

NOTES

ריבועא דנפיק מגו עגולא – A square circumscribed by a circle – Some explain the Gemara according to the opinion of the Rambam and others that one does not calculate the internal area of a round *sukka* to determine its fitness. Rather, one determines whether a square *sukka* with the requisite area could fit inside the circular one. The same is true with regard to several other *halakhot*. In certain areas of *halakha*, e.g., the *halakhot* of leprosy, a round house is not considered a house at all, or at least it is not deemed a full-fledged permanent dwelling.

כל – כל ריבועא דנפיק מגו עגולא – Every square whose sides measure one cubit, etc. – *Tosafot* proved that the measure of one and two-fifths is not precise. The actual measure is the square root of two, which is slightly more than 1.414. In addition, the ratio of the circumference of the circle to its diameter is not precisely 3:1 but is actually greater, approximately 3.141:1. The Rambam explains that since these numbers can never be calculated precisely, as they are irrational numbers, the Sages rounded them. The *Me'iri* explains that since the discussion here is with regard to measurements of actual structures, the minute difference between the precise figures and the approximations of the Sages is not significant.

הני מילי בעיגולא. אכל בריבועא – בעיא טפי.

The Gemara answers: **This applies only in the middle of the circle** that has a circumference of twelve cubits, as the diameter of the circle is four cubits; **but in order for a square** inscribed within a circle to have a perimeter of sixteen cubits, the circle **requires a circumference that is more** than twelve cubits.

מבדי פמה מרובע יותר על העיגול – רביע, בשיתסר סגי!

The Gemara asks further: **Now, by how much is the perimeter of a square** inscribing a circle **greater than the circumference of that circle?** It is greater by **one quarter** of the perimeter of the square. If that is the case, a circle **with a circumference of sixteen cubits is sufficient**. Why, then, does Rabbi Yoḥanan require a circumference of twenty-four cubits?

הני מילי בעיגול דנפיק מגו ריבועא. אכל ריבועא דנפיק מגו עגולא – בעיא טפי, משום מורשא דקרנתא.

The Gemara answers: **This statement with regard to the ratio of the perimeter of a square to the circumference of a circle applies to a circle inscribed in a square, but in the case of a square circumscribed by a circle,**ⁿ the circle **requires a greater circumference due to the projection of the corners** of the square. In order to ensure that a square whose sides are four cubits each fits neatly into a circle, the circumference of the circle must be greater than sixteen cubits.

מבדי כל אמתא בריבועא אמתא ותרי חומשא באלכסונא. בשיתסר נכי חומשי סגיא! לא דק.

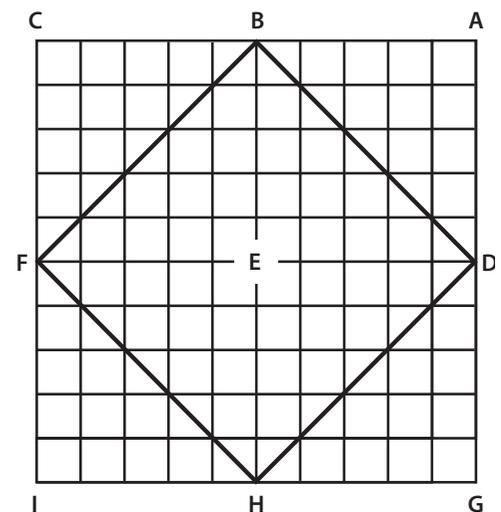
The Gemara calculates precisely how much greater the circumference must be in order to circumscribe the four-by-four-cubit square. **Now, in every square** whose sides each measure one cubitⁿ its **diagonal^b measures one and two-fifths cubits**, and in a circle that circumscribes a square, the diagonal of the square is the diameter of the circle. In this case, the circumscribed square measures four by four cubits; therefore, the diagonal of the square, which is the diameter of the circle, measures five and three-fifths cubits. Since the Gemara calculates the circumference of the circle as three times its diameter, a circular *sukka* with a circumference of **seventeen cubits minus one-fifth** of a cubit should be **sufficient**. The Gemara answers: Rabbi Yoḥanan **was not precise** and rounded the dimensions of the circular *sukka* to a number higher than the absolute minimum.

אימור דאמרין לא דק פורתא. טובא מי אמרין לא דק?

The Gemara wonders: **Say that we say that the Sage was not precise** when the difference between the number cited and the precise number is **slight**; however, when the difference is **great, do we say the Sage was not precise?** After all, Rabbi Yoḥanan stated that the minimum measure is twenty-four cubits, a difference of more than seven cubits.

BACKGROUND

ריבוע ואלכסון – A square and its diagonal – This is the proof offered by *Tosafot* for the fact that the ratio of the side of a square to its diagonal is actually greater than the ratio stated in the Gemara: The square AGIC has an area of one hundred units (ten by ten). The square BDHF is half the size of the square AGIC and so it has an area of fifty units. However, each side of this square (such as BD) is itself a diagonal; in the case of BD, it is the diagonal of the square ADEB. Since each side of square ADEB (e.g., EB) is five units long, based on the rule suggested by the Talmud, BD should measure seven units in length. If this were true, though, the area of square BDHF would be forty-nine units (seven by seven), and it was already noted that its area is fifty units. Therefore, it must be that BD is slightly longer than seven units (7.071) and so the rule provided by the Talmud is an approximation.



Calculation according to *Tosafot* of the ratio of a square to its diagonal

אמר ליה מר קשישא בריה דרב חסדא
לרב אשי: מי סברת גברא באמתא
יתיב? תלתא גברי בתרתא אמתא יתיב.
במה הוה להו – שיתסר, אן שיבסר נבי
חומשא בעינן! לא דק.

Mar Keshisha, i.e., the elder, son of Rav Hisda, said to Rav Ashi: **Do you hold that when a man sits, he sits and occupies one cubit, and consequently a sukka that seats twenty-four people must have a circumference of twenty-four cubits?** In fact, **three people sit and occupy two cubits.** The Gemara asks: **How many cubits are there in the sukka required by Rabbi Yoḥanan?** There are **sixteen cubits.** But **we require a sukka with a circumference of seventeen cubits minus one-fifth**, as calculated above. The Gemara answers: **He was not precise** and rounded the figure down to the lower whole number; actually, the required circumference is four-fifths of a cubit larger.

אימור דאמרינן לא דק לחומרא,
לקולא מי אמרינן לא דק?

The Gemara rejects this explanation: **Say that we say that the Sage was not precise** when the result is a **stringency**, e.g., he required a *sukka* whose dimensions are greater than the minimum required dimensions; however, when the result is a **leniency, do we say the Sage was not precise?** In that case, the lack of precision will lead to establishing a *sukka* whose dimensions are smaller than the minimum requirement.

אמר ליה רב אסי לרב אשי: לעולם
גברא באמתא יתיב, ורבי יוחנן מקום
גברי לא קחשיב.

Rav Asi said to Rav Ashi: **Actually, a man sits and occupies one cubit,^N and Rabbi Yoḥanan is not factoring the space that the men occupy in his calculation.^N** In other words, to this point, the assumption has been that Rabbi Yoḥanan calculated the circumference of the *sukka* required to seat twenty-four people. Actually, he merely calculated the circumference of the inner circle formed by the twenty-four people seated.

במה הוה להו – תמני סרי, בשיבסר נבי
חומשא סגיא! היינו דלא דק, ולחומרא
לא דק.

The Gemara asks: **How many cubits are there in the circumference of the inner circle formed by a circle of twenty-four people?** There are **eighteen cubits.** Based on the principle that for every three cubits of circumference there is one cubit of diameter, the diameter of a circle whose outer circumference surrounds twenty-four people is eight cubits. To calculate the circumference of the inner circle, subtract from the diameter the space occupied by two people, each sitting at one end of the diameter. The result is a diameter of six cubits. Based on the above principle, a circle with a diameter of six cubits will have a circumference of eighteen cubits. However, a circumference of **seventeen cubits minus one-fifth** of a cubit should be **sufficient.** The Gemara answers: **This is the case where he was not precise, and in this case he is not precise** when the result is a **stringency**, as instead of sixteen and four-fifths, Rabbi Yoḥanan required eighteen cubits.

רבנן דקיסרי, ואמרי לה דיני דקיסרי
אמרי: עיגולא דנפיק מגו ריבועא –
רבועא.

The Sages of Caesarea, and some say that it was the judges of Caesarea, said that Rabbi Yoḥanan's statement could be explained using a different calculation: The circumference of a **circle inscribed in a square is one-quarter less than the perimeter of the square,**

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^N גברא באמתא יתיב – Since a person occupies more space sitting than standing, the calculation of the Gemara is based on the precise formulation of Rabbi Yoḥanan's statement. He spoke of a circular *sukka* in which people are sitting, not merely a *sukka* containing twenty-four people. Here, too, the calculation of the space occupied by the average person is based on people sitting (Arukh LaNer).

He is not factoring the space that the men occupy in his calculation – מקום גברי לא קחשיב – According to this statement, this is referring to a case of one who seeks to build a *sukka* but has no tools to measure the area precisely. Therefore, he seats people in a circle to demarcate where to place the walls of the *sukka* (Penei Yehoshua).

BACKGROUND

Two craftsmen's booths – שתי סוכות של יוצרים:



Inner and outer booths

Samaritans [Kutim] – כותים: These are the descendants of the nations displaced by Sennacherib, king of Assyria, and brought to settle in Eretz Yisrael. Initially, they converted. Over time, they readopted their original religion, but continued to fulfill several mitzvot (see II Kings, chapter 17). At the beginning of the Second Temple period, during the times of Ezra and Nehemiah, relations between the Samaritans and the Jews deteriorated. Later, the Samaritans established a center of worship on Mount Gerizim, as they claimed that the sanctity of that mountain was established by one of the Ten Commandments. Consequently, there was a very real possibility that their blessings and prayers, although somewhat similar to the Jewish liturgy, might conclude in a manner antithetical to Judaism. Some generations of Jewish Sages recognized Samaritans as half-Jews. They went so far as to say: In the mitzvot that the Samaritans adopted, they are extremely exacting in their fulfillment, even more than the Jews are. Ultimately, as the Samaritans continued to distance themselves from the Jewish people in virtually every regard, they were accorded the legal status of gentiles.



Samaritan high priest with Torah scroll, 1905

ריבועא, דנפיק מגו עיגולא – פלגא. ולא היא, דהא קחוינן דלא הוי כולי האי.

אמר רבי לוי משום רבי מאיר: שתי סוכות של יוצרים זו לפנים מזו, הפנימית אינה סוכה, וחייבת במזוזה, והחיצונה סוכה, ופטורה מן המזוזה.

ואמאי? תהוי חיצונה כבית שער הפנימית, ותתחייב במזוזה! משום דלא קביע.

תנו רבנן: גנב"ד; סוכת גוים, סוכת נשים, סוכת בהמה, סוכת בותים, סוכה מכל מקום – כשרה, ובלבד שתהא מסוככת בהלכתה.

while the perimeter of a square circumscribed by a circle is smaller than the circumference of that circle by half,^N i.e., if one adds half the perimeter of the square to the perimeter of the square, that is equal to the circumference of its circumscribing circle. Therefore, a circle with a circumference of twenty-four cubits would circumscribe a square with a perimeter of sixteen cubits, as prescribed by Rabbi Yoḥanan. The Gemara notes: **And that is not the case, as we see that the circumference of the circumscribing circle is not that much.** The actual circumference is closer to seventeen cubits.

§ Rabbi Levi said in the name of Rabbi Meir: With regard to two craftsmen's booths,^B one within the other, as potters would build two booths, an inner one used as living quarters and an outer one for plying their craft and selling their wares, **the inner one is not fit for fulfillment of the mitzva of *sukka*,**^N since the potter resides there year-round and it is not evident during the Festival that he is residing there for the sake of the mitzva of *sukka*. **And since it is a permanent residence, it is also obligated in the mitzva of *mezuzah*.** **And the outer booth is fit for fulfillment of the mitzva of *sukka*,**^H since he does not reside there year-round, and when he resides there during the Festival it is evident that he is doing so for the sake of the mitzva. Since it is not designated as a year-round residence, but rather serves as an entrance to his residence and a passage for merchants and merchandise, it is not considered a residence and is **not obligated in the mitzva of *mezuzah*.**^H

The Gemara asks: **Why is the outer booth exempt from the mitzva of *mezuzah*?** **Let the outer booth be considered like a gatehouse of the inner booth and therefore be obligated in the mitzva of *mezuzah*.** The Gemara answers: It is exempt because even the inner booth is **not a permanent residence.**^N It requires a *mezuzah* because the potter resides there year-round; however, that alone does not render it a full-fledged residence that would obligate one to affix a *mezuzah* to the outer booth as its gatehouse.

The Sages taught: The booths represented by the mnemonic: *Gimmel, nun, beit, kaf*, which stands for a booth of gentiles [*goyim*], a booth of women [*nashim*], a booth of domesticated animals [*behema*], a booth of Samaritans [*Kutim*],^{BN} a booth of any sort, each is fit for use as a *sukka*, provided it is roofed in the standard sense. None of them is disqualified due to the one who constructed it or the purpose for which it was constructed.

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A square circumscribed by a circle is smaller than the circumference of that circle by half – ריבועא דנפיק מגו עיגולא פלגא: The commentaries encountered difficulty in attempting to explain the opinion of the judges of Caesarea, primarily because it is so obviously wrong, even if it is merely an approximation. Several explanations were proposed (see *Tosafot*). One explanation is that they are referring to the area of a square circumscribed by a square that in turn is circumscribed by a circle. However, that too is difficult. In any event, the *Me'iri* points out that the Gemara itself notes: We see that the circumference of the circumscribing circle is not that much larger than the perimeter of the square.

The inner one is not fit for fulfillment of the mitzva of *sukka* – הפנימית אינה סוכה: The commentaries debate the reason for

this *halakha*. According to Rashi and others, since the inner room is his permanent residence, it is not conspicuous that he is residing there in order to fulfill the mitzva. Although there is no requirement to construct the *sukka* specifically for the sake of the mitzva, there is a requirement that one reside there for the sake of the mitzva. Others explain that it is unfit because the inner room was built for residence and not for shade, and a *sukka* that is not constructed for shade is unfit (Ran; *Me'iri*).

Because it is not a permanent residence – משום דלא קביע: There is disagreement whether this statement of the Gemara is referring to the inner or the outer booth. According to Rashi and others (Rid; Ra'avad), it is referring to the inner room. The inner room is not sufficiently permanent that it would render its gatehouse, the outer room, obligated in the mitzva of *mezuzah*.

This explanation is based on their opinion that the obligation to affix a *mezuzah* in a gatehouse is by rabbinic law. According to those who disagree (Rambam; *Me'iri*) the outer room lacks permanence since the craftsman occasionally destroys and rebuilds it based on his needs.

A booth of Samaritans – סוכת כותים: Although the Gemara already mentioned a booth of gentiles, it was necessary to mention the Samaritans specifically in order to teach that their *sukka* may not be used to fulfill the mitzva, even though they build these booths for the sake of the mitzva, because they are not well versed in the *halakhot* and do not observe the mitzvot properly (see Jerusalem Talmud). Therefore, one must inspect a booth that they built to determine whether it is fit (*Emek Sukkot*).

מאי בהלכתה? אמר רב חסדא: והוא שששאה לצל סוכה.

The Gemara asks: **What is the meaning of the term: In the standard sense?** Rav Hisda said that it means: **And provided that one established the booth to provide shade of a sukka^N from its roofing, it may be used to fulfill the mitzva of sukka.**

מכל מקום לאתווי מאי? לאתווי סוכת רב"ש. דתנו רבנן: סוכת רב"ש; סוכת רועים, סוכת קייצים, סוכת בורגנין, סוכת שומרי פירות, סוכה מכל מקום – בשרה, ובכלבד שתהא מסוככת בהלכתה.

The Gemara asks: **What does the phrase: A booth of any sort, come to include?** What other booths are included in this generalization? The Gemara answers: It comes to include the booths listed in another *baraita* with the mnemonic: *Reish, kuf, beit, shin*, as the Sages taught: **The booth known by the mnemonic *reish, kuf, beit, shin*, which stands for the booth of shepherds [*ro'im*], the booth of fig driers [*kayyatim*], the booth of guards of fields [*burganin*], the booth of the guards of produce [*shomerei peirot*], a booth of any sort, each is fit, provided it is roofed in the standard sense.**

מאי בהלכתה? אמר רב חסדא: והוא שששאה לצל סוכה.

The Gemara asks again: **What is the meaning of the term: In the standard sense?** Rav Hisda said that it means: **And provided that one established the booth to provide shade of a sukka, it may be used to fulfill the mitzva of sukka.**

מכל מקום לאתווי מאי? לאתווי סוכת גב"ד.

The Gemara asks: **What does the phrase: A booth of any sort, come to include?** The Gemara answers: It comes to include the booths listed in the first *baraita* cited above with the mnemonic *gimmel, nun, beit, kaf*.

האי תנא דגב"ד – אלימא ליה גב"ד משום דקביעי, וקא תנא "מכל מקום" – לאתווי רב"ש, דלא קביעי.

The Gemara explains: **This tanna who taught and detailed the halakhot of booths of *gimmel, nun, beit, kaf* did so because the fitness of the booths of *gimmel, nun, beit, kaf* for use in fulfilling the mitzva of sukka is powerful and more obvious to him because they are permanent structures, even though their builders are not obligated in the mitzva. And he taught: Booths of any sort, to include the booths of *reish, kuf, beit, shin, which*, although they are seasonal and not permanent structures, may still be used to fulfill the mitzva of sukka.**

והאי תנא דרב"ש אלימא ליה רב"ש, דבני חייבא ננהו, ותנא "מכל מקום" לאתווי גב"ד – דלא בני חייבא ננהו.

And that other tanna who taught and detailed the halakhot of booths of *reish, kuf, beit, shin* did so because the fitness of the booths of *gimmel, nun, beit, kaf* for use in fulfilling the mitzva of sukka is powerful and more obvious to him because those who constructed the booths are obligated in the mitzva of sukka.^H And he taught: Booths of any sort, to include the booths of *gimmel, nun, beit, kaf, which*, although those who constructed them are not obligated in the mitzva, may still be used to fulfill the mitzva of sukka.

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And provided that one established the booth to provide shade of a sukka – והוא שששאה לצל סוכה: There are different opinions with regard to the meaning of the phrase: That he established it to provide shade of a sukka, as there is certainly no requirement to build it for the sake of the mitzva. According to Rashi, if the booth has fit roofing, that indicates that it was built for shade; if not, it appears that one constructed the booth

for privacy, in which case the structure would be fundamentally unfit (see *Sefat Emet* and *Arukh LaNer*). Rabbeinu Tam (cited in the *Tur*) explains that one established it to provide shade of a sukka and not that the roofing was thick like that of a house, which would render the sukka unfit. The Ran explains that it means that the sukka was built to use its shade and not to use it as a storage shed or as a permanent dwelling.

HALAKHA

סוכות שלא – Booths not made for the purpose of the mitzva – נעשו למצוה: With regard to booths constructed by those not obligated in the mitzva of sukka, e.g., gentiles, women, livestock, or Samaritans; and booths that are not permanent, e.g., those of shepherds, fig driers, guards of fields, or guards of produce, if they were roofed to provide shade, have fit roof-

ing, and were not made for another purpose, they are fit (*Magen Avraham*). Although they were built by those not obligated in the mitzva and they are not permanent, they are fit, provided that one adds to the sukka, e.g., a square handbreadth of roofing (*Bah; Mishna Berura; Shulhan Arukh, Oraḥ Hayyim* 635:1).