

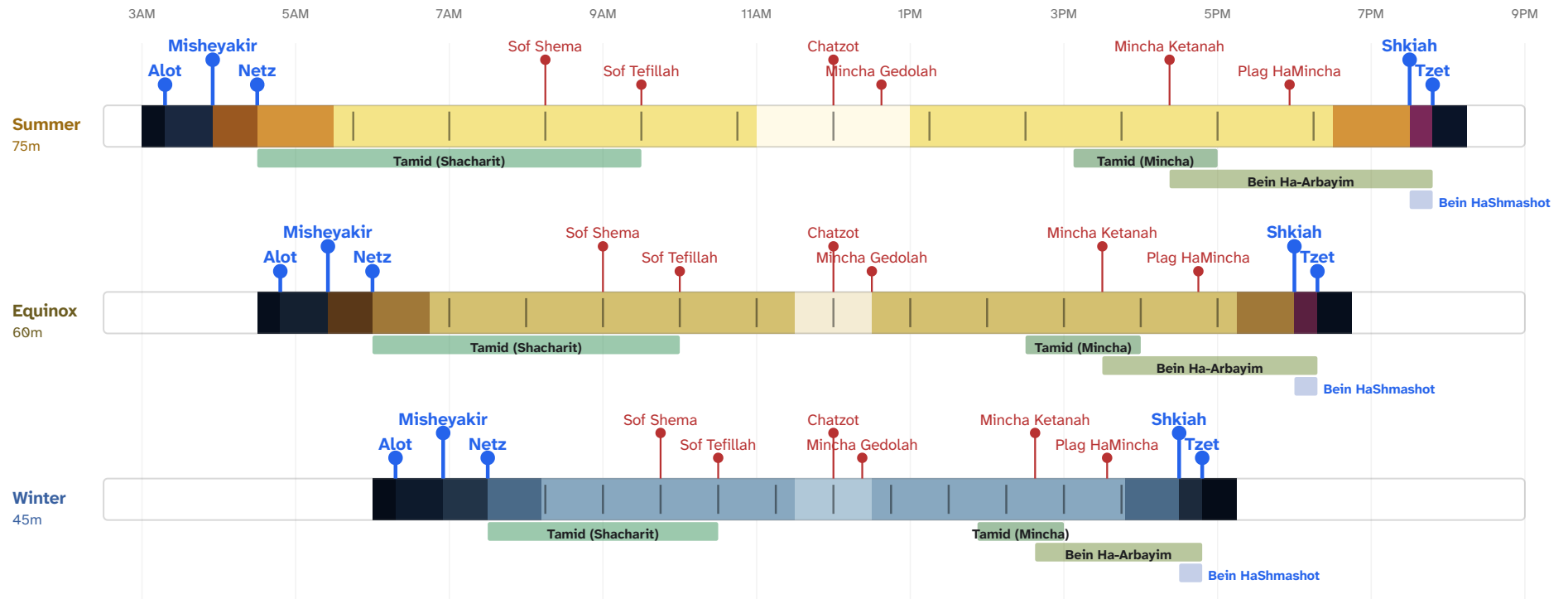
Rabbinic Time — Sha'ot Zmaniyot & Zmanim

Seasonal Timeline (~40°N)

Each band shows one full halachic day. Sun-shading reflects physical light; the 11 internal tick marks divide the sunrise–sunset interval into 12 equal sha'ot zmaniyot. Colored markers above each band locate the named zmanim; colored bars below show korban and bein-hashmashot windows. **The clock-length of a sha'ah changes with the season; the count never does.**

● Zmanim (structure of the day) ● Prayer times ■ Korban windows ■ Bein HaShmashot

Comparing: Summer · Equinox · Winter



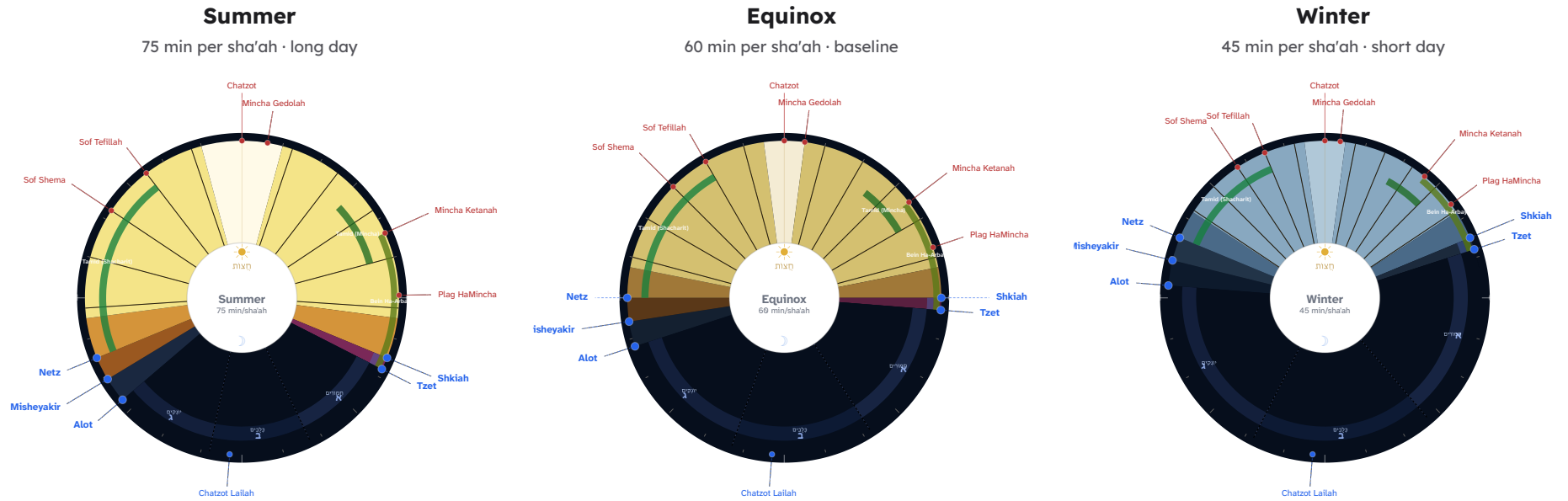
Tefillah ↔ Korban (Berachot 26b). Shacharit mirrors the Tamid Shachar window; Mincha mirrors the Tamid bein ha-arbayim; Maariv corresponds to the eivarim u'pedarim — organs left burning overnight. Each prayer's deadline is set by the closing time of its parallel korban.

Gra vs. Magen Avraham. This sheet uses the **Gra method** — sha'ot measured from *Netz* (sunrise) to *Shkiah* (sunset). The Magen Avraham method instead spans from *Alot HaShachar* to *Tzet HaKochavim*, shifting all derived zmanim earlier by roughly the duration of dawn twilight.

TERM / ZMAN	WHEN (EQUINOX)	NOTES
ZMANIM — STRUCTURE OF THE DAY		
Alot HaShachar <i>rising of the dawn</i>	עלות השחר 4:48 AM · ~72 min before Netz	First trace of light on the eastern horizon. Day begins for some korbanos. Earliest b'dieved Shacharit. Yoma 28b: 'amud hashachar.' The 72 vs 90 min debate is based on walking distance of 4 mil before sunrise.
Misheyakir <i>"when one can recognize"</i>	משׁיכיר 5:25 AM · ~35 min before Netz	Light sufficient to distinguish techelet (blue) thread from white in tzitzit, and to recognize a friend at arm's length. Earliest time for tallit and tefillin (most Poskim). Varies by season and latitude.
Netz HaChama <i>sunrise</i>	נץ החמה 6:00 AM · sha'ah 0	Start of the halachic day. All 12 sha'ot zemaniyot measured from here. Preferred (vatikin) time for Shacharit Amidah — completing the Amidah at the first ray of sunrise (Berachot 9b).
Shkiah <i>sunset</i>	שקיעה 6:00 PM · sha'ah 12	End of the halachic day. Shabbat and Yom Tov begin. R. Tam distinguishes shkiah rishona (disc disappears) from full darkness (~50 min later); most Rishonim follow the Geonim and hold twilight begins from this moment.
Bein HaShmashot <i>"between the suns" — uncertain twilight</i>	בין השמשות 6:00 PM – 6:18 PM (13–72 min; disputed)	Uncertain boundary between day and night — treated stringently as both simultaneously. Cannot do melachah; cannot yet make Havdalah. R. Yose (Shabbat 34b): 'like the twinkling of an eye.' Geonim: ~18 min after Shkiah. R. Tam: ~50–72 min. This is the core of almost every Shabbat-ending question.
Tzet HaKochavim <i>"emergence of the stars"</i>	צאת הכוכבים 6:18 PM · ~18 min after Shkiah (Geonim); R. Tam: ~50–72 min	Definitive nightfall; 3 medium stars visible. Shabbat ends; Havdalah recited; Maariv valid. The Geonim vs R. Tam dispute is fundamentally a dispute about when Tzet occurs.
Chatzot Lailah <i>halachic midnight</i>	חצות הלילה 12:18 AM · midpoint of night	Exactly 6 night sha'ot after Tzet. Night sha'ot span Tzet to Alot, divided into 12 equal parts — their duration differs from daytime sha'ot. The Exodus plague struck at midnight (Shemot 12:29). Tikun Chatzot recited here.
Ashmorot <i>night watches</i>	אשמורות Night divided into 3 watches (Talmud) or 4 (Roman)	Berachot 3b: R. Eliezer — at each of the 3 watch transitions God mourns the Temple, with a sign for each: (1) donkeys bray, (2) dogs howl, (3) a nursing child wakes. David rose at the last watch for Tehillim. R. Yosi: 4 watches (Roman military reckoning).
Erev <i>"evening" / "eve"</i>	ערב Broadly: afternoon through sunset; "erev X" = eve of X	Torah term for the pre-night transition. Since the halachic day begins at night (Bereishit 1: vayehi erev, vayehi voker), 'erev Shabbat' = Friday afternoon, 'erev Pesach' = 14 Nisan afternoon. Underlies preparation laws for Shabbat and Yom Tov.

TERM / ZMAN	WHEN (EQUINOX)	NOTES
PRAYER TIMES		
Sof Zman Shema <i>deadline for morning Shema</i>	9:00 AM · sha'ah 3 סוף זמן שמע	Latest time to fulfill the Torah obligation of morning Shema (Berachot 9b). After this: recited without a beracha. B'dieved until Sof Tefillah (sha'ah 4). Set at sha'ah 3 because Shema must be said before 'the third hour when kings arise.'
Sof Tefillah <i>deadline for Shacharit Amidah</i>	10:00 AM · sha'ah 4 סוף תפילה	Latest time for Shacharit Amidah (Berachot 26a-b). Directly mirrors when the Tamid Shachar had to be completed — the tefillah window is derived from the korban window. After this: Shacharit is missed; make-up (tashlumin) with first Maariv is possible.
Chatzot <i>halachic noon</i>	12:00 PM · sha'ah 6 חצות	Midpoint of the halachic day. Latest time to offer Korban Pesach (Rambam). Tachanun omitted after Chatzot. Earliest Mincha = Mincha Gedolah (half sha'ah after this).
Mincha Gedolah <i>earliest Mincha</i>	12:30 PM · sha'ah 6½ מנחה גדולה	Earliest valid time for Mincha Amidah — half a sha'ah after Chatzot. Corresponds to when the afternoon Tamid first became valid to offer. R. Yochanan: Mincha Gedolah is preferable in some respects (Berachot 29b).
Mincha Ketanah <i>preferred Mincha time</i>	3:30 PM · sha'ah 9½ מנחה קטנה	Preferred (l'chatchila) time for Mincha Amidah. Berachot 6b: 'One who davens Mincha Ketanah — Eliyahu the prophet answered him.' Corresponds precisely to when the Tamid bein ha-arbayim was ideally slaughtered (Pesachim 58a).
Plag HaMincha <i>portion of the afternoon</i>	4:45 PM · sha'ah 10¾ פלג המנחה	¾ through the last sha'ah. Latest Mincha (R. Yehuda, Berachot 27a); earliest Maariv (same opinion — cannot hold both at once). Many communities begin Kabbalat Shabbat at Plag on Friday night.
KORBANOT — TEMPLE OFFERING WINDOWS		
Bein Ha-Arbayim <i>"between the two evenings"</i>	3:30 PM – 6:18 PM (start disputed) בין הערבים	Torah term (Shemot 12:6; 29:39) defining when to bring: Tamid shel bein ha-arbayim, Korban Pesach, Menorah lighting, Shabbat candle lighting. Start-time dispute: Rashbam — 'two evenings' = (1) sun begins to decline → sunset, (2) sunset → full dark. Rambam: any visible post-noon decline. Most Acharonim: from ~Mincha Ketanah.
Tamid Shachar <i>morning daily offering</i>	6:00 AM – 10:00 AM (Netz – sha'ah 4) תמיד של שחר	Whole-burnt offering slaughtered after Netz and fully offered by sha'ah 4 — hence Sof Tefillah is sha'ah 4. On erev Shabbat / erev Pesach: slaughtered at sha'ah 7 to clear the mizbeach for Korban Pesach (Pesachim 58a). Shacharit Amidah window corresponds to this offering window (Berachot 26b).
Musaf <i>additional offering</i>	Shabbat/Yom Tov/Rosh Chodesh — after Shacharit, ideally before sha'ah 7 מוסף	Additional korban on Shabbat, Rosh Chodesh, Yom Tov, and Chol HaMoed, beyond the Tamid. Brought after Shacharit; ideally before sha'ah 7. The Musaf Amidah corresponds to this offering. Missed Musaf cannot be made up (Berachot 28a, R. Yochanan).
Tamid Bein HaArbayim <i>afternoon daily offering</i>	2:30 PM – 4:00 PM (sha'ot 8½–10) תמיד של בין הערבים	Slaughtered at sha'ah 8.5; offered by sha'ah 10. On erev Shabbat / erev Pesach: slaughtered at sha'ah 7.5. Mincha Amidah window corresponds to this offering (Berachot 26b). Mincha Ketanah (sha'ah 9.5) mirrors the ideal slaughter time (Pesachim 58a).
Korban Pesach <i>Passover offering — 14 Nisan only</i>	14 Nisan, bein ha-arbayim — after Tamid BA, through sunset קרבן פסח	Slaughtered 14 Nisan bein ha-arbayim (Shemot 12:6). Three groups cycled through the Azarah (Pesachim 64b). The Bein Ha-Arbayim start-time dispute directly determines when Pesach shechita could begin. Special erev Pesach schedule: Tamid Shachar at sha'ah 7, Tamid BA at sha'ah 7.5, then Pesach groups through bein ha-arbayim.

Noon at top of each circle, midnight at bottom; the day rotates clockwise. Sky colors reflect physical light at that moment; outer-ring tick marks are clock hours, inner-ring radial lines are the 12 sha'ot zmaniyot. Outer arcs flag halachic windows: **Tamid windows**, **Bein Ha-Arbayim**, and the **Bein HaShmashot** twilight. The inner ring shows the three night watches (Berachot 3b — donkeys, dogs, nursing children). *Larger single-season versions follow on the next three pages.*

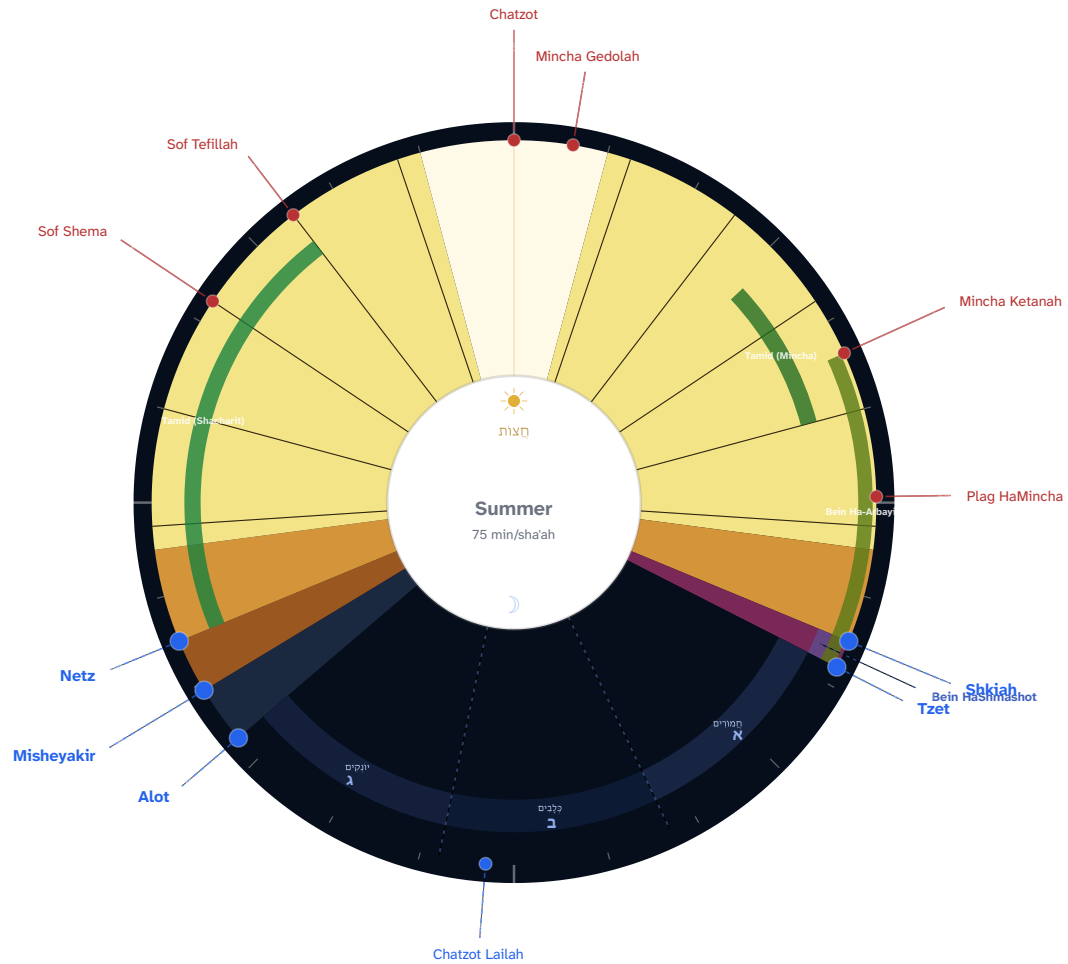


- Zmanim time-points
- Prayer times
- Korban windows
- Night watches (3)

24-Hour Clock — Summer · 75 min per sha'ah

LONG DAY · DAYLIGHT ~15 HOURS · THE BRIGHT BAND DOMINATES

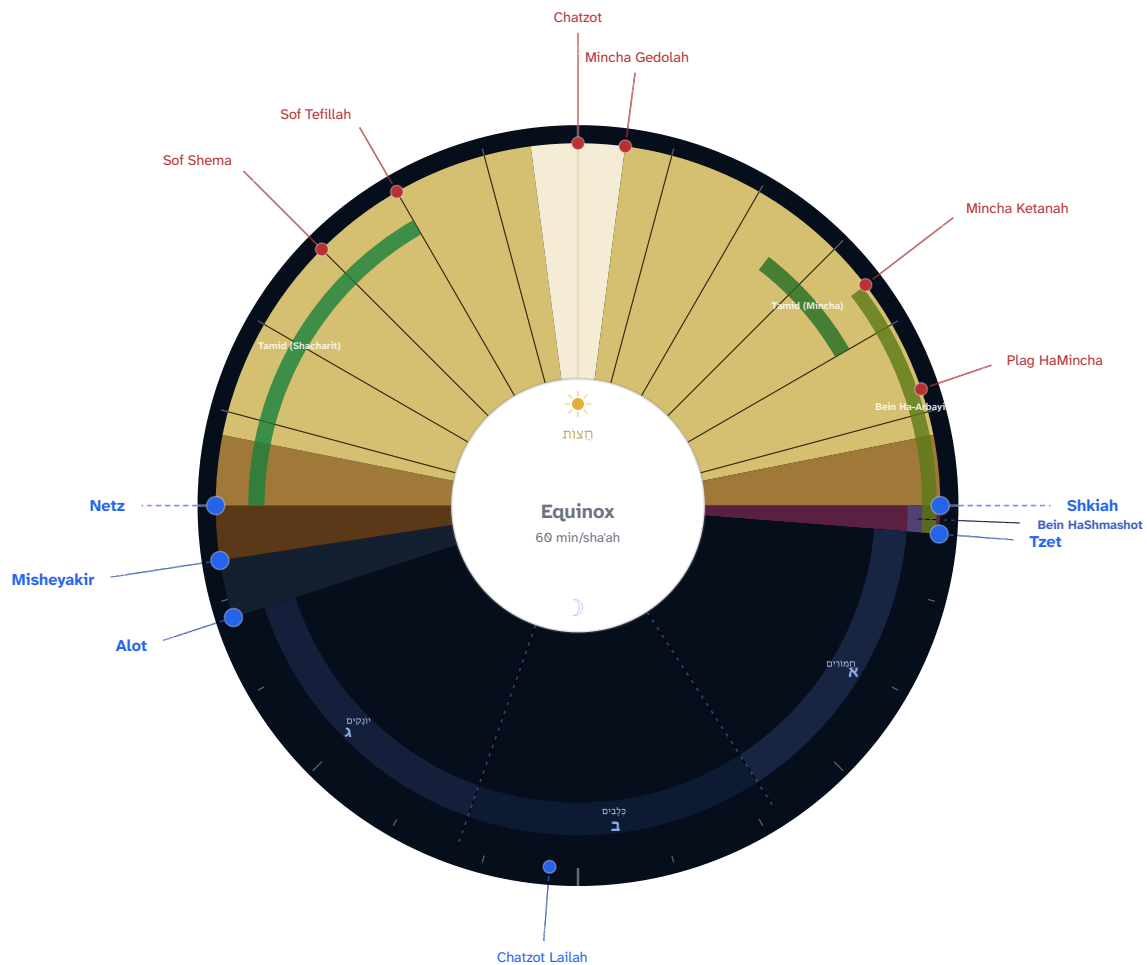
Daytime stretches from ~4:30 AM to ~7:30 PM at 40°N near the summer solstice. Each sha'ah zmanit runs about 75 clock-minutes — so afternoon zmanim like Mincha Ketanah and Plag fall significantly later in clock time than at equinox. Note how Shkiah and Tzet cluster tightly at the bottom-right of the circle: in summer the twilight gap is short.



24-Hour Clock — Equinox · 60 min per sha'ah · baseline

DAY EQUALS NIGHT · THE ONLY TWO DAYS A YEAR CLOCK-TIME MATCHES HALACHIC-TIME

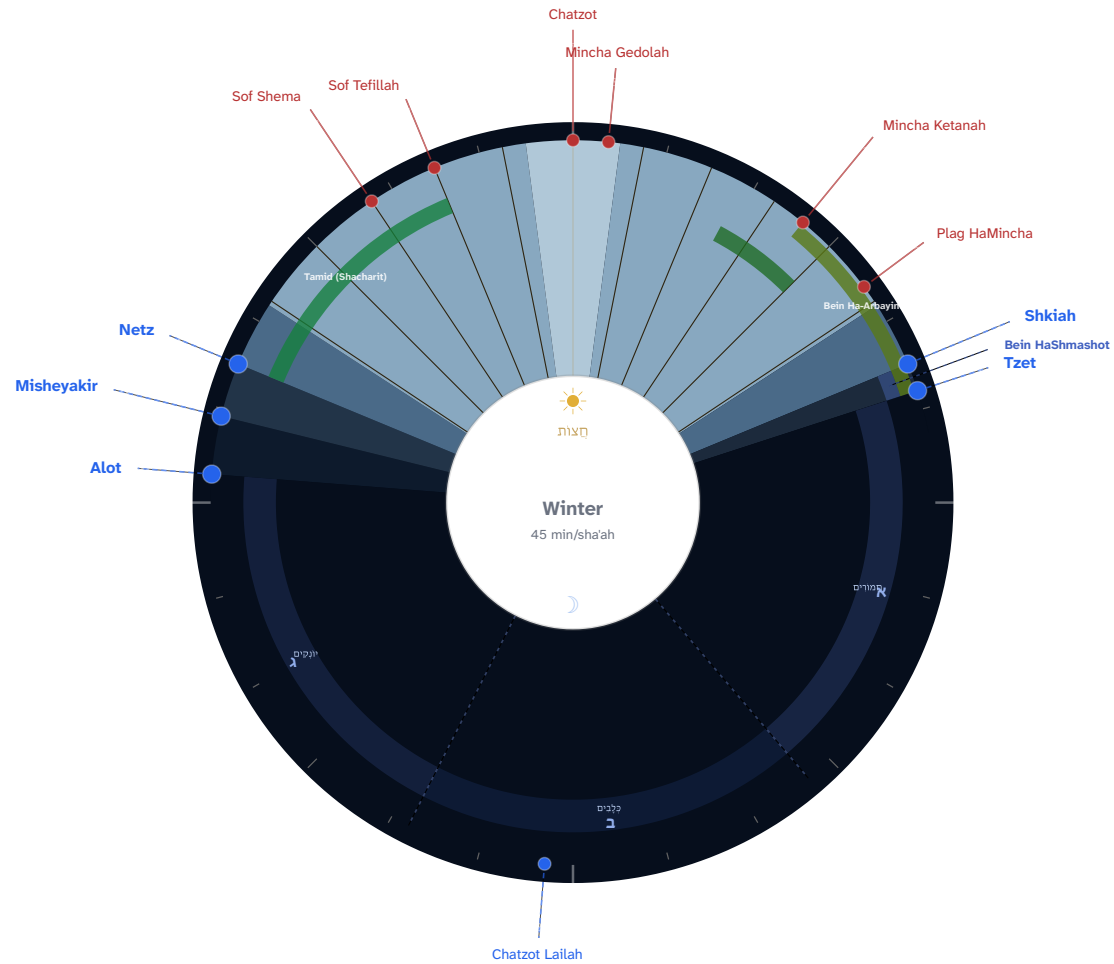
On the spring and fall equinoxes, daylight is exactly 12 hours, so a sha'ah zmanit equals exactly 60 clock-minutes. This is the one configuration of the day where halachic and civil hours coincide — every other day of the year, the count stays fixed at 12 sha'ot but the clock-length flexes.



24-Hour Clock — Winter · 45 min per sha'ah

SHORT DAY · DAYLIGHT ~9 HOURS · THE DARK BAND DOMINATES

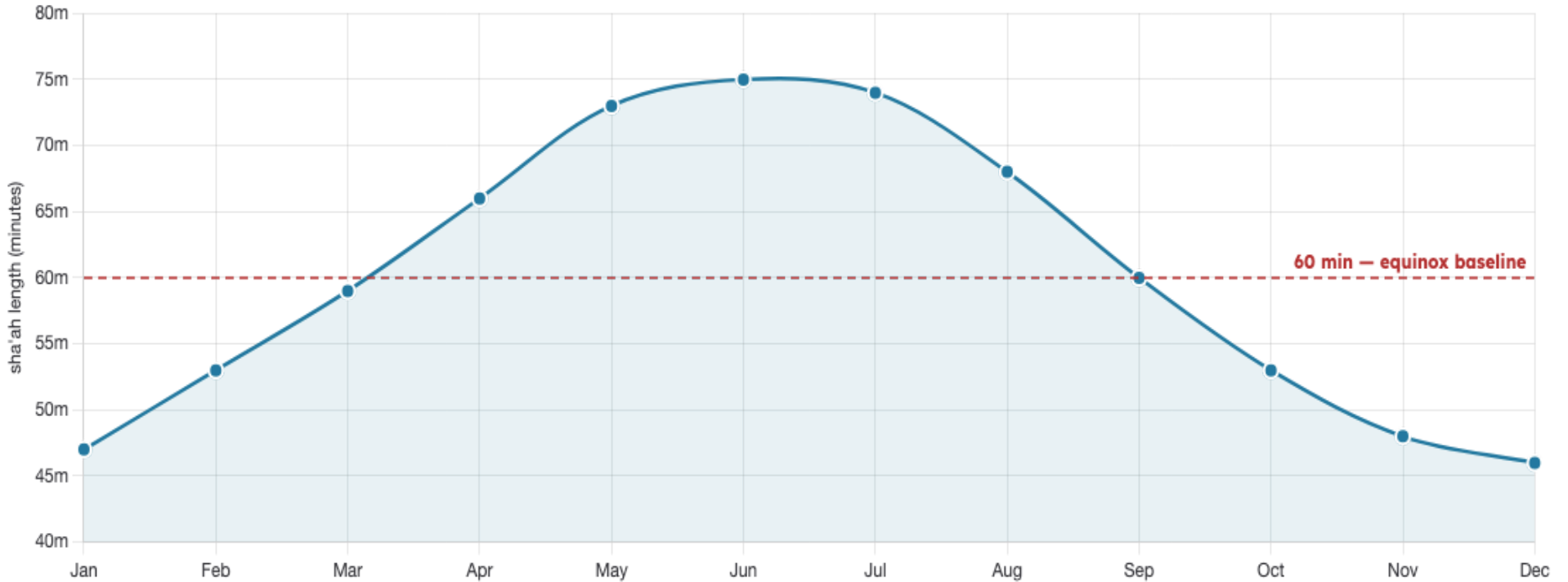
Near the winter solstice at 40°N, daylight runs only ~7:30 AM to ~4:30 PM. Each sha'ah zmanit is just ~45 clock-minutes, so morning zmanim arrive earlier in the day relative to sunrise and Mincha Ketanah falls in early afternoon. The overall structure of the day — 12 sha'ot from sunrise to sunset — is unchanged; only the clock-time per sha'ah contracts.



Sha'ah Duration by Month

~40°N LATITUDE · GRA METHOD (SUNRISE → SUNSET)

A sha'ah zmanit is one twelfth of the daylight interval, so its clock-length expands and contracts with the seasons. The dashed line marks the **equinox baseline** of exactly 60 minutes — the only two days a year a halachic hour equals a clock hour.



Key insight. Summer noon-hour \approx 75 min, winter \approx 46 min — a swing of roughly half an hour at 40°N. Closer to the equator the swing is smaller; closer to the poles it grows dramatically. All twelve sha'ot together always span exactly sunrise \rightarrow sunset, no matter what time of year it is.

Practical consequence. Time-bounded mitzvot anchored to a sha'ah-count (Sof Shema, Sof Tefillah, Mincha Ketanah, Plag) shift by clock time across the year even though their halachic count stays put. Latest morning Shema can be as early as \sim 8:50 AM in deep winter or as late as \sim 10:15 AM in midsummer, while always remaining at the close of the third sha'ah.