

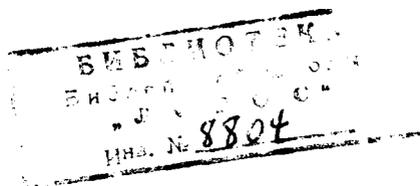
Handbook OF Biblical Chronology

*Principles of Time Reckoning in
the Ancient World and Problems
of Chronology in the Bible*

REVISED EDITION

Jack Finegan

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on the two equinoctial days of the year,¹¹⁰ and we find later that Josiah "removed the horses that the kings of Judah had dedicated to the sun, at the entrance to the house of the Lord" and "burned the chariots of the sun with fire" (2 Kgs 23:11), and that again in Ezekiel's time men stood at the door of the temple, "with their backs to the temple of the Lord, and their faces toward the east, worshipping the sun toward the east" (Ezek 8:16). After the exile, however, it was the Babylonian calendar that was the most influential in Palestine.

4. The Babylonian Calendar in Palestine

LITERATURE: Solomon **Gandz**, "Studies in the Hebrew Calendar," *Proceedings of the American Academy for Jewish Research* 17 (1947-48): 9-17; idem, "Studies in the Hebrew Calendar," *JQR* 39 (1948-49): 259-280; 40 (1949-50): 157-172; 251-277; idem, "The Calendar of the *Seder Olam*," in *JQR* 43 (1952-53): 177-192; 240-270; Elias **Auerbach**, "Die babylonische Datierung im Pentateuch und das Alter des Priester-Kodex," in *VT* 2 (1952): 334-342.

65. In the foregoing discussion of the Israelite calendar, it has been noted that the month names Abib, Ziv, Etanim, and Bul appear in the Old Testament, that these are probably the old Canaanite designations, and that in some instances the occurrences of the names is followed by an explanatory statement indicating, for example, that Ziv is the second month, Etanim is the seventh month, and so on. These numerical equivalents look as if they were added to the records at a time when the old names were no longer so commonly employed and when a different system had come into use, namely a designation of the months by number alone. Such a system is actually found elsewhere in Kings (1 Kgs 12:32, etc.), Jeremiah (1:3, etc.), Ezekiel (1:1, etc.), and many other books of the Old Testament, and all of the months from the first to the twelfth are so designated. Likewise, in the majority of the apocryphal and pseudepigraphical writings, the same system of indicating the months by number is followed.¹¹¹

66. It has also been noted that in the earlier system the months were listed from the fall, but in the new system, where the months are designated by number, the numbering begins in the spring. In addition to evidence already cited, there is a plain example of the latter usage when Jer 36:9 mentions the ninth month and the following verse 22 indicates that it was in the winter: counting from the fall, the ninth month would be in summer; counting from the spring, the ninth month would be in winter.

67. The beginning of the year in the spring is in accordance with what we have seen was the usage in Mesopotamia, and it is therefore a reasonable surmise that the new calendrical system was derived from that source. The latest contemporary use of the old Canaanite names is probably in Deut 16:1.¹¹² The book of Deuteronomy is commonly supposed to have been edited in connection

¹¹⁰Julian Morgenstern, *HUCA* 6 (1929): 16-19.

¹¹¹Morgenstern, *HUCA* 1 (1924): 19.

¹¹²Morgenstern, *HUCA* 1 (1924): 18.

with the reformation of Josiah and found in the temple in 621 B.C. (2 Kgs 22:8).¹¹³ The new system no doubt came to Jerusalem after the Babylonian conquest of the city (586 B.C.) when the Jews began to reckon years by the regnal years of the Babylonian kings (e.g., 2 Kgs 24:12).¹¹⁴

68. That the new system of months numbered from a point of beginning in the spring was really the Babylonian system is shown by the fact that the Babylonian names for the months are also found later in the Old Testament. In a number of passages in Esther and Zechariah the month is cited first by number and then by name. The months which so appear are: "the first month, which is the month of Nisan" (Esth 3:7); "the third month, which is the month of Sivan" (Esth 8:9); "the ninth month, which is Chislev" (Zech 7:1); "the tenth month, which is the month of Tebeth" (Esth 2:16); "the eleventh month, which is the month of Shebat" (Zech 1:7); and "the twelfth month which is the month of Adar" (Esth 3:7, etc.). In Ezra and Nehemiah the month is sometimes referred by number (Ezra 7:8, etc.; Neh 7:73, etc.), but in the following cases is cited by name alone: Nisan (Neh 2:1), Elul (Neh 6:15), Chislev (Neh 1:1); Adar (Ezra 6:15). The sources just cited are generally considered to be among the latest books in the Old Testament, and thus the use of these month names must have begun relatively late, perhaps from the fourth century B.C. on.¹¹⁵ The first work in which only the Babylonian names are employed is probably *Megillat Ta'anit*, the *Scroll of Feasting*. This is essentially a list of thirty-six Jewish festivals, written probably just after the beginning of the first century A.D. The book is divided into twelve chapters, corresponding to the twelve months. The first chapter treats the memorial days of the first month, Nisan, and so on to the twelfth chapter which deals with those of the twelfth month, Adar.¹¹⁶

69. The fact that the numbering of the months according to the Babylonian system came into use among the Jews before the actual month names were adopted may indicate a complex evolution,¹¹⁷ but would seem to be explicable most simply on the grounds that the numbers did not carry the associations of pagan religions which some of the names did. Thus the month Tammuz (Babylonian Duzu) bore the name of the famous dying god of Mesopotamia, wept by the women of Jerusalem to the distress of Ezekiel (8:14); and the month Elul may have meant "shouting for joy" in the celebration of the restoration to life of the same deity.¹¹⁸

70. As a result of the development just sketched, then, the list of months in use among the Jews at the end of the Old Testament period was as shown in Table 13.¹¹⁹

¹¹³Robert H. Pfeiffer, *Introduction to the Old Testament* (5th ed.; New York: Harper, 1941), 181.

¹¹⁴Bickerman in *BIBOR* 22 (1965): 184.

¹¹⁵Morgenstern, *HUCA* 1 (1924): 20.

¹¹⁶Hans Lichtenstein, *HUCA* 8-9 (1931-32): 257-351; J. Z. Lauterbach, *JE* 8: 427-428.

¹¹⁷Morgenstern, *HUCA* 1 (1924): 21.

¹¹⁸I. Abrahams, *HDB* 4: 765.

¹¹⁹PDBC 24.

TABLE 13. The Babylonian Calendar in Palestine

<i>Number</i>	<i>Babylonian Name</i>	<i>Hebrew Name</i>	<i>Julian Equivalent</i>
1	Nisanu	ניסן Nisan	Mar/Apr
2	Aiaru	אייר Iyyar	Apr/May
3	Simanu	סיון Sivan	May/June
4	Duzu	דזו Tammuz	June/July
5	Abu	אב Ab	July/Aug
6	Ululu	אלול Elul	Aug/Sept
7	Tashritu	תשרי Tishri	Sept/Oct
8	Arahsamnu	מרחשון Marheshvan, or Heshvan	Oct/Nov
9	Kislimu	כסלו Kislev	Nov/Dec
10	Tebetu	טבת Tebet	Dec/Jan
11	Shabatu	שבט Shevat	Jan/Feb
12	Addaru	אדר Adar	Feb/Mar

71. The Babylonian calendar was, as we have seen (§§ 50ff.), essentially lunisolar. The months began with the first appearing of the crescent of the new moon in the evening sky, which made months for the most part of alternately twenty-nine and thirty days in length so that twelve of these lunar months made a year of 354 days, while the intercalation of seven months in nineteen years kept the year of lunar months in close approximation to the solar year (§52). The opinion has also been noted (§61) that intercalation was practiced in Israel from the early monarchy on, and the question which now arises is whether and to what extent, along with the Babylonian numbers and names of the months (§67), the full Babylonian system of intercalation was also adopted in Palestine, and when. On the one hand, it is held that the nineteen-year cycle of the Babylonian system (§53) was only introduced among the Jewish rabbis between the fourth and seventh centuries A.D.,¹²⁰ and caution is advised in the use of calendars and astronomy for chronological purposes.¹²¹ On the other hand, there is much to make it look as if, in general, the Babylonian system came to prevail relatively early, but with some variations in Jewish practice from the Babylonian. Information (see immediately below) from the Mishna (second century B.C. to second century A.D.) reflects careful observation and not a little accurate knowledge of the relationships of sun and moon, texts from Qumran show attention to both lunisolar and solar calendars and their equivalences, and the rotation of the priestly courses also provided data for timekeeping. We may believe, therefore, that available materials, especially including the tables of Babylonian chronology (PDBC, see our §54), provide basis for high probabilities if not for complete assurance on many of the dates with which we are concerned. Further details about Jewish practice in the regulation of the calendar will appear in the sources which will be cited next.

72. In Palestine, it was the responsibility of the Sanhedrin in Jerusalem to determine matters connected with the calendar, and in practice this was done by a council of three men.

¹²⁰Wacholder and Weinberg, *HUCA* 42 (1971): 227-242.

¹²¹Roger T. Beckwith, "Cautionary Notes on the Use of Calendars and Astronomy to Determine the Chronology of the Passion," *CKC* 183-205.

73. As in Babylonia, the month began when the new moon was first seen in the evening, but since the new moon was visible at Jerusalem thirty-seven minutes before it was visible at Babylon, it was possible that upon occasion the new month would begin a day earlier than in Babylonia.¹²² The determination that the new moon had actually appeared and the declaration that the new month had thereby begun had to be made by the council just referred to, and the rules according to which this was done are presented and discussed in the Midrash in the tractate *Rosh Hashanah*.¹²³ The testimony of at least two witnesses was required to establish that the new moon had been seen. So important were the observations of these witnesses that, for the fixing of the new moons of Nisan and Tishri, the pivotal points of the year in the spring and fall, they might even exceed the travel limit of two thousand cubits on the Sabbath day to bring their report to Jerusalem.¹²⁴ In Jerusalem there was a special courtyard where the witnesses were examined and entertained. In earlier time, if they came on the Sabbath day, they could not leave this place the whole day because they had doubtless already used up their allowed travel distance, but Rabbi Gamaliel the Elder ruled that they could go two thousand cubits from it.¹²⁵ In the examination of the witnesses they were asked five questions, which were phrased so as to be understandable by ordinary observers, but which showed real astronomical knowledge on the part of the examiners: "Tell us how you saw the moon: facing the sun or turned away from it? to the north or to the south? how high was it? to which side was it leaning? and how broad was it?" The point of the second query, for example, lay in the fact that the new moon always appears due west; hence in the summer when the sun sets in the northwest the new moon is seen to the south of the sun, in the winter it is to the north of the sun.¹²⁶ More complex relationships of moon and sun are reflected in other queries. Rabbi Gamaliel II (about A.D. 80–116) had pictures of the various shapes of the moon on a tablet and on the wall of his upper chamber, and used these in the questioning of witnesses.¹²⁷ A study of *Rosh Hashanah* 2:6 and related sources concludes that, while witnesses were not required to be knowledgeable in astronomy, the examiners were able to deal with the main elements in a lunar theory, such as a solar longitude and declination, lunar longitude and elongation, latitude and declination, and parallax.¹²⁸

74. When it was determined that the new moon had been seen, the beginning of the new month was proclaimed. On the scriptural warrant of Lev 23:44 where "Moses declared . . . the appointed feasts of the Lord," this was done by the solemn declaration of the head of the Sanhedrin that the new moon was "sanctified."¹²⁹ Also, a trumpet was sounded,¹³⁰ as it is said in Psa 81:3,

¹²²PDBC 23-24.

¹²³1:3–3:1; 18z–25b; Danby 188-191; Epstein, *BT* 73–115; cf. *Sanhedrin* 1:2; Danby 382.

¹²⁴*Rosh Hashanah* 19b; Epstein, *BT* 81 n.4.

¹²⁵*Rosh Hashanah* 2:5; 23b; Epstein, *BT* 101.

¹²⁶*Rosh Hashanah* 2:6; 23b-24a; Epstein, *BT* 102f.

¹²⁷*Rosh Hashanah* 2:8; 24a; Epstein, *BT* 105.

¹²⁸Ernest Wiesenbergl, "Elements of a Lunar Theory in the Mishnah, *Rosh Hashanah* 2:6, and the Talmudic Complements Thereto," *HUCA* 33 (1962): 153-196.

¹²⁹*Rosh Hashanah* 2:7; 24a; Epstein, *BT* 104.

¹³⁰*Rosh Hashanah* 3:3; 26a; Epstein, *BT* 115.

"Blow the trumpet at the new moon." At one time flares were lighted also to signal the new month, but when the Samaritans introduced confusion by lighting misleading flares, messengers were sent out instead.¹³¹

75. While it was considered "a religious duty to sanctify [the new moon] on the strength of actual observation,"¹³² it was also recognized that conditions might be such that the actual visual sighting could not be made and, in this case, it was established that one month would have thirty days and the next twenty-nine. The month with twenty-nine days was considered "deficient" by half a day, the month with thirty days was "full," being half a day over the true lunar period. It was agreed that the year should not have less than five nor more than seven "full" months. At least in post-Talmudic times Nisan, Sivan, Ab, Tishri, Chislev, and Shevat had thirty days, and Iyyar, Tammuz, Elul, Heshvan, Tebeth, and Adar had twenty-nine. The science by which these determinations were made was known as the "fixing of the month" or as the "sanctification of the new moon."¹³³

76. In his work entitled *Sanctification of the New Moon*, Maimonides (A.D. 1135–1204) gives in chapters 1–5 a description of the way in which the calendar was anciently regulated by the Sanhedrin, and in his description of the manner of determining the new moon, he shows that calculation as well as observation was employed. Maimonides writes:¹³⁴

Just as the astronomers who discern the positions and motions of the stars engage in calculation, so the Jewish court, too, used to study and investigate and perform mathematical operations, in order to find out whether or not it would be possible for the new crescent to be visible in its "proper time," which is the night of the 30th day. If the members of the court found that the new moon might be visible, they were obliged to be in attendance at the court house for the whole 30th day and be on the watch for the arrival of witnesses. If witnesses did arrive, they were duly examined and tested, and if their testimony appeared trustworthy, this day was sanctified as New Moon Day. If the new crescent did not appear and no witnesses arrived, this day was counted as the 30th day of the old month, which thus became an embolismic¹³⁵ month.

77. It was also necessary for the same council of the Sanhedrin to determine when an intercalary month should be added to the year. There is a discussion of "the intercalating of the year" in the tractate *Sanhedrin*.¹³⁶ Here, in addition to mention of the council of three, it is also stated that "A year cannot be intercalated unless the Nasi sanctions it."¹³⁷ The Nasi was the "prince" or chief

¹³¹Rosh *Hashanah* 2:2-4; 22b-23b; Epstein, *BT* 96-100.

¹³²Rosh *Hashanah* 20a; Epstein, *BT* 81.

¹³³*E* 3: 499-SOO (Cyrus Adler); 502-503 (M. Friedländer).

¹³⁴*The Code of Maimonides*, Book Three, Treatise Eight, *Sanctification of the New Moon* (trans. by Solomon Gandz, with introduction by Julian Obermann, and astronomical commentary by Otto Neugebauer; Yale Judaica Series 11; New Haven, Yale University Press, 1956), 4-5 (1:6).

¹³⁵That is, a month containing an added day.

¹³⁶1:2; Danby 382; 10b-13b; Epstein, *BT* 42-61.

¹³⁷11a; Epstein, *BT* 47.

of the Sanhedrin, and it would appear that he might or might not be a member of the council of three. An example is given where "Rabban Gamaliel was away obtaining permission from the Governor of Syria,"¹³⁸ and as his return was delayed, the year was intercalated subject to Rabban Gamaliel's later approval.¹³⁹

78. The rabbis taught, it is stated, that "a year may be intercalated on three grounds: on account of the premature state of the corn crops; or that of the fruit trees; or on account of the lateness of the *tequfah*. Any two of these reasons can justify intercalation, but not one alone."¹⁴⁰ The minute calculations involved are referred to, and an example is given where the rabbis did not finish their calculation until the last day of the month preceding the month to be intercalated.¹⁴¹ In Babylonia, as we saw, either a second Ululu or a second Addaru might be inserted in the year, but here it is stated flatly that "only an Adar can be intercalated."¹⁴² When the intercalation took place the added month was called the Second Adar,¹⁴³ and the year with a Second Adar was a "leap" year (§39) in contrast with an ordinary year. The length of the added month was left to the judgment of the council, and it might be either twenty-nine or thirty days in length.¹⁴⁴ Leap years were frequent and fell, on average, rather more than once in three years.¹⁴⁵

79. In the same tractate letters are quoted which were sent out by Rabbi Simeon ben Gamaliel and Rabban Gamaliel II. Simeon, son of Gamaliel I and head of the Sanhedrin in the two decades before the destruction of the temple, wrote as follows: "We beg to inform you that the doves are still tender and the lambs still young, and the grain has not yet ripened. I have considered the matter and thought it advisable to add thirty days to the year." The letter of Gamaliel II differs only in that he, more modestly as the Talmud observes, associates his "colleagues" with himself in the decision of intercalation.¹⁴⁶

80. In agreement with the foregoing, Maimonides¹⁴⁷ also gives a lucid account of the process of intercalation as conducted under the Sanhedrin. Noting that the solar year exceeds the lunar year by approximately eleven days, he says that whenever this excess accumulates to about thirty days, or a little more or less, one month is added and the particular year is made to consist of thirteen months. The extra month is never anything other than an added Adar, and hence an intercalated year has a First Adar and a Second Adar. This added

¹³⁸Probably to obtain confirmation of his appointment as Nasi rather than to secure permission for intercalating the year, since it seems unlikely that the latter would have been required.

¹³⁹11a; Epstein, *BT* 47.

¹⁴⁰11b; Epstein, *BT* 49.

¹⁴¹12b; Epstein, *BT* 57.

¹⁴²12b; Epstein, *BT* 55.

¹⁴³The book of Esther was specified to be read in the month Adar, and in *Megillah* 1:4 (Danby 202) it is discussed whether, if the book has already been read in the First Adar and the year is subsequently intercalated, it must be read again in the Second Adar.

¹⁴⁴11a; Epstein, *BT* 48.

¹⁴⁵Roger T. Beckwith, *RQ* 9 (1977): 83.

¹⁴⁶11a-11b; Epstein, *BT* 47-49.

¹⁴⁷*Sanctification of the New Moon*, 1:2; 4:1-17. ed. Gandz, 4, 16-22.

month may consist of either twenty-nine or thirty days. The decision is made by the Council of Intercalation, with a minimum membership of three; if the *nasi* or chief of the supreme court was not one of them, his assent was also necessary. Continuing with his own exposition of the mathematics involved, Maimonides states that each group of nineteen years contains seven intercalated years and twelve ordinary years.¹⁴⁸ Therefore, in spite of the fact that the Jewish system used only added Adars, the result was the same as in the Babylonian system and seven months were intercalated in nineteen years.

81. Both the tractate *Sanhedrin* and Maimonides¹⁴⁹ also show that the solar year was divided likewise into four seasons or *tequfot* and into twelve signs of the zodiac (§§34–36). On the basis of a year of 365¼ days, one *tequfah* was reckoned at 91 days, 7½ hours. The four *tequfot* were: the *tequfah* of Nisan, which began at the vernal equinox when the sun enters the constellation of Aries; the *tequfah* of Tammuz at the summer solstice when the sun enters Cancer; the *tequfah* of Tishri at the autumnal equinox when the sun enters Libra; and the *tequfah* of Tebet at the winter solstice when the sun enters Capricorn.

5. The Calendar at Qumran

LITERATURE: William H. **Brownlee**, *The Dead Sea Manual of Discipline* (BASOR Supplementary Studies 10–12; New Haven: American Schools of Oriental Research, 1951); S. Talmon, "Yom Hakkippurim in the Habakkuk Scroll," in *Biblica* 32 (1951): 549–563; H. H. Rowley, *The Zadokite Fragments and the Dead Sea Scrolls* (Oxford: Blackwell, 1952); A. Jaubert, "Le calendrier des Jubilés et de la secte de Qumrân, ses origines bibliques," in *VT* 3 (1953): 250–264; D. **Barthélemy** and J. T. **Milik**, eds., *Qumran Cave I* (Discoveries in the Judaean Desert 1; Oxford: Clarendon, 1955); Millar Burrows, *The Dead Sea Scrolls* (New York: Viking, 1955); Theodor H. **Gaster**, *The Dead Sea Scriptures in English Translation* (Garden City, N.Y.: Doubleday Anchor, 1956); J. T. **Milik**, *Ten Years of Discovery in the Wilderness of Judaea* (Studies in Biblical Theology 26; Naperville, Ill.; Alec R. Allenson, 1959), 107–110; Ernst E. Ettisch, "Die Gemeinderegel und der Qumrankalender," *RQ* 9 (1961): 125–133; Roger T. **Beckwith**, "The Modern Attempt to Reconcile the Qumran Calendar with the True Solar Year," *RQ* 7 (1970): 379–396.

82. In the Jewish community at Qumran, known through the now famous Dead Sea Scrolls and probably to be identified or connected with the Essenes described in Josephus,¹⁵⁰ Philo,¹⁵¹ and Pliny,¹⁵² there was a special interest in and emphasis upon times, seasons, and the calendar. The *Manual of Discipline* (IQS) describes the members of the covenant as desiring to walk before God "perfectly in all things that are revealed according to their appointed seasons" (I, 8–9; III, 10). They are also "not to advance their times, nor to lag

¹⁴⁸*Sanctification of the New Moon*, 6:10 ed. Gandz, 29.

¹⁴⁹*Sanhedrin* 11b; Epstein, *BT* 49 and n.5; Maimonides, *Sanctification of the New Moon*, 9:2–3, ed. Gandz, 36f.

¹⁵⁰*Ant.* 18.18–22; *War* 2.119–161.

¹⁵¹*Every Good Man is Free* 75–91.

¹⁵²*Nat. Hist.* 5.15.

behind any of their seasons" (I, 14–15). Likewise the duties of the council of fifteen include "the proper reckoning of the time" (VIII, 4),¹⁵³ while the wise man is admonished "to walk . . . according to the proper reckoning of every time," "to do God's will according to all that has been revealed for any time at that time, and to study all the wisdom found with reference to the times" (LX, 12–13).

83. Again in the latter part of our copy of the same *Manual* there is a long poem in which it is told how the devout worshiper blesses God at different times and seasons. The section with which we are concerned begins as follows (LX, 26–X, 1):

With an offering of the lips he shall bless Him
During the periods which Aleph ordained:
At the beginning of the dominion of light with its circuit;
And at its withdrawal to the habitation of its ordinance.

84. Aleph is the first letter of the Hebrew word for God (אלהים, 'Elohim) and is probably used here as a somewhat mysterious abbreviation for God. The "beginning of the dominion of light" is evidently dawn. In this connection it may be noted that Josephus says it was the custom of the Essenes to offer certain traditional prayers "before the sun is up" and "as though entreating him to rise,"¹⁵⁴ and in another passage reports them as regarding the rays of the sun as "the rays of the deity" (τὰς ἀγὰς τοῦ θεοῦ).¹⁵⁵ The word "circuit" (תְּקִיפָתוֹ, *tequfato*) is the same that is used in Psa 19:6¹⁵⁶ for the circuit of the sun. The withdrawal of the light is likewise sunset, and the word (אַסַּף, 'asaf) is the same that is also used in the Old Testament for the setting of moon (Isa 60:20) and stars (Joel 2:10). Thus, sunrise and sunset were taken account of by the community as times of worship.

85. After this the poem mentions the time "when luminaries shine from the abode of holiness" (X, 2–3). The word "luminaries" (מְאֹרוֹת, *me'orot*) is the same as that translated "lights" in Gen 1:14, and the "abode of holiness" (זְבוּל קֹדֶשׁ, *zebul qodesh*) is the same as the "holy habitation" of God in Isa 63:15. According to Gen 2:14 the "lights" serve "for signs and for seasons and for days and years," and the Qumran community undoubtedly looked to the heavenly bodies for the marking out of periods of time.

86. Using the same word "seasons" (מוֹעָדִים, *mo'adim*) as in Gen 1:14, the poem next speaks of "the coming together of seasons to the days of the new moon" (X, 3). This probably means in effect, "whenever the days and nights add up to a month,"¹⁵⁷ and indicates concern with this unit of time.

87. Following this the characters mem and nun are introduced into the poem (X, 4). As seemed probable in the case of the aleph above (X, 1), there

¹⁵³Another translation, however, is simply, "in conduct appropriate to every occasion" (Gaster, *DS* 55).

¹⁵⁴*War* 2.128.

¹⁵⁵*War* 2.148.

¹⁵⁶Verse 7 in the Hebrew text.

¹⁵⁷Brownlee, *Manual of Discipline*, 39 n. 13.