms are called "stated cardinal" number-terms and the year-related expressions in which they occur may be identified as "stated cardinal number" expressions. For example, Mosiah 6:5 includes the stated cardinal number expression "three years". The simple number name *three* is the entire number-term. As an example of a multipart stated cardinal number-term, the cardinal number expression "fifty and five years ... from the time that Lehi left Jerusalem" occurs in Jacob 1:1. The adjectival phrase consists of the simple cardinal number names *fifty* and *five* joined by the conjunction *and*. This phrase expresses the number of years that had been measured and numbered in the Lehi era. All 93 stated cardinal number-terms are listed in Table 4.C.

4.5.4 Atypical stated cardinal number-terms

Table 4.C also notes the 14 stated cardinal number-terms that are associated with atypical features. First, unlike the other 92 stated cardinal number-terms that modify the plural noun *years*, a single stated cardinal number-term uses the simple number name *one* to modify the singular noun *year*.[176] In addition to this atypical expression, 13 more stated cardinal number-terms include (or in two instances might include) words other than simple cardinal number names usually conjoined by the word *and*. These actual or potential modifiers include the words *about*, *even*, *more*, *only*, *the, therefore* and *threescore*, and the phrase *more than*. Each of these atypical expressions must be introduced because they are carefully examined in later Divisions of this source book.

Three stated cardinal number-terms include the adverb *about*, which Webster's 1828 dictionary defined as "[n]ear to in number or quantity"[177] and which the *Oxford English Dictionary* defines as "[n]early, approximately; not many more or less ... [when] used with numbers or quantities".[178] Mormon$_2$'s year-related expressions are: "about ten years of age", "about twenty and four years old" and "about four years".[179] In these three expressions, the adverb *about* definitely modifies the cardinal number. These expressions appear in narratives of Mormon$_2$'s early life and perhaps suggest inexact recollections.

Mormon$_2$'s stated cardinal number-term in Mosiah 6:4 initially might seem to be the same as his other stated cardinal number-terms that include *about*, but the narrative context and the form and meaning of the other words in the temporal-expression all contrast with the meaning "near to" or "approximately". In other words, the adverb *about* in Mosiah 6:4 may not modify the stated cardinal number. The year-related narrative marks the time of king Mosiah$_2$'s enthronement: "And Mosiah began to reign in his father's stead, and he began to reign in the thirtieth year of his age, making in the whole *about* four hundred and seventy six years from the time that Lehi left Jerusalem" (italics added). This chronological statement is part of the conclusion of a lengthy narrative describing dozens of specific details about the ceremony of enthronement.[180] The word *about* is preceded by the precise participial phrase *making in the*

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[176] Alma 3:26.

[177] Webster, *An American Dictionary of the English Language*, I: [95] (about).

[178] *The Compact Edition of the Oxford English Dictionary*, I: 8 (about).

[179] Mormon 1:2-3, 12.

[180] Mosiah 2:1-6:3.

whole and is followed by the definite cardinal number 476. Thus, if the meaning of the word *about* is assumed to be "near to" or "approximately", that meaning seems out of place in its narrative and semantic contexts.

The definitional facts that complicate and perhaps solve this apparent misplacement of *about* are the two quite different meanings for the word. The adverb *about* may refer either to position or to motion. Does the adverb *about* in Mosiah 6:4 refer to the position of time (i.e., "near to" or "approximately" 476 years, as suggested by the above definitions) or to the motion of time (i.e., "[r]ound" or "in rotation or revolution"[181] when 476 years have come to an end)?[182] Does *about* modify the cardinal number 476 as part of the number-term or does *about* qualify the participle *making* as a modifier that is separate from the number-term? What would be rotating or turning around at the end of 476 Lehi calendar years? These might seem to be simple questions, but their answers are complex and they will be discussed extensively in Divisions 3, 5 and 9 of this source book. As precursors to such discussions, however, this introduction of number-terms must be completed and narrative-links must be introduced in Part 5 of this Division. At this point in the analysis, it is sufficient to note that the adverb *about* in Mosiah 6:4 is interpreted provisionally as an integral part of the number-term (and is presented this way in Tables 3.A and 4.C of this Division), but that interpretation is not without critical problems.

In two more stated cardinal number-terms, the adverb *even* appears to be used for emphasis, as a synonym of the adverbs *exactly* or *precisely*.[183] The first of these number-terms appears in Nephi_1's recitation of Lehi_1's 600-year prophecy in 1 Nephi 10:4. In the preceding two verses, the time of the Messiah's coming is described in general terms as occurring after the destruction of Jerusalem, after the exile to Babylon of many survivors of that destruction, and after their return "according to the own due time of the Lord … to possess again their land of inheritance". Then, for specificity, the time of the Messiah's birth is stated to be "even six hundred" years after Lehi_1 departed from Jerusalem. This precise phrase is the stated cardinal number-term in 1 Nephi 10:4. Similarly, in 1 Nephi 17:4, Nephi_1's report about the sojourn of Lehi_1 and his followers in the wilderness notes that they spent "the space of many years, yea, even eight years in the wilderness". Here again, the period of time is described generally (the year-related expression "many years") and then followed for emphasis with a specific year-related expression in which the stated cardinal number-term includes the adverb *even* and the number name *eight*.[184]

Another three stated cardinal number-terms appear to include the adjective *more*, which apparently means "[g]reater in number".[185] In two of these year-related expressions ("five years more" and "ten years more"[186]), the number-term appears to have been split into the simple cardinal number that precedes the year-term and the adjective *more* that follows the year-term. In such instances, Webster's 1828 dictionary defines *more* to mean "[a]dded to some former

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[181] Webster, *An American Dictionary of the English Language*, I: [95] (about); *The Compact Edition of the Oxford English Dictionary*, I: 8.

[182] Compare 1 Nephi 10:19 and Alma 37:12, which appear to assume a round or cyclical motion of time.

[183] Webster, *An American Dictionary of the English Language*, I: [691] (even); *The Compact Edition of the Oxford English Dictionary*, I: 906.

[184] This pattern, a general quantitative description of some kind followed by the adverb *even* and a specific quantitative description, also occurs in narrative contexts unrelated to year-related expressions; see, e.g., Mosiah 7:2-5; 18:18; Alma 58:39; Helaman 4:9-10.

[185] Webster, *An American Dictionary of the English Language*, II: [150] (more); *The Compact Edition of the Oxford English Dictionary*, I: 1850.

[186] Helaman 14:2; Mormon 3:1.

number [or] additional".[187] No other number-term in the *Book of Mormon* includes a word that follows the year-term. In each of these instances, the year-related expression could have been written with adjoined adjectives for the number-term ("five more years" or "ten more years"), but it was not.[188] In the third instance where *more* appears in a number-term, the phrase *more than* occurs before the year-term: "more than four hundred and twenty".[189] The phrase *more than* qualifies the cardinal number 420 and is integral to the number-term. The use of the word *more* in stated cardinal number-terms will be addressed further in Part 3 of this source book.

A tenth stated cardinal number-term includes the word *only* (apparently meaning "merely [or] barely"[190]) as the modifying adverb in a narrative describing Moroni_1: "he was only twenty and five years old when he was appointed chief commander over the armies of the Nephites".[191] An eleventh stated cardinal number-term consists of the determiner *the* and the simple cardinal number name *four*, in the phrase *at the end of the four years*. In the previous year-related narrative, these particular four years were identified as the interval when Jared and his followers "dwelt in tents upon the seashore".[192]

A twelfth stated cardinal number-term is the multipart phrase "threescore and five", which appears in Nephi_1's quotation of a prophecy of Isaiah contained in the brass plates.[193] The adjective *threescore* is noted by the *Oxford English Dictionary* to be an archaic way to express "[t]hree times twenty" or the cardinal number sixty.[194] One might want to consider *threescore* to be additional evidence of multiplication in the *Book of Mormon*; however, the compound word did not always appear in English translations of the text now identified as Isaiah 7:8. In the 14th and 15th centuries, English manuscript versions of the number-term in Isaiah 7:8 appear to have taken two forms, either "sixti yeer and fiue" or "sixti and fyue yer".[195] The use of *threescore* in printed English translations of Isaiah 7:8 appears to have begun in 1535 with the first whole Bible printed in English, *BIBLIA*, prepared by Miles Coverdale: "fyue and threscore yeare".[196] A more widely published translation, known as the "Great Bible" because of its large size, first appeared in 1539 and used the phrase "fyue & threscore yeare".[197] *The.holie.Bible.conteynyg the olde Testament and the newe*, also known as the "Bishops' Bible" of 1568, modified the diction and spelling of the number-term to be "threscore and fiue yeres"[198] and this order of the diction was followed by the "Authorized (King James) Bible" of 1611: "threescore and fiue yeeres".[199]

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[187] Webster, *An American Dictionary of the English Language*, II: [150].

[188] Compare, e.g., 1 Nephi 9:1; Helaman 14:1 ("a great many more things"); 1 Nephi 10:15 ("many more things"); 2 Nephi 1:14 ("[a] few more days"); Moroni 1:4 ("a few more things"); Alma 41:9 ("one more offense").

[189] Moroni 10:1.

[190] Webster, *An American Dictionary of the English Language*, II: [209] (only).

[191] Alma 43:17.

[192] Ether 2:13-14.

[193] 2 Nephi 17:8; compare Isaiah 7:8.

[194] *The Compact Edition of the Oxford English Dictionary*, II: 3304 (threescore).

[195] "Preface" in Rev. Josiah Forshall and Sir Frederic Madden, eds., *The Holy Bible by John Wycliffe and his followers*, vol. I (Oxford: Oxford University Press, 1850); idem, *The Holy Bible by John Wycliffe and his followers*, vol. III (Oxford: Oxford University Press, 1850), 239; both volumes accessed at archive.org.

[196] *BIBLIA: The Byble, that is the holy Scrypture of the Olde and New Testament, faythfully translated in to Englysh, M.D.XXXV*. The 1535 Coverdale Bible; accessed at archive.org.

[197] *The Byble in Englyshe, that is to saye the contēt of al the holy scrypture, both of ye olde, and newe testamēt, with a prologe therinto, made by the reuerende father in God, Thomas archbysshope of Cantorbury*. A 1540 edition of the 1539 Great Bible; accessed at archive.org.

[198] *The.holie.Bible.conteynyng the olde Testament and the newe*. The 1568 Bishops' Bible; accessed at archive.org.

[199] *THE HOLY BIBLE, Conteyning the Old Testament, AND THE NEW*. (London: Robert Barker, 1611). Authorized (King James) Version of the Bible; accessed at archive.org.

The text of this phrase in the original manuscript of the *Book of Mormon* is not extant,[200] but Oliver Cowdery transcribed the text as "three score & five years" in the printer's manuscript.[201] This transcription suggests that the printer's manuscript version had been informed by the 1568 or 1611 version of the English translation of Isaiah 7:8. The printed form of this phrase in the 1830 edition of the *Book of Mormon* ("threescore and five years") appears to have been provided by John Gilbert, the typesetter.[202]

The last of the 13 stated cardinal number-terms that may include relatively unusual words appears in 3 Nephi 2:8. Beginning with the 1830 edition, the typesetters of the number- and year-term in this verse almost always punctuated the words with a semi-colon after the last word of the preceding, unique, time-term ("from this period which the sign was given, or from the coming of Christ") and before the following adverb *therefore*, and then with a comma between the word *therefore* and the cardinal number nine, as follows: "Christ; therefore, nine years had passed away".[203] The word *therefore* appears to mean "[f]or that [or] for that or this reason, referring to something previously stated" or "[c]onsequently".[204] Hence, as a first alternative interpretation, *therefore* may be viewed as an adverbial conjunction between the previous clause in which the time-term appears and the following clause in which the number- and year-terms ("nine years") appear. The difficulty with this interpretation (which is the one punctuated for the 1830 edition and most other editions) is that the adverb *therefore* is not the narrative-link of the year-term and no conjunction is required. The narrative-link is the verb *had passed*.

The Yale text keeps the semi-colon between the two clauses, but drops the comma after the adverb *therefore*. This punctuation is consistent with a second alternative interpretation in which the adverb *therefore* is deemed to be part of the number-term; i.e., an adverb modifying the adjective *nine* and indicating a new type of nine years. Such newly reckoned "therefore nine" or "for that nine" years may differ in composition or length, or both, from the Lehi and Judges calendar years that previously had been mentioned, measured and numbered. This interpretation of *therefore* is consistent with the fact that these new nine years not only are mentioned later in the text than the nine years of the Lehi and Judges eras, but they also had to be specifically numbered because they were in consequence of the reckoning of time that is said to have preceded the formal adoption of the NC calendar. Analysis of this issue will continue in Division 3, but for now, the adverb *therefore* is deemed provisionally to be part of the number-term in 3 Nephi 2:8 and is presented this way in Tables 3.A and 4.C of this Division.

In summary, 338 stated number-terms present definite ordinal or cardinal number names. Ordinal number names appear in 245 stated ordinal number-terms and, in all but two instances, they modify the singular word *year*. The exceptions are texts where they modify the plural word *years*. The typical form of stated ordinal number-terms begins with the determiner *the*, which points to an express time-term or to an era context. Then the position of the year-term within that time frame or context is quantified by a simple or multipart ordinal number. In the two texts where the year-term is plural, the position of the year-term is quantified by simple and multipart conjoined ordinal numbers.

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200 Skousen, ed., *The Original Manuscript of the Book of Mormon*, 37.

201 Skousen, ed., *The Printer's Manuscript of the Book of Mormon, Part One*, 196.

202 Smith, *Book of Mormon* (1830), 92.

203 Ibid., 455.

204 Webster, *An American Dictionary of the English Language*, II: [756] (therefore).

At least 80 stated number-terms are formed just by a cardinal number name and, except in the single instance where the cardinal number *one* modifies the word *year*, the cardinal number names modify the express plural *years*. While the typical form of a stated cardinal number-term is a simple or multipart cardinal number, in perhaps as many as 13 instances, the cardinal number is qualified by or composed in part with atypical diction: the words *about*, *even*, *more*, *only*, *the, therefore* or *threescore*, or the phrase *more than*. The two questionable categorizations are in Mosiah 6:4, where the adverb *about* may qualify the word *making* rather than the cardinal number, and in 3 Nephi 2:8, where the adverb *therefore* may be used as a conjunction instead of qualifying the cardinal number.

4.6 Referenced number-terms

In addition to the 338 stated number expressions, another 80 (18.8%) of the 426 year-related expressions have number-terms that imply quantities or quantitative positions without actually stating definite ordinal or cardinal numbers. These 80 number-terms are typically called "referenced" number-terms and the year-related expressions in which they occur are often identified as "referenced number" expressions. While stated number-terms can be clearly subdivided into either ordinal or cardinal number-terms, the 80 referenced number-terms appear to exhibit somewhat less distinct separations suggesting three principal types. This study also recognizes that referenced number-terms actually do not state definite ordinal or cardinal numbers and that the analysis carried out in Divisions 2 through 4 of this source book must account for this textual fact. Consequently, referenced number-terms may be categorized in two distinct ways (as the three principal types or as a single combined type) and they are analyzed accordingly. On the one hand, the referenced number-terms are divided into three basic types. First, the number-terms discussed in Sections 4.6.1 and 4.6.2, which are associated with express singular year-terms, are analyzed as though they represent the definite numbers in the stated number-terms to which they refer. Second, the number-terms discussed in Section 4.6.3, which are associated with express plural year-terms, may be categorized by the computed cardinal numbers suggested in their related narratives. Third, the remaining number-terms discussed in Section 4.6.4 are viewed as a separate type of referenced number-term that indicates a single nonspecific year or an unknown quantity of years. On the other hand, for purposes of a complete analysis, all referenced number-terms are treated like the number-terms discussed in Section 4.6.4. Since no referenced number-term actually states a definite ordinal or cardinal number, each of these number-terms may be interpreted as not implying a definite ordinal or cardinal number. This Section 4.6 introduces the three types of referenced number-terms and the ambiguities associated with some of their numerical meanings.

4.6.1 Referenced ordinal number-terms

Forty-three of the 80 referenced number expressions have number-terms that modify an express singular year-term; so, for each of these expressions, the expectation is that the number-term refers to an ordinal number that is stated or suggested elsewhere. A number-term of this type is usually called a "referenced ordinal" number-term and the year-related expression in which it occurs is often identified as a "referenced ordinal number" expression. Table 4.D sets forth the locations of these 43 referenced ordinal number-terms in the text. Table 4.D also presents the diction of these number-terms in the Yale text. Each referenced ordinal number-term consists of a single word (*it*, *the*, *that* or *this*) or a two-word phrase (*all that*, *the same*, *that same*,

this same or *that selfsame*). Finally, the table lists the simple and multipart ordinal numbers that have been implied, together with the references to their sources in the text of the *Book of Mormon* or in the brass plates.

In 35 of these 43 texts, the referenced ordinal number-term clearly suggests a nearby, previously mentioned, stated ordinal number-term. For example, in the small plates of Nephi, the very first year-related expression, "the first year of the reign of Zedekiah, king of Judah", appears in 1 Nephi 1:4 and, later in this verse, a second year-related expression, "that same year", also appears. In this second expression, the determiner *that* and the adjective *same* precede the year-term and help to specify its quantitative position. In essence, the number-term "that same" incorporates the meaning of the previous ordinal number-term (as well as the meaning of the previous personalized time-term). In 34 other instances listed in Table 4.D, the referenced ordinal number-terms suggest or incorporate the meanings of nearby, previously mentioned, stated ordinal number-terms.

4.6.2 Ambiguous referenced ordinal number-terms

In the other eight referenced ordinal number-terms proposed in this analysis, each of which modifies an express singular year-term, the references to definite ordinal number names are ambiguous. The ambiguities are not all the same; so, these number-terms must be individually introduced. In the small plates of Nephi, two year-related expressions appear in quotations from the Book of Isaiah in the brass plates. These expressions are "the year that king Uzziah died"[205] and "the year that king Ahaz died".[206] In each expression, the number-term is the determiner *the*, which seems to specify just its associated year- and time-terms.[207] Clearly, these number-terms specify a single year, but they do not refer to a previously stated ordinal number-term in the small plates of Nephi. Do they refer to numbers previously stated in the brass plates? Nephi_1 noted that the brass plates contained "the five books of Moses", followed by "a record of the Jews from the beginning, even down to the commencement of the reign of Zedekiah, king of Judah, and also the prophecies of the holy prophets from the beginning, even down to the commencement of the reign of Zedekiah, and also may prophecies which have been spoken by the mouth of Jeremiah".[208] Presumably, versions of the Book of Kings and the Book of Isaiah were included in the brass plates. The ambiguities associated with these two referenced number-terms arise when the specific years in the Jewish historical texts associated with the reigns of kings Uzziah and Ahaz are considered. In the Authorized or King James Version ("KJV") of the Christian Bible, 2 Kings 15:2 notes that "[s]ixteen years old was [Azariah aka Uzziah[209]] when he began to reign, and he reigned two and fifty years in Jerusalem". Similarly, 2 Kings 16:2 notes that "[t]wenty years old was Ahaz when he began to reign, and reigned sixteen years in Jerusalem". One of the difficulties with analyzing these KJV texts is the problem of converting intervals described with cardinal numbers into a single ordinal number associated with the singular word *year* used in the Book of Isaiah. Did king Uzziah die in the 52nd or 53rd year of his reign? Or did he die in the 68th (16+52) or 69th (16+53) year of his life? Did king Ahaz die

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[205] 2 Nephi 16:1; see also Isaiah 6:1.

[206] 2 Nephi 24:28; see also Isaiah 14:28.

[207] The determiner *the* is used elsewhere in the Book of Mormon as referenced ordinal number-term. See 3 Nephi 1:1 ("the year that Lachoneus was the chief judge and the governor over the land"; 3 Nephi 3:22 ("the year"); 3 Nephi 7:26 ("the year").

[208] 1 Nephi 5:11-13.

[209] Uzziah is called Azariah in 2 Kings 14:21 and 15:1; compare 2 Chronicles 26:1-3.

in the 16th or 17th year of his reign? Or did he die in the 36th (20+16) or 37th (20+17) year of his life? All eight alternatives for these ambiguous referenced ordinal number-terms are listed in Table 4.D and examined further in Division 2 of this source book.

In the plates of Mormon, five referenced ordinal number-terms also involve uncertainties. The year-related expression in Alma 24:4 is "that selfsame year that the Lamanites began to make preparations for war against the people of God". One might be satisfied merely to interpret "that selfsame" as referring just to the year- and time-terms. However, the adjective *selfsame* means "very same [or] very identical";[210] so, the number-term "that selfsame" appears to be a more forceful or emphatic form of the number-term "that same". As a result of such emphasis, a thorough examination of the associated narratives is suggested.

The year identified in Alma 24:4 by the year-related expression "that selfsame year that the Lamanites began to make preparations for war against the people of God" may be placed in an era context on the basis of seven narratives that occur earlier in the *Book of Mormon* text and one that immediately follows Alma 24:4. Chronological details about the beginning of the mission of king Mosiah's sons to the Lamanites and the creation of the reign of judges over the people of Nephi are included in three narratives.[211] Chronological details of the mission of $Alma_2$ and Amulek in the Nephite city of Ammonihah are found in another three narratives that extend that mission from 7th month of "the tenth year" of the Judges era to shortly before the 2nd month of "the eleventh year" of that era, when the Lamanites destroyed Ammonihah.[212] Finally, two more narratives make it clear that the year when "the Lamanites began to make preparations for war against the people of God" was either the 10th or 11th year of the Judges era because, immediately after the very short "war against the people of God", the Lamanites marched on Ammonihah and, in a single day, destroyed the city.[213]

Uncertainty in interpreting all of this narrative information arises, in part, from the fact that Alma 24:4 occurs in a distinct record, "An account of the sons of Mosiah ... according to the record of Alma",[214] inserted in the much later Book of Alma composed by $Mormon_2$. Did $Mormon_2$ intend this chronological note to imply a definite ordinal number? What was the purpose for such a reference? Additional uncertainty in the chronological details arises from the question of the speed with which the Lamanites carried out their preparations and launched their attacks against "the people of God" and Ammonihah. Both numerical alternatives for the ambiguous referenced ordinal number-term are listed in Table 4.D and examined further in Division 3 of this study.

The next referenced ordinal number-term in the plates of Mormon that appears to require a reader to recognize some ambiguity occurs in 4 Nephi 1:35. In that verse, the first year-related expression is "this year". In accordance with the example of most other referenced ordinal number-terms in the plates of Mormon, the determiner *this* would be expected to refer to the number-term of a nearby, previously mentioned, stated number expression. In fact, the previous verse describes the Nephites dwindling "in unbelief and wickedness from year to year, even until two hundred and thirty years had passed away". The phrases *from year* and *to year* in this verse include two year-terms that have no number-terms or time-terms. At this point in the narrative,

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[210] *The Compact Edition of the Oxford English Dictionary*, II: 2719 (selfsame).

[211] Mosiah 28:1-9; 29:1-44; Alma 17:6-8.

[212] Alma 10:1-11; 14:14-15:1; 16:1-11.

[213] Alma 23:8-24:2; 24:5-25:2.

[214] Alma 17 preface.

these phrases may just draw attention to the repeated word *year*, but they neither state nor imply a definite number. Then, the end of 230 years in the NC era context[215] is described and thereby creates the semantic issue that the reader meets in the beginning of the next verse.

The narrative introduction of verse 35 states: "And now it came to pass in this year". Initially, the number-term *this* might be interpreted as a reference to the cardinal number-term that appeared in the last year-related expression of verse 34: "two hundred and thirty". Presumably, the end of 230 years in the same era context means that the 230th year from the coming of Christ had passed away. Thus, this interpretation might suggest that after closing the record on the 230th year, $Mormon_2$ decided to return to it and describe something else that had occurred within that year. Such a practice is unusual, but it would not be unique. Fourth Nephi 1:48-49 contains the last reference to an NC calendar year in the Book of Fourth Nephi. In verse 48, the hiding of the Nephite records and other sacred items is described as occurring "when three hundred and twenty years had passed away". This statement normally would close the record for the 320th year. However, $Mormon_2$ then used the phrase *even until the three hundred and twentieth year from the coming of Christ* to state the fact that the Nephite sacred records had been preserved and "handed down from generation to generation" until that crucial year. Similar examples of this unusual practice appear in Alma 28:7 ("thus ended the fifteenth year") and the following discussion about events that preceded the closing of that year,[216] and in Alma 50:35 ("thus ended the twenty and fourth year") and the following summary of events that preceded the end of the 24th year.[217] These infrequent narrative irregularities (a year-ending phrase positioned before a report or discussion of what happened in the year that had ended) might be viewed as analogous to the narrative construction of 4 Nephi 1:34-35. In verse 34, the end of the 230th year was implied and, in verse 35, the introductory clause "And now it came to pass in this year" might seem to refer to the previously suggested 230th year and to introduce a following report or discussion about what happened in that year. However, in 4 Nephi 1:34-35, no such report or discussion follows the introductory phrase *in this year*.

The alternative interpretation of the number-term "this" in the beginning of verse 35 relies on the related narrative. $Mormon_2$ immediately made it clear that a narrative of events in the 231st year was being introduced. The phrase *in this year* at the beginning of verse 35 is followed directly by a clarifying statement: "yea, in the two hundred and thirty and first year". Hence, the number-term "this" in 4 Nephi 1:35 must be understood from a narrative standpoint as referring to the 231st year, the one that followed the closing of 230 previous years, even though the referenced ordinal number-term does not follow an associated stated ordinal number-term. As a result of this unusual textual pattern, the number-term "this" in verse 35 initially might be interpreted as a grammatical reference back to the previous number-term, but from a narrative standpoint, "this" must be interpreted as a reference to the following number-term. Both alternatives are presented in Table 4.D and considered in the analysis presented in Division 3 of this source book.

Early in $Mormon_2$'s personal book, three more referenced ordinal number-terms are associated with uncertain meanings because they follow and are apparently related to nearby stated cardinal number expressions. The expressions "this year" and "this same year" in Mormon 1:8 and 11 follow the expression "eleven years old" in Mormon 1:6. The expression "that same

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[215] 4 Nephi 1:21, 48.

[216] Alma 28:8-12.

[217] Alma 50:36-40.

year" in Mormon 2:1 follows the expression "fifteen years of age" in Mormon 1:15. The issue in the first two of these referenced number-terms is whether "this" and "this same" are interpreted to imply the ordinal number 11th, which corresponds to the cardinal number 11, or whether $Mormon_2$ "being eleven years old" was to be understood as being in his 12th year. Likewise, the issue in the third expression is whether "that same" is interpreted to imply the ordinal number 15th, which corresponds to the cardinal number 15, or whether $Mormon_2$ "being fifteen years of age" was to be understood as being in his 16th year. Because of these uncertainties in coordinating referenced and cardinal number-terms, alternative numerical meanings are specified for these three referenced ordinal number-terms in Table 4.D. The alternative ordinal numbers are analyzed further in Part 3 of this Division.

The last of the eight ambiguous referenced ordinal number-terms occurs in the plates of Moroni. The year-related expression in Ether 13:15 is "that same year which he [the Jaredite prophet Ether] was cast out from among the people". The phrase *that same* is identical to the phrase in 1 Nephi 1:4; however, this phrase in Ether is not preceded by a stated ordinal number-term. Indeed, in the plates of Moroni, the five stated ordinal number-terms all follow Ether 13:15.[218] Hence, one might suppose that the number-term in Ether 13:15 only suggests a general quantitative meaning derived from its year- and time-terms and should not be classified as a referenced ordinal number-term. However, a more thorough narrative examination in the Book of Ether suggests three additional considerations. First, the fact that the number-term "that same" occurs after nearby, previously mentioned, stated ordinal number-terms in the small plates of Nephi and the plates of Mormon[219] may not be relevant to the Book of Ether, which occurs in the plates of Moroni. Nothing in the text suggests any prohibition against $Moroni_2$ using number-terms in ways that differed from previous writers. Second, the narrative that immediately precedes Ether 13:15 states that the Jaredites "esteemed [Ether] as naught and cast him out. And he hid himself in the cavity of a rock by day, and by night he went forth, viewing the things which should come upon the people."[220] In other words, the narrative information that immediately precedes Ether 13:15 makes it clear that at the same time Ether was cast out, he also began dwelling in the cavity of a rock. Third, the narrative that includes the year-related expression of Ether 13:15[221] is followed directly by a narrative describing events in "the first year that Ether dwelt in the cavity of a rock".[222] Finally, the example of 4 Nephi 1:34-35 in the plates of Mormon may be noted. Even though the number-term "this" usually followed and referred to a nearby, previously mentioned, stated ordinal number-term, that fact did not prohibit $Mormon_2$ from placing "this" before the stated ordinal number-term apparently being referenced. Thus, one may certainly argue that the number-term in Ether 13:15 has reference to the subsequent number-term "the first", as well as to the time-term "which he was cast out from among the people".

Is it possible that the number-term in Ether 13:15 was chosen by $Moroni_2$ for literary contrast with the identical number-term in 1 Nephi 1:4? In the small plates of Nephi, the number-term "that same" follows and refers to the previous number-term "the first", while in the plates of Moroni, the number-term "that same" precedes and apparently refers to the following number-

[218] Ether 13:18, 20, 23-24; 14:11.

[219] See Table 4.D.

[220] Ether 13:13-14.

[221] Ether 13:15-17.

[222] Ether 13:18-19.

term “the first”. Analysis of this literary issue also will continue in Division 4, but for purposes of Table 4.D, the number-term in Ether 13:15 is deemed to be a referenced ordinal number-term, rather than a reference to just a general period of time.

4.6.3 Referenced cardinal number-terms

In addition to the 43 referenced ordinal number-terms that modify express singular year-terms, another 13 referenced number-terms modify express plural year-terms in the small plates of Nephi and the plates of Mormon. In this study, these number-terms are sometimes called “referenced cardinal” number-terms and their year-related expressions are occasionally called “referenced cardinal number” expressions. Because these expressions often appear to require computation to be understood, each of these 13 referenced number-terms is introduced in this Section.

Two of the 13 expressions occur in the First Book of Nephi, where $Nephi_1$ quotes his older brothers’ complaints during their argument about building a ship. Each of these number-terms is the phrase *these many*.[223] The determiner *these* and the adjective *many* may be thought to refer to the cardinal number eight, which appears in the previous stated cardinal number-term; however, it seems more likely that “these many” refers to a larger cardinal number, perhaps nine or ten, which may be derived by reference to the previous stated cardinal number-term “even eight”, which identified the time $Lehi_1$ and his followers spent in the wilderness before reaching the seashore that they called Bountiful.[224] In addition, one must take into account $Nephi_1$’s later chronological note that a “space of many days” had occurred after the end of the previous eight years and before he envisioned the building of a ship.[225] And one must consider the additional time that passed as $Nephi_1$ “did make bellowses wherewith to blow the fire”[226] and “did make tools of the ore which [he] did molten out of the rock”.[227] Only after all of those days passed away did his brothers “complain against [him] and were desirous that they might not labor, for they did not believe that [he] could build a ship, neither would they believe that [he] were instructed of the Lord”.[228] Note that $Nephi_1$ has not stated how many days his activities took before the confrontation with his older brothers occurred. The derivation of the cardinal number nine or ten requires computation. If a “space of many days” occurred in the ninth year before $Nephi_1$ envisioned building a ship, then it seems more likely that his brothers’ phrase “these many years” at least meant nine years. Since $Nephi_1$ immediately began to find the ore and prepare to make tools with which to construct the ship and then made the tools before the confrontation occurred with his brothers, the additional time necessary for $Nephi_1$’s activities seems likely to have extended well into the tenth year. This proposal, that the phrase “these many years” numbered nine or ten when the conflict between brothers again became physical, is examined further in Division 2, where the year-related expressions in the small plates of Nephi are examined in detail.

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[223] 1 Nephi 17:20-21.

[224] 1 Nephi 17:4.

[225] 1 Nephi 17:7-10.

[226] “[I]n Early Modern English , *bellowses* was not viewed as nonstandard, although by Joseph Smith’s time it was. The [*Oxford English Dictionary*] also points out that *gallows* has developed in the same way as *bellows*, with examples of *gallowses* and *a gallows*.” Skousen with Carmack, *The History of the Text of the Book of Mormon, Part One*, 268-69; *The Compact Edition of the Oxford English Dictionary*, I: 197 (bellows); 1109 (gallows). This information about spelling suggests that $Nephi_1$ may have constructed more than one bellows.

[227] 1 Nephi 17:11-16.

[228] 1 Nephi 17:18.

Three more identical number-terms in the small plates of Nephi seem to be general allusions to long periods of time, but on careful examination they may actually be referenced cardinal number-terms. Both the Book of Jacob and the Words of Mormon use the number-term "many hundred", which includes a definite cardinal number name.[229] These number-terms, within their separate narrative contexts, apparently may be computed to be the cardinal number 500 (for $Jacob_2$'s number-terms) and 300 (for $Mormon_2$'s number-term).[230] These three potential referenced cardinal number-terms in the small plates of Nephi similarly will be examined in Division 2.

The referenced number-term in Jacob 7:1, "some", also might be viewed as a referenced cardinal number-term, rather than merely a general quantitative reference. If it is assumed that the phrase *many hundred* in Jacob 4:4 and 7:7 refers specifically to 500 years, then the challenge to $Jacob_2$'s religious leadership, personal testimony and emphasis on his father's 600-year prophecy may have reached or been approaching an important 100-year milestone.[231] Perhaps as many as 40 to 45 years of the Lehi era had passed away since $Nephi_1$ transferred political power to a successor king and recognized $Jacob_2$ as the Nephite religious leader.[232] However, if such a challenge was becoming important, it need not have waited until nearing the 100-year milestone. The challenge could have just as well been geared to $Jacob_2$'s advanced age and he would have been in his eighties long before the 100-year milestone was reached. Because of the temporal uncertainty associated with Jacob 7:1, the year-term "some" is classified as a general reference to an interval and not as a referenced cardinal number-term. Again, this issue in the small plates of Nephi will be addressed further in Division 2 of this source book.

In the plates of Mormon, eight more year-related expressions suggest the possibility of computing a cardinal number for their number-terms. In four instances in the Book of Helaman, the expression is "not many years" and the number-term "not many" may be compared with the associated year-related narratives that appear to define the small number of years that are intended by the phrase *not many*.[233] In the other four instances, the number-terms "this many", "a certain number of", "some" and "a few",[234] also may be compared with their associated year-related narratives to compute how many years are intended. Table 4.D includes proposed numbers of years for each of these eight potential referenced cardinal number-terms, together with the referenced sources where the associated narratives appear. When the year-related expressions in the plates of Mormon are closely examined in Division 3, these eight referenced cardinal number-terms are analyzed further.

4.6.4 Referenced general number-terms

Twenty-four (5.6%) of the 426 year-related expressions include imprecise language typically indicating a single nonspecific year or an unknown quantity of years. In this study, these number-terms are sometimes called "referenced general" number-terms and their year-related expressions are occasionally called "referenced general number" expressions. For example, in 1 Nephi 15:13, the simple number-term "many" appears to describe an unknown

[229] Jacob 4:4; 7:7; Words of Mormon 1:2.

[230] See Section 4.2.2 above.

[231] E.g., Jacob 1:1-8; 2:1-3; 4:1-7; 7:26-27.

[232] Jacob 1:1-12.

[233] Helaman 4:26; 6:32; 7:6; 11:26.

[234] Mosiah 10:18; Alma 16:1; Helaman 11:24; 3 Nephi 6:16.

quantity of years in a prophetic narrative about the temporal distance between the time that "the Messiah hath manifested himself in body unto the children of men" and the time that "the fulness of the gospel of the Messiah [shall] come unto the Gentiles, and from the Gentiles unto the remnant of our seed". No year-related expressions indicate how many years the adjective *many* in this verse is intended to represent.

The four number-terms that include simple number names with general adjectives ("many hundred" and "a great many thousand"[235]) all might be treated as being referenced general number-terms because they seem so indefinite, but as noted in Section 4.2.2 above, the three "many hundred" number-terms placed by $Jacob_2$ and $Mormon_2$ in the small plates of Nephi may have computed cardinal number connotations that the number-term "a great many thousand" in the plates of Mormon does not have. The three "many hundred" number-terms have been categorized as referenced cardinal number-terms in this study, even though they appear in a form that seems to be imprecise. The number-term "a great many thousand", however, has no apparent links to other year-related narratives. The number is unknown; so, it is categorized as a referenced general number-term.

Like the two year-related expressions in the small plates of Nephi that begin with the words "the year", there is a unique noun phrase in the plates of Mormon that ends with the words "the year". In Alma 46:40, the year-related expression "the year" occurs in the noun phrase "some seasons of the year". One might consider the article *the* in Alma 46:40 to be interpreted as a determiner pointing to a separate stated number-term; however, the previous year-related expression, two verses earlier, is "four years" and the following year-related expression in Alma 48:2 is "the nineteenth year of the reign of the judges". Was the article *the* intended to refer to the cardinal number four or to the ordinal number nineteenth? Neither alternative seems likely to have the intended meaning. The article *the* in Alma 46:40 seems most likely to indicate a single nonspecific year because if one year has certain seasons, presumably other years have similar seasons. The simplest interpretation of "the year" in Alma 46:40 seems to be that it is like the other nonspecific number-terms and unlike referenced ordinal number-terms where the determiner *the* appears to imply other texts that include a definite number or alternative definite numbers.[236] Table 4.D includes the 24 referenced general number-terms identified in this study.

4.7 Absent number-terms

A sixth type of year-related expression, a final type, has been mentioned above. In the remaining eight (1.9%) of the 426 expressions,[237] there are no express number-terms. For example, the adjoined temporal-expressions "from year to year" appear in Mosiah 19:15 and in 4 Nephi 1:34, but they do not include express number-terms. One might speculate that a number-term has been omitted from each expression (e.g., "from *one* year to *the next* year" or "from *the eighth* year to *the tenth* year"); however, unlike implied year-terms and omitted time-terms, the exact word or phrase that may be absent from this kind of an expression cannot be inferred from the nearby text. To avoid confusion with omitted time-terms, these number-terms usually are called "absent" number-terms and their related expressions often are called "absent number" expressions.

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[235] Jacob 4:4; 7:7; Words of Mormon 1:2; Helaman 8:18.

[236] 2 Nephi 16:1; 24:28; 3 Nephi 1:1; 3:22; 7:26.

[237] 1 Nephi 18:17; Mosiah 19:15; Alma 13:7, 9; 3 Nephi 1:29; 4 Nephi 1:34.

4.8 The placement of number-terms

In the following introduction, the six types of number-terms identified above (stated ordinal, stated cardinal, referenced ordinal, referenced cardinal, referenced general and absent) are grouped by the three sets of plates on which the *Book of Mormon* was engraved and by the 15 extant major divisions within the plates. This Section 4.8 concludes with an examination of the apparent placement of the six types of number-terms throughout the extant text of the *Book of Mormon*.

4.8.1 Number-terms in the three sets of plates

Five types of year-related expressions that include express number-terms exist in the text of the *Book of Mormon*: stated ordinal, stated cardinal, referenced ordinal, referenced cardinal and referenced general number expressions. A sixth analytical type, for the absent number expressions, has no number-terms. Table 4.E identifies the numbers and percentages of these six analytical types of expressions in the small plates of Nephi, the plates of Mormon, the plates of Moroni and all the plates. In the small plates, nearly half of the number-terms (48.3%) are stated cardinal number-terms. In the plates of Moroni, more than half of the number-terms (55.9%) are stated cardinal number-terms. Most number-terms in the plates of Mormon, however, are stated ordinal number-terms (239 or 65.8% of the 363 year-related expressions in these plates). All six analytical types appear in the small plates of Nephi and in the plates of Mormon, but only four types of number-terms appear in the plates of Moroni.

4.8.2 Number-terms in the major divisions

Table 4.F presents the numbers and percentages of the six analytical types of number-terms in the major divisions of the *Book of Mormon*. As may be expected from the quantities presented in Table 4.E, the six books in the small plates of Nephi and both books in the plates of Moroni exhibit more stated cardinal number-terms than stated ordinal number-terms. The Words of Mormon, however, has neither of these types of number-terms and thus differs in this manner from all the major divisions that are called books in the three sets of plates. As may also be anticipated from the quantities presented in Table 4.E, stated ordinal number-terms appear most often in the five complete books in the plates of Mormon. The extant text of the Book of Mosiah, however, has four times more stated cardinal number-terms than stated ordinal number-terms. When year-, time- and number-terms are the components being considered, the textual differences between the extant portion of the Book of Mosiah and the complete books in the plates of Mormon become obvious. The Book of Ether in the plates of Moroni exhibits the most referenced general number-terms in a major division of the *Book of Mormon*. This fact is consistent with the narratives in the Book of Ether being very brief abridgments of events (often used for didactic purposes by Moroni_2) in the Jaredite period.

4.8.3 The placement of number-terms

Express number-terms in 418 year-related expressions have been divided into five analytical types: 245 stated ordinal number-terms; 93 stated cardinal number-terms; 43 referenced ordinal number-terms; 13 referenced cardinal number-terms; and 24 referenced general number-terms. In addition, a sixth analytical type has been created to account for the eight absent number expressions. Table 4.G shows the placements of these different types of number-terms in the

major divisions of the three sets of plates. To make the placements more comprehensible, each type has been labeled with a capital letter: K = stated ordinal; L = stated cardinal; M = referenced ordinal; N = referenced cardinal; O = referenced general; and P = absent. These letters have been chosen to avoid condensing and thereby mistaking the similar typefaces of the capital letters I and J, and to preclude confusion with the capital letters A through H that were used to symbolize year- and time-terms in Tables 2.C and 3.E.

In the small plates of Nephi, number-terms represented by all six letters occur. As Table 4.G shows, $Nephi_1$'s writings may be symbolized in First Nephi with a (KMLOLNPLO) letter-group and in Second Nephi with an (LMLML) letter-group. The following major divisions collectively use just three types of number-terms in their year-related expressions: Jacob (LNON), Enos (OL), Jarom (L), Omni (L) and Words of Mormon (N). None of these letter-groups or letter-sets in the small plates of Nephi initially appears to have an organized pattern beyond the requirements of its associated narratives. However, if the major divisions are disregarded as just passing divisions in the constant motion of time, the letter pattern becomes the single (KMLOLNPLOLMLMLNONOLN) letter-group. Furthermore, if the absent or P number-term is ignored (because the lack of any measurement can hardly be considered a quantity term), there might be the combined pattern of an initial (K) letter-set followed by three balanced and reversible letter-groups (MLOL[N]LOLM)(LML)(NON) and by a final non-reversible and unbalanced letter-group (OLN). These potential letter patterns for number-terms in the small plates are analyzed in Division 2 of this source book.

In the plates of Moroni, only number-terms represented by the letters K, L, M and O occur. $Moroni_2$ created a pattern of number-terms in the Book of Ether that may be represented by the letter-group (LOLOLOLOLOLOMKLKL). Then he concluded the plates of Moroni with expressions in the Book of Moroni represented by the letter-group (OL). These number-term letter-groups in the plates of Moroni might not seem to have any overriding pattern; however, if the major divisions again are disregarded, the combined pattern might be viewed as the letter-groups and letter-set (LOLOLOLOLOLO)(M)(KLK)(LOL). This potential letter pattern for the plates of Moroni is analyzed further in Division 4 of this study.

Like the small plates of Nephi, the plates of Mormon contain number-terms represented by all six of the capital letters. The letter-groups of the extant text may be depicted as: Mosiah (KLKOLNLPLKL), Alma (KOKLKPKNKOKLKLKOMKLKLKLOKLKOKMKMKMKMKO KMKMK), Helaman (KMKMKMKNMKMKNKNOKMKMKMKNMKMKMLKMK), Third Nephi (KLMKOMKPKLKMKLKMKLKNKMKLKMKMKOL), Fourth Nephi (KLKLKLKLP LMKMLK) and Mormon (LMLMKLKLKMKLKLKMKMLKL). When the text is assumed to be divided only by number-terms, the number-terms in the plates of Mormon become a very long letter-group (KLKOLNLPLKLKOKLKPKNKOKLKLKOMKLKLKLOKLKOKMKMKMKM KOKMKMKMKMKMKNMKMKNKNOKMKMKMKNMKMKMLKMKLMKOMKPKLKM KLKMKLKNKMKLKMKMKOLKLKLKLKLPLMKMLKLMLMKLKLKMKLKLKMKMLK L). Parts of this letter pattern suggest an organized structure (based on reversible and/or balanced letter-groups) like the patterns associated with year- and time-terms. For example, Alma displays seemingly organized, reversible and balanced letter-groups (OKL[K]LKO) and (OK[L]KO), as do Helaman (KMK[M]KMK) and Mormon (MKLKLK[M]KLKLKM), but disorganized lists of letters also appear between these supposedly planned letter-groups.

4.8.4 The organization of number-terms in the plates of Mormon

Assuming that $Mormon_2$ may have used an organized system for the placement of his number-terms, as he apparently did with his year- and time-terms, a search for potential letter patterns was undertaken. This investigation compiled additional letter lists by sorting the six types of number-terms in various ways. A total of 240 additional letter lists were produced, with each letter list having three, four or five categories. (As with the time-terms, a letter list with only one or two categories could not present a meaningful letter pattern.) These attempts to identify potentially planned systems in the letter patterns assumed that reversible and balanced letter-groups suggested such systems. Most of the lists displayed occasional letter-groups that appeared to be planned, mixed with seemingly random insertions of unsystematic letters or lists of letters. The appearance of definite ordinal and cardinal number names in more than 82.4% of the number-terms in the plates of Mormon resulted in alternative letter patterns that were often very similar to each other, but jumbled in a variety of ways.

One hundred seventy alternative letter lists included absent (P) letter-sets, either as stand-alone letter-sets or in combination with other five letter-sets. Another 35 alternative letter lists took into account the possibility that referenced cardinal number-terms often were not definitive as to the number of years being referenced or may have been too speculative to have been considered a separate type and, thus, should be categorized as referenced general number-terms. For these 35 additional letter lists, absent (P) letter-sets also were included. In addition, 35 more letter lists included the five express types of number-terms, but excluded (P) letter-sets altogether because the (P) letter-set in the small plates of Nephi seems to have been ignored in the letter pattern suggested for those plates and no (P) letter-set occurs in the plates of Moroni. Thus, the possibility that $Mormon_2$'s system of organization ignored absent names also was examined. Again, because ordinal and cardinal names dominated all these lists, a great deal of similarity appeared in many parts of the lists.

Of the 240 letter lists produced by these different procedures, three lists appeared to provide organized letter patterns (based on letter reversal and balancing) throughout the plates of Mormon. Absent or (P) number-terms seem to have been disregarded in the apparent plan for number-terms in these plates, just as omitted or (H) letter-sets were disregarded as a separate type in the apparent plan for time-terms in these plates. Unlike the combination of the more formal long and short names into an "official" name category in the apparent plan for time-terms in these plates, the more precise or stated ordinal or (K) number-terms and stated cardinal or (L) number-terms were not combined in the three letter patterns for number-terms that seemed to have the greatest likelihood of being planned for the plates of Mormon.

The differences in the three proposed letter patterns arise from the distinct ways in which referenced number-terms are employed. In the first of the proposed letter lists, stated ordinal number-terms are combined with referenced ordinal number-terms [in (K) letter-sets], stated cardinal number-terms are combined with referenced cardinal number-terms [in (L) letter-sets], and referenced general number-terms [in (O) letter-sets] make up the third category. The 418 express number-terms in the extant texts of the plates of Mormon may be understood as being divided into six separate letter patterns that have been divided by two forward slashes // in the following letter list: (KLK[O]LKL)//(KOK)(L[K]L)(KOK)//(LKL)(K[O]K)(LKLKL)//(OKLKO)(K[O]K)(LKLKL)//(OKLK[L]KLKO)//(KLKLKLKLKLK[O]LKLKLKLKLKLKLKLKLKLKLKLKLKL). In the second of the proposed letter lists, stated ordinal number-terms are combined with referenced cardinal number-terms [in (K) letter-sets], stated cardinal number-

terms are combined with referenced ordinal number-terms [in (L) letter-sets], and referenced general number-terms [in (O) letter-sets] again make up the third category. The 418 express number-terms may be understood as being divided into seven letter patterns separated by two forward slashes // in the following letter list: (KLK[O]LKLKL)//(KOK[L]KOK)//(LKLK[O]L KLKLKL)//(OK[L]KO)//(KLKLKLKLK[O]KLKLKKLKLKLKLKLK)//(O)(KLKLKLKL[K]L KLKLKLK)(O)//(LKLKLKLKLKLKLKLKLKLK[O]LKLKLKLKLKLKLKLKLKLKLKL KLKL). Lastly, in the third proposed letter list, stated ordinal number-terms [in (K) letter-sets] and stated cardinal number-terms [in (L) letter-sets] are entirely separate from the three combined types of referenced number-terms [in (M) letter-sets]. The 418 express number-terms may be depicted in ten letter patterns that have been separated by two forward slashes // in the following letter list: (KLK)(M[L]M)(LKL)//(KMK)(L[K]M)(KMK)//(LKL)(K[M]K)(LKL)// (KL[M]KL)//(KMKMKMKMKMKMKMKMKMKMKMKMKMKMKMKMKMKMKMKMK M)//(LKM[K]LMK)//(M)(KLKLK[M]KLK)(M)//(KLK)(MKM)(KLK)//(MK[M]KM)(LKLKL KLKL)(M[K]M)//(LKL)(MLM)(KLKLK[M]KLKLK)(MKM)(LKL).

The organizing protocol for this third letter list contrasts somewhat with the one suggested for time-terms. General references to few or many years, or to this or that year or these years, seem to indicate an everyday or common way to quantify the words *year* and *years*, whereas long and short era names suggest the more formal measuring, counting and recording of a definite year or a definite number of years by those who keep or use written records. Thus, the three types of referenced number-terms may be designated as a single letter-set of "common" number-terms. When compared with the proposed pattern for time-terms, the "common" number-terms (combined referenced number-terms) contrast with the "official" time-terms (combined long and short names). The three types of express number-terms appear to combine with the three types of year-terms and the three types of express time-terms to organize the three components of year-related expressions in the plates of Mormon. In Division 3, where year-related expressions in the plates of Mormon are analyzed, the number-term letter patterns suggested above will be examined.

4.9 Nephite Set-sums and Set-contexts

Part 3 of this Division ended by introducing the analytical concepts called an "era" and an "era context". A Nephite era was defined as a chronological system that numbered years from a specific point of time named (an event mentioned) in a group of related time-terms. Their associated number- and year-terms provided evidence of the numbering of years, but a Nephite era was proposed as a symbolic feature principally suggested by time-terms. As listed in Table 3.G, 124 or 80.5% of the 154 express time-terms appeared to specify the beginning points of three Nephite eras. Part 3 also noted that most year-related expressions (272 or 63.8%) did not include time-terms.[238] Nonetheless, three Nephite era contexts were proposed to be connected with narratives that included year-related expressions (whether such expressions had time terms or not) and with narratives that had no year-related expressions. A Nephite "era context" was defined as an interval that began with a Nephite era and continued at least until the last numbered year mentioned or implied by the era's express time-terms. A Nephite era context was proposed as a second symbolic feature principally suggested by time-terms.

[238] See Sections 3.6, 3.8.3 and 3.9 in Part 3 of this Division.

For example, six verses in Helaman 11 place several war-related narratives in "the eightieth year of the reign of the judges over the people of Nephi".[239] The 80th Judges calendar year is not the last numbered year implied by the era's express time-terms; the last year is the 101st Judges calendar year suggested by the year-related expression and narrative in 3 Nephi 2:5. Through the clear, express and identical time-terms in Helaman 11:24 and 29, the war-related narratives are positioned in the Judges era context. However, in some of the following year-related expressions in Helaman 11, just number- and year-terms are used and time-terms are omitted: "the eighty and first year", "the eighty and second year", and so forth.[240] As noted in Section 4.4.1 above, when one calendar year expression follows another with the next larger ordinal number, the motion of time into the next calendar year or the addition of another numbered year may be assumed and represented by the equation x+1 = y. Despite the omitted time-terms in Helaman 11, readers logically assume that the progression of years specified by the number- and year-terms occurred within the Judges era context, the temporal setting "of the reign of the judges over the people of Nephi" that apparently continued into the 101st Judges calendar year.

This Part 4 ends the introduction of number-terms by proposing the existence of two other analytical concepts principally associated with number-terms. Similar to the way that the diction in various types of time-terms may be grouped together and the combination of the associated meanings helps to identify a chronological system that has been called an era, this study proposes that numbers of various types expressed in number-terms may be grouped together and the combination of their meanings (their sum) helps to identify another chronological system. Each group of numbers usually is identified by the capitalized term "Set". The combination of the meanings of numbers in a Set typically is identified by the hyphenated and capitalized term "Set-sum". In other words, a Set and its Set-sum, like a group of era names and their combined meanings, symbolize a unique chronological system.

Furthermore, just as an era context was defined as an interval that begins with an era and continues at least until the last numbered year mentioned or implied by the era's express time-terms, the hyphenated and capitalized term "Set-context" is defined as an interval that begins with a unique event on a certain day and continues until another day implied by the Set-sum. A Set-context is proposed as the second symbolic feature principally suggested by time-terms. Set-contexts appear to be implied intervals of time shorter than era contexts. In other words, just as era contexts may be said to be based largely on era names that have been grouped to symbolize such long-term intervals (the longest of the Nephite chronological periods), a Set-context may be said to be based largely on number names that have been grouped to symbolize chronological periods shorter than eras; i.e., short intervals measured by the Nephites' observations or by the use of their calendars.

The new analytical terms "Set", "Set-sum" and "Set-context" have been capitalized primarily to distinguish them from another type of "set" mentioned often in this source book: a set of plates. Two of the new terms also have been hyphenated to indicate their specific use in connection with the analysis of number-terms. The noun *context* is used in a normal way as "[t]he whole structure of a connected passage regarded in its bearing upon any of the parts which constitute it".[241] However, the nouns *set* and *sum* are used in a somewhat unique way. The word *set* may be defined as "[a] number of things grouped together according to a system of

[239] Helaman 11:24-29.

[240] Helaman 11:30, 36-38.

[241] *The Compact Edition of the Oxford English Dictionary*, I: 536 (context).

classification or conceived as forming a whole".[242] As to number-terms, the word "Set" normally means a collection of numbers, but since the grouping of numbers is based on other closely-related words within the text of the *Book of Mormon*, sometimes a "Set" includes only one number. Similarly, the mathematical meaning of the noun *sum* is "[t]he number, quantity, or magnitude resulting from the addition of two or more numbers, quantities, or magnitudes".[243] In most cases, a "Set-sum" is the number resulting from the grouping of the numbers presented in many number-terms into a Set and the addition of such numbers when two or more numbers occur within the Set. However, when numbers in number-terms are sorted or grouped by means of other closely-related words within the text, a Set occasionally may contain just a single number. In such cases, the single number is understood to be a "Set-sum", even though the operation of addition need not be performed.

4.9.1 Grouped number-terms

A principal assumption used in this study for analyzing year-, time- and number-terms is that they may be classified or sorted into various groups based on textual criteria. The various types of year-, time- and number-terms introduced thus far, and their proposed letter patterns, all are based on the assumption that these terms may be analyzed apart from their narratives and combined or grouped based on their existence or implied use in the text. For year-terms, the criteria for sorting included the distinctive meanings of the nouns *year* and *years*, and their express or implied existence in the text. For time-terms, the criteria for grouping included the diction and meanings of various names as understood within the context of year-related expressions, and the omission of time-terms from so many year-related expressions. For the sorting of number-terms, the textual criteria initially focused on the use of, or reference to, ordinal, cardinal and general numbers, or their absence. However, as to the symbolic features of number-terms, the criteria were uncertain. The analytical decision was made to test number-terms for meaning based on their express or absent diction and on the other textual concepts used to analyze chronological structure: sets of plates, major divisions, year- and time-terms, and narrative-links. Since the use of year-, time- and number-terms apparently could be understood to exhibit organized literary decision-making (at least separately within each of the three principal sets of plates) and since era contexts seemed to be expressed by repeated diction in combined time-terms (such as "Lehi left Jerusalem", "the reign of the judges" and "the coming of Christ"), this study assumed that number-terms might be analyzed for other chronological settings or contexts expressed by combined number names.

For example, the number-terms placed in the small plates of Nephi were assumed to be separate in some ways from the number-terms of the other two principal sets of plates. Similarly, the number-terms of the small plates of Nephi were assumed to be subdivided into seven groups based on the major divisions in these plates. Alternatively, the number-terms were assumed to be subdivided into just two groups based on the singular A year-terms and plural B year-terms in these plates, or into three groups based on the long name D time-term, personalized name G time-terms and omitted name H time-terms in these plates, and so forth based on all the other analytical types associated with year- and time-terms and narrative-links. In the analysis of each set of plates in Divisions 2 through 4 of this source book, each Set of number names is based on

[242] Ibid., II: 2745 (set).

[243] Ibid., II: 3149 (sum).

the analytical concepts of plates, major divisions, year- and time-terms, and narrative-links, as presented in the extant text of the *Book of Mormon*.

4.9.2 The addition of numbers

The second key assumption used in the analysis of number-terms in the *Book of Mormon* is that the number names in each Set may be combined by addition and represented by their Set-sum, which is an entirely new number name (except in those instances where a Set includes only one number name). In Section 4.4.1 above, the arithmetic operation of addition was shown to be present in the *Book of Mormon*; so, its use in combining number names appears to have a firm textual basis.

The use of the operation of addition for number names is similar to the operation by which era names were combined and identified. For example, the first ten era names listed in Table 3.G of this Division were gathered from ten time-terms in six separate books in two sets of plates, grouped by their diction and similar meanings, and then represented by a new name, one that did not appear in the text: "an era" or, more specifically, "a Nephite era" or, even more precisely, "the Lehi era". This operation for combining and identifying many names is straightforward, simple and used throughout the English language. For example, when "this dirty dish" and "that dirty dish" are combined, they may be identified by a new name such as "the dirty dishes" or "the dishes I want you to wash", depending on the details of the particular narrative. Similarly, when "the nails", "the screws", "the ruler", "the hammer", "the saw" and "the screwdriver" are combined, they may be identified by a new name such as "the tools in the work room" or "the mess you've made", again depending on the details of the particular narrative. As Table 3.G indicates, the 124 era names expressed in the times-terms of the *Book of Mormon* may be grouped by their diction and meanings; i.e., by the way they qualify their associated year- and number-terms and narratives. That classifying or sorting process subdivides the era names into three large groups and each large group taken as a whole symbolizes, or is understood to specify, both the unique time when one of the three Nephite eras began and all subsequent time measured and numbered within that "era context".

The number-term analysis presented in Divisions 2 through 4 of this source book also indicates that the number names in most of the express number-terms of the *Book of Mormon* may be grouped by their diction and meanings; i.e., by the way they qualify their associated year- and time-terms and narratives. That classifying or grouping process subdivides the number names into many separate Sets of numbers and each Set may be combined by addition to create a total quantity or Set-sum, which is most often an entirely new number name that identifies or represents the Set. These various Sets and their Set-sums are the number-term data analyzed for chronological meaning in the following Divisions.

One final practice associated with the creation of Sets and Set-sums has been adopted to simplify and clarify the analysis. Section 4.4.1 noted several examples of the verbal addition of ordinal and cardinal numbers.[244] In the narratives describing those operations of addition, the narrative text provided a setting in which ordinal and cardinal numbers both made sense. To current sensibilities, however, the use of both ordinal and cardinal numbers in an abstract arithmetic operation—one that is detached from a narrative context—may be confusing. For

[244] Alma 16:9, 12, 21 (11th + 3 = 14th); Alma 17:4, 6; 28:7 (1st + 14 = 15th); Alma 28:9-10; 46:38; 48:20; 49:29 (15th + 4 = 19th); Helaman 13:1; 14:2; 16:9; 3 Nephi 1:1 (86th + 5 = 91st); 3 Nephi 2:8, 10 (9 + 1 = 10th); 3 Nephi 4:1, 4;5:7-8; 6:1 (18th + 7 = 25th); 3 Nephi 5:7-8; 7:1, 8 (25th + 5 = 30th); Mormon 2:28; 3:1, 4 (350th + 10 or 10th = 360).

example, the number names used in the implied addition in Mormon 2:28-3:4 may create uncertainties. What is the sum of 350th plus 10th? Is it the same sum as 350th plus 10? Is the sum 360th or 360? Or is the abstract addition conceptually unworkable? When numbers are removed from their associated narratives and placed in an abstract numerical Set, the conversion of ordinal numbers to cardinal numbers simplifies and clarifies their use in arithmetic operations. Ordinal suffixes like -st, -nd, -rd and -th may be eliminated. Instead of dealing with an equation like 350th + 10th = 360 and its ordinal trimmings and potential for confusion, it is clear-cut to present the equation as 350+10 = 360. Throughout the remainder of this study, the practice of changing ordinal numbers to their corresponding cardinal numbers for the purposes of creating Sets and carrying out abstract arithmetic operations is followed because it standardizes and simplifies the data analysis.

4.9.3 The interplay of assumptions

The following discussion about the ways in which these two assumptions interact, which sets the stage for introducing a third key assumption, relies on the textual data in Table 4.H. The data are derived from the First Book of Nephi, a major division in small plates of Nephi. The reference and diction of each year-related expression in the Yale text are provided. The letter labels are the ones identified in Tables 2.C, 3.E and 4.G of this Division. Most of the information in the column labeled “Cardinal No.” represents the numbers that appear in the number-terms of stated number expressions or that are implied by the number-terms of referenced number expressions. English number names are represented by numerical figures. In addition, a tilde (~) in the Cardinal No. column signifies the lack of a definite number name associated with a referenced general or absent number-term. A star (*) in the same column represents a referenced ordinal number-term or a referenced cardinal number-term when it is treated for analytical purposes like a referenced general number-term because it does not actually state a definite number. Tildes and stars are used because zeros would be inappropriate. Neither zero nor a substitute appears to be attested in the *Book of Mormon*.

The Cardinal No. column of Table 4.H also presents each stated or referenced ordinal number as though it is the corresponding cardinal number. For example, the initial year-related expression in 1 Nephi 1:4 uses the ordinal name *first* in its number-term; however, because ordinal number names are changed into their corresponding cardinal number names for purposes of simplicity and clarity in abstract arithmetic operations, the name *first* appears only as the figure 1 in the Cardinal No. column. In the following year-related expression in 1 Nephi 1:4, the number-term is “that same”, which is listed in Table 4.H with the alternatives “* or 1”. If the phrase *that same* is treated the same way as a referenced general number-term because, in fact, it does not state a definite number, then the phrase is represented by a star. Alternatively, if the phrase *that same* is treated as a referenced ordinal number-term (i.e., as implying the definite number name that appears in the previous number-term), then the phrase also may be represented in the column by the figure 1. Both instances where the ordinal number name *first* is stated or referenced may be represented by the figure 1. For a complete analysis, both a star and a definite number are included for each referenced ordinal number-term or referenced cardinal number-term listed in Table 4.H.

In this regard, it also must be noted that the two year-related expressions in First Nephi that appear to include referenced cardinal number-terms are represented in the column with alternative definite numbers. Both number-terms in 1 Nephi 17:20-21 use the quantity name

"these many". The definite number implied by this name is uncertain. The related narratives[245] suggest that eight is probably not likely, nine is more likely than eight, and ten is also a likely possibility; so, these referenced number-terms are represented in the Cardinal No. column by the alternatives "* or 8, 9 or 10".

As noted above, the seven major divisions of the small plates of Nephi may be assumed to create at least seven separate Sets of numbers, each of which is represented by the definite numbers in its respective year-related expressions. This means, of course, that the Set of numbers for First Nephi is different from the Set of numbers for each of the other major divisions. As Table 4.H depicts, First Nephi contains seven number-terms that may be represented by a definite number. Like the different era names that could be combined with each other to symbolize the separate Nephite eras and their era contexts, the different number names in each Set may be combined with each other to symbolize the separate Sets and their Set-contexts. Based on the second assumption discussed above, the combination of numbers in a Set may be accomplished by the operation of addition and the result is a Set-sum.

Where alternative definite numbers appear to exist for a number-term (as with 1 Nephi 17:20-21), alternative Sets and operations of addition are required in the analysis. For example, a simple Set in First Nephi may be composed from the data in Table 4.H and depicted as 1, 600, 8, 600. These figures represent the four stated number-terms (labeled K and L) in First Nephi. In the analysis of this Set, the seven number-terms represented by stars or tildes in First Nephi are disregarded. They cannot be thought of as representing a separate Set because it would have no numerical values. Alternatively, the largest Set in First Nephi may be represented by the seven number-terms labeled K, L, M and N. In this Set, the definite number associated with the referenced ordinal number-term and the largest definite number proposed for the referenced cardinal number-terms are included with the four stated number-terms: 1, 1, 600, 8, 10, 10, 600. The definite number 10 is computed to be the number intended by the number-terms in 1 Nephi 17:20-21. (A separate Set must be examined when the definite number 8 or 9 is computed to be the number intended by the number-terms in 1 Nephi 17:20-21.) The other four number-terms (labeled O and P) are depicted in Table 4.H with tildes and they are disregarded because they cannot be associated with definite numbers.

A Set may be represented by its individual numbers (as above). Alternatively, when the operation of addition is employed to combine the Set of definite numbers, the Set may be represented by the equation that shows the addition of such numbers and by their Set-sum. Thus, the simple Set in First Nephi that is mentioned above also may be represented by the equation 1+600+8+600 = 1,209, which includes the four stated numbers, the symbols indicating addition and equivalence, and the Set-sum. The largest Set in First Nephi that is mentioned above may be represented similarly by the equation and Set-sum: 1+1+600+8+10+10+600 = 1,230. In like manner, each textual grouping or combination of the number names in the small plates of Nephi, whether based on major divisions or on other analytical concepts such as those included in Table 4.H, may be represented by its Set of definite numbers, its equation of addition and its Set-sum.

4.10 Conclusion

This Part has introduced four fundamental topics related to the use of numbers in the *Book of Mormon*: number names, the sequence of numbers, the number grouping system and the

[245] 1 Nephi 17:1-18. See also Section 4.6.3 above.

arithmetic operations associated with numbers in the *Book of Mormon*. Without question, the *Book of Mormon* relies on English number names, beginning with one, organized in a standard base-10 number grouping system. When number-terms themselves were examined, six analytical types were identified: stated ordinal names, stated cardinal names, referenced ordinal names, referenced cardinal names, referenced general names and absent number names. Sets, Set-sums and Set-contexts associated with grouped or combined number names also have been introduced. Because the analytical assumptions on which Sets, Set-sums and Set-contexts depend are crucial to an understanding of the chronological symbolism of year-related expressions, this Part 4 concludes by examining the textual foundations of the key assumption that appears to give a Set-context its chronological meaning.

This third key analytical assumption used in the analysis of number-terms in the remainder of this study also has its counterpart in the analysis of era contexts. The three large groups of era names listed in Table 3.G were assumed to have distinct meanings related to Nephite chronology. Each group of era names appeared to symbolize the time when a Nephite era began to be measured and numbered. When understood in terms of the related year- and number-terms, each group of era names also appeared to symbolize an era context that existed during the times of narratives that have year-related expressions without time-terms and that have no year-related expressions. The interval measured and numbered by the group of era names was assumed to begin at a specified point of time and to continue at least until the last numbered year associated with an era name was stated or implied in the text. Each group of time-terms that includes era names appears to create a symbolic temporal setting or era context for the Nephite narratives.

When the assumption of a distinct meaning related to Nephite chronology is applied to number-terms, the question immediately arises: how do a Set and its Set-sum, which are abstract numerical concepts, become associated with Nephite chronology? Stated another way: what distinct aspect of Nephite chronology is symbolized by a Set and its Set-sum? This study relatively quickly discarded the notions that Set-sums represented numbers of years, moons, months or weeks. For example, the chronological meaning symbolized by the Set-sum of the largest of the proposed Sets of the First Book of Nephi (1,230) appears to have no textual connection with that many "years". The Lehi era apparently existed into its 610th year and the Nephite people appear to have been destroyed long before 1,230 Lehi calendar years had passed away.[246] Thus, the Set-sum 1,230 appears to have no verifiable chronological meaning directly associated with a number of years mentioned in, or computed from, the text of the *Book of Mormon*. Neither does a period of 1,230 "years", whatever that might mean in terms of a number of days, seem to have any particular astronomical significance.

The text of the small plates of Nephi indicates that numbered "moons" had chronological meaning for the Nephites and the text of the plates of Mormon states that a "month" of some type in the Judges and NC calendars was numbered.[247] The words *moon* and *month* may appear in the *Book of Mormon* as cognate English terms.[248] A period of 1,230 mean synodical months (if that is what was measured by "moons" during the Lehi era) would be about 36,323 days or about 102.5 lunar astronomical years or 99.4 solar or tropical years. Alternatively, a period of 1,230 mean sidereal months (if that was the meaning of "moons" during the Lehi era) would be

[246] See, e.g., 1 Nephi 10:4; 3 Nephi 1:1; 2:5-8; Mormon 6:5-15.

[247] See Section 1.9.5 in Part 1 of this Division.

[248] Webster, *An American Dictionary of the English Language*, II: [147] (month and moon); *The Compact Edition of the Oxford English Dictionary*, I: 1843-44 (month); 1845 (moon).

about 33,606 days or about 94.8 lunar astronomical years or about four days longer than 92.0 solar or tropical years. Again, none of these potential calendrical or astronomical periods seems to be connected with the chronology expressly mentioned in the First Book of Nephi.

Furthermore, a Set-sum also does not appear to be directly associated with a specific number of weeks. While the days of a Nephite week appear to have been numbered for purposes of sanctifying the seventh day,[249] the text provides no direct evidence that successive weeks were similarly numbered. Continuing with the same example of a Set-sum in First Nephi, one may calculate that if weeks had been consecutively numbered, a period of 1,230 weeks would be 8,610 days or about 24.3 of the lunar astronomical years or 23.6 of the solar or tropical years mentioned in Webster's 1828 dictionary.[250] Such hypothetical periods do not appear to be attested in the text or to have any direct link to the chronology actually stated in First Nephi. A period of 8,610 days also does not appear to have any specific astronomical importance.

When Set-sums are analyzed as symbols of numbers of natural days, however, the possibility of distinct and accurate chronological meanings is suggested. This assumption—that a Set-sum (such as 1,230) represents a number of natural days—is consistent with the use of the noun *day* and its plural *days* hundreds of times in the text of the *Book of Mormon*.[251] Indeed, the words *year* and *day* and their plurals are the principal terms that describe the passing of time in the *Book of Mormon*. Furthermore, the text of the small plates of Nephi contains phrases in which a number modifies the noun *day* or *days*, but these instances occur in narratives where the numbering seems to be episodic rather than calendrical.[252] The text of the plates of Mormon indicates that consecutive days were numbered both episodically[253] and within sequentially numbered months of the Judges and NC calendars.[254] By implication, references to numbered calendrical months and days indicate that the total number of days in each calendar year was known and maintained.

If this calendrical information is applicable to the Lehi calendar that appears to have been used throughout most of the interval mentioned in the books of the small plates of Nephi, then a period of 1,230 natural days would be a fairly exact measure of 45 mean sidereal months (1229.4747 days), the time it takes the moon to return to the same place in the so-called "fixed" stars 45 times. In other words, if sidereal months were measured with natural days, a period of 45 mean sidereal months could be measured closely (within less than a single natural day) with either 1,229 or 1,230 days. This period may be related, perhaps, to Amaleki's specific mention of "nine moons" in the small plates of Nephi[255] and to one of Webster's definitions of the word *moon* as a sidereal month.[256] Nine mean sidereal months are about 245.9 days and five iterations of a nine-moon period of 246 natural days would be 1,230 days. Ten iterations of a nine-moon period composed of 246 days would be 2,460 days, but to maintain a close connection with actual sidereal months, the tenth nine-moon period would need to be measured with just 245 days because 90 mean sidereal months is about 2,458.9494 days. All of these lunar associations

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249 See Section 1.9.4 in Part 1 of this Division.

250 See Section 1.3 in Part 1 of this Division.

251 See Part 4, "The Vital Day", in Division 10 of this source book.

252 E.g., 1 Nephi preface; 2:6; 16:13; 18:13-15; 19:10; 2 Nephi 25:13.

253 E.g., Mosiah 3:10; 7:4, 8; Alma 8:6; 14:18; 17:26; Helaman 14:4, 20, 27; 3 Nephi 8:3, 23; 10:3; 26:13.

254 Mosiah 13:18; Alma 10:6; 14:23; 16:1; 49:1; 56:1, 42; 3 Nephi 8:5.

255 Omni 1:21.

256 Webster, *An American Dictionary of the English Language*, II: [147] (moon)

also may suggest that a nine-moon period might be considered a "fifth part"[257] of a period of 1,230 days. In addition, a period of 1,230 days is nearly 3.5 lunar astronomical years (about 1240.3 days) or roughly "half"[258] of a seven-year period. Webster's 1828 dictionary mentioned the last year of an Israelite seven-year period, which he referred to as the "Sabbatic year … when their land was suffered to lie untilled".[259] Since the small plates of Nephi state that $Lehi_1$ came from Jerusalem[260] and obtained a version of the then-existing Hebrew Scriptures on the brass plates,[261] the use of some sort of lunar calendar[262] for measuring a seven-year period[263] and for numbering years in the Lehi era would not have been unreasonable. Furthermore, the measurement of a lengthy period of sidereal months would suggest at least some familiarity with astronomical observations connecting the positions of the moon with some kind of visible point or pattern in the stars. Hence, the Set-context symbolized by the Set-sum 1,230 might be thought of as an interval much shorter than an era, an interval measured by natural days that suggests careful observation, numbering and record keeping regarding the apparent movement of the moon against the background of the stars.

Of course, at this point in the introduction of number-terms, these hypothetical chronological meanings that may be associated with the Set-sum 1,230 (based on lunar and stellar observations and Hebrew Scriptures) are bare speculations. To maintain rational principles of interpretation, this study cannot base its proposal regarding number-term symbolism on a single Set and its Set-sum.[264] Are there any other Set-sums in First Nephi that would bolster a decision to adopt the assumption that a Set-sum may represent a number of natural days with distinct chronological meaning?

The data in First Nephi seem to provide at least one more related example. Table 4.H indicates that a simple Set composed of all the definite and certain numbers in First Nephi may be depicted as 1, 1, 600, 8, 600. These figures represent the stated number names and the referenced ordinal number name in First Nephi (all the number-terms labeled K, L and M). The stated number names are definite and the referenced number name is certain. For this Set, the six number-terms categorized as referenced cardinal number-terms, referenced general number-terms and absent number-terms (labeled N, O and P) are ignored. The (K, L and M) Set also may be represented by the equation and Set-sum 1+1+600+8+600 = 1,210. Assuming that the Set-sum represents a period of 1,210 natural days, the chronological symbolism appears to be 41 mean synodical months (1210.7541 days), the time it takes the moon to return 41 times to the same phase (such as new moon or full moon). In other words, if synodical months were measured with natural days, a period of 41 mean synodical months could be measured closely with either 1,210 or 1,211 days. This also might be the period related to Amaleki's specific mention of "nine moons" in the small plates of Nephi[265] and to another of Webster's apparent definitions of the words *month* and *moon* as a synodical month.[266] Nine mean synodical months

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257 Mosiah 11:3.

258 Mosiah 19:15; Alma 11:15-17; 20:23; Helaman 4:10.

259 Webster, *An American Dictionary of the English Language*, II: [948] (year).

260 1 Nephi 1:4; 2:1-4.

261 1 Nephi 3:1-5:14.

262 E.g., Exodus 12:1-20; 23:16; Leviticus 23:24-25, 34-43; Numbers 10:10; 1 Samuel 20:5-6, 29; 2 Kings 4:23; Isaiah 1:14; Amos 8:5.

263 E.g., Leviticus 25:1-7; Deuteronomy 15:1-18.

264 See Part 1, "Rational Interpretation of the *Book of Mormon*", in Division 10 of this source book.

265 Omni 1:21.

266 Webster, *An American Dictionary of the English Language*, II: [147] (moon and month); [723] (synodical).

is about 265.8 days. A period of 41 synodical months is exactly one synodical month less than 3.5 lunar astronomical years or roughly half of a seven-year period measured with a lunar astronomical year. This hypothetical Set-context of 41 synodical months again would suggest careful observation, numbering and record keeping regarding the moon, but in this case focused on the phases of the moon.

The previous three paragraphs suggest a connection between the proposed Sets and Set-sums and their potential chronological meanings based on the assumption that a Set of number names, as symbolized by its Set-sum, is a chronological measurement representing a definite number of natural days. Are the potential lunar associations of the Set-sums 1,210 and 1,230 merely coincidental? Or were they intended to indicate the lunar observation undertaken by $Lehi_1$ and his followers and the lunar nature of the Lehi calendar that was measured for more than 609 years? These questions cannot be answered at this point in the study. Narrative-links, which are discussed in the next Part of this Division, have not yet even been introduced. Nor have the number-terms in the small plates of Nephi yet been thoroughly analyzed. That analysis occurs in Division 2 of this source book. Nonetheless, the notion of a lunar chronological connection suggested above, which admittedly is both uncertain and unsubstantiated at this point in the study, appears to be related to additional examples of Set-sums in other major divisions of the small plates of Nephi.

Table 4.I summarizes seven more year-related expressions and their associated textual data in the Words of Mormon and in the books of Jarom and Jacob. The Set for the Words of Mormon is a single year-related expression, a Set with only one simple number-term, “many hundred”. With just one referenced number, this Set does not involve the operation of addition. $Mormon_2$, after finishing his examination of the small plates of Nephi, engraved several statements at the very end of these plates. He entitled his engravings “The Words of Mormon”. His contextual statement of chronology, which immediately follows his title and preface, stated that “it is many hundred years after the coming of Christ”.[267] Indeed, *three* “hundred years” in the NC era had passed away before the birth of $Mormon_2$.[268] He and his people would be destroyed by the Lamanites before 400 years in the NC era had occurred.[269] The referenced cardinal number-term is easy to compute and certain. By his use of the number-term “many hundred” and the personalized time-term “after the coming of Christ”, $Mormon_2$ linked his witness and words to those mentioned in the Book of Jacob.[270] The issue now becomes the potential chronological meaning of the Set-sum 300. Does it represent a definite number of natural days with chronological meaning? Perhaps it should not be surprising that a period of 300 natural days is a close approximation of 11 mean sidereal months (300.5383 days), the time it takes the moon to return to the same place in the stars 11 times. When sidereal months are measured with natural days, a period of 11 mean sidereal months could be measured closely with either 300 or 301 days.

The simple Set for the Book of Jarom provides another example. This Set may be represented by the equation and Set-sum 200+238 = 438. Here, the operation of addition is required because the book contains two year-related expressions with stated cardinal number-terms. If it is assumed that the Set-sum represents a definite number of natural days with

[267] Words of Mormon 1:2.

[268] 4 Nephi 1:48-49; Mormon 1:1-5.

[269] Mormon 6:1-15; 8:1-6.

[270] Jacob 4:4; 7:7.

chronological meaning, then a period of 438 days would be a close approximation of 16 mean sidereal months (437.1466 days). When sidereal months are measured with natural days, a period of 16 mean sidereal months could be measured closely with either 437 or 438 days. Moreover, five iterations of a 438-day period would be 2,190 days or about 80 mean sidereal months plus four days. Perhaps more importantly, a 438-day period would represent an exact "fifth part" of six years measured with a 365-day calendar (6x365 = 2,190). $Nephi_1$ states that he "was taught somewhat in all the learning of [his] father"[271] and that his "record" on the small plates was made "in the language of [his] father, which consists of the learning of the Jews and the language of the Egyptians".[272] By the latter half of the seventh century BCE when $Lehi_1$ appears to have maintained a "house at Jerusalem",[273] two Egyptian calendars (a lunar religious calendar and a 365-day civil calendar) seem to have been in existence and in coordinated use for many hundreds of years.[274] Since $Lehi_1$ and $Nephi_1$ apparently knew "the language of the Egyptians" well enough to keep their records in that language, they might be thought to have had some acquaintance with Egyptian lunar and 365-day calendars. Thus, the two number-terms in the Book of Jarom, when combined in a Set, also might suggest the association of the Set-sum with astronomical observations and calendars regulated in accordance with the sun, moon and stars.

The Book of Jacob includes four number-terms: a stated cardinal number-term, two referenced cardinal number-terms and a referenced general number-term. The alternative Sets of definite numbers for the Book of Jacob may be represented by: the single number-term Set and Set-sum 55; the Set, equation and Set-sum 500+500 = 1,000; and the Set, equation and Set-sum 55+500+500 = 1,055. If these alternative Set-sums are assumed to represent periods of natural days, then both 55 and 1,055 appear to have close astronomical associations and the Set-sum 1,000 appears to be merely an adjunct that keeps the stated and referenced number-terms separate and makes possible the other two Set-sums. A Set-context of 55 natural days is a close measure of two mean sidereal months (54.6433 days), the time it takes the moon to return twice to the same place in the stars. When sidereal months are measured with natural days, a period of two mean sidereal months may be measured closely with either 54 or 55 days.

The second Set-sum in the Book of Jacob that exhibits a close astronomical association is 1,055. However, this association does not emphasize the moon's phases or relate the cycles of the sun to those of the moon, or the cycles of the moon to the stars. A Set-context of 1,055 days is a close measure of 12 mean sidereal periods of the planet Mercury (1055.6327 days), the time it takes the planet Mercury to complete 12 orbits in relation to the stars. When sidereal periods of the planet Mercury are measured with natural days, 12 mean sidereal periods may be measured closely with either 1,055 or 1,056 days.

The observational implications and chronological symbolism related to the Set-sum 1,055 are examined carefully in Divisions 2 and 3 of this source book. This study has much more to say on topics such as observable lunar and planetary periods, and letter patterns that seem to represent literary models for systematizing the chronology and record keeping of a culture in ways similar to horizon- and zenith-focused astronomical observations. But at least for now, the conclusion seems inescapable that the third key assumption for understanding number-terms in

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[271] 1 Nephi 1:1.

[272] 1 Nephi 1:2.

[273] 1 Nephi 1:7; 2:1-5; 10:1-4.

[274] E.g., Anthony Spalinger, "Notes on the Ancient Egyptian Calendars," *Orientalia, NOVA SERIES*, 64, No. 2 (1995): 17-32; accessed at jstor.org/stable/43076199; idem, "Ancient Egyptian Calendars: How Many Were There?" *Journal of the American Research Center in Egypt*, 39 (2002): 241-250; accessed at jstor.org/stable/40001158.

the *Book of Mormon*—the assumption that a Set-sum may represent a definite number of natural days with chronological meaning—is worth testing in the analysis of year-related expressions in Divisions 2, 3 and 4 of this source book. The detailed analysis of number-terms in those Divisions is both challenging and extensive. Before starting that analysis, however, this study must finish the introduction of its foundational concepts. Narrative-links have been mentioned and briefly defined above, but their introduction must be presented in Part 5.