

HEJAZI UNITS OF MEASUREMENT

WEIGHTS

The system of weights is built around three families of units: seed-based units (grain weights), precious metal units (silver → gold), commercial units (grain, dates, spices, oils, and bulk goods).

7th Century Arabian Units Of Weight				
Unit	Derivation	Grains / Uqiyyah	Type	Metric
Grain		1	Fine Weight	0.048 g
Barleycorn	2 grains	2	Fine Weight	0.096 g
Qirāṭ	3⅓ barleycorns	6 2/3	Fine Weight	0.195 g
Mithqāl	24 qirāṭ	160	Fine Weight	4.25 g
Dirham	1 dirham = 0.7 mithqāl = 2.975 g		Silver Weight	2.975 g
Dinār	1 dinār = 1 mithqāl of gold = 4.25 g		Gold Weight	4.25 g
Dirham / Dinar	10 dirhams = 7 mithqāls		Coinage	
Uqiyyah (ounce)	12 dirhams = 1 uqiyyah (ounce)	1	Bulk Weight	31.7 g
Nisṭ	2 uqiyyah	2	Bulk Weight	63.4 g
Wuqiyyah	40 dirhams	3 1/3	Bulk Weight	119 g
Ratl (Pound)	128 dirham, roughly the weight of Water in a drinking cup (pint)	10 2/3	Bulk Weight	381 g
Mann	2 ratl	24	Bulk Weight	762 g

DISTANCES / LENGTH

Anthropometric System of measurement based on human proportions.

7th Century Arabian Units Of Length				
Unit	Derivation	Isba'	Long Dhirā'	Metric
Isba' (Finger)	Width of a thumb	1	1/32	2 cm
Qabḍah (Palm)	Width of palm	4	1/16	8 cm
Shibr (Handspan)	Span From Thumbtip to Little Fingertip	6	3/16	12 cm
Qadam (Foot)	Length of foot	16	1/4	32 cm
Dhirā' al-yad (Hand Cubit)	Elbow → wrist	24	3/4	48 cm
Dhirā' (Cubit)	Elbow → fingertip + palm	32	1	64 cm
Qāmah (Fathom)	Arm-span fingertip → fingertip	96	3	1.9 m
Qaşbah (Cane)	6 long dhirā'	192	6	3.8 m
Mil (Mile)	4000 long dhirā'	128,000	4,000	2.6 km
Farsakh (League)	Distance a horse can cover in an hour	384,000	9,000	5.8 km
Marḥalah	Distance a caravan travels without water	(varies by region)		10 - 12 km
Barid	Distance a camel travels in a day	(varies by region)		23 km
Ubqa	Distance a pilgram travels in a day	(varies by region)		40 km

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AREA

7th Century Arabian Units Of Area				
Unit	Derivation	Square Isba'	Dhirā' murabba'	Metric
Isba' (Finger)		1		4 cm ²
Shibr murabba'	Square Shibr	36	1/16	144 cm ²
Dhirā' murabba'	Square Cubit	576	1	0.23 m ²
Qaşaba	Rope Measure of 6 cubits	36,864	36	14.7 m ³
Jarib	Agricultural Area		3,600	0.23 ha

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VOLUME

7th Century Arabian Units Of Volume Varying By Region					
Unit	Derivation	Mudd	Type	Metric	
Mudd	Double Handful	1	Dry Volume	1.1	L
Kayl	Wholesale grain volume	2	Dry Volume	2.1	L
Sā'	Bushel = 1 camel load of grain	4	Dry Volume	4.2	L
Faraq	3 Sā'	12	Dry Volume	12.6	L
Wās	Camel Load = 60 Sā'	240	Dry Volume	252	L
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CAMEL LOAD (HIML)

Note that a *himl* is a **capacity**-based weight that can apply to either weight or volume since it is based on what a camel can carry, and since camels varied in strength, it was a standardized trade load based on the average camel – i.e. not the full camel load.

In terms of dry volume, a *himl* = 6 - 12 *sā'* or 25 - 50 L (25 - 50 kg), the variance being due to wet or dry volume affecting density of a volume of bulk goods (e.g. grain). A *himl* of water was 31 – 36 kg, depending on the container.

Caravan masters would factor in hauling distance when loading camels, e.g. 80 – 100 kg for comfortable long distance travel, 120 – 150 kg for short hauls. Generally, a standard trade load was factored as 12 *sā'* of commodity and a camel carried a *himl* on each side (2 per side for short distances only) as well as a top load that was typically caravan related (tents, tools, food).

When packing mixed loads, caravan masters would often use tally boards to determine loading and factor in the density of goods so that each animal had a balanced load to within 10% weight on each side (particularly important when traversing deep sand or steep terrain). Crossing the Sarawat might require a reduction in load by up to 20% and deep desert travel required more water to be carried.

Some goods were packed by weight, others by volume, so balancing was tricky. Some camels were also lightly loaded so that they could be used as scouts to investigate uncertain terrain in advance of the main caravan. Generally, the camels were kept loaded when the caravan stopped for the night to avoid having to reload in the morning and to prevent theft. Keeping the load on the camel also reduced stress on the camel's joints and shoulders.

An example tally sheet might look like:

- Grain: 2–3 *himl* per camel
- Dates: 3–4 *himl* per camel
- Water: 2 skins (≈ 2 *himl*)
- Spices: 150–250 *ratls*
- Mixed loads: 1–2 *himl* + *ratls*

Camel # 1 (short haul) – 2 *himl* grain, 1 *himl* dates, 1 waterskin, 40 *ratl* spices

Camel #20 (long haul) – 200 *ratl* incense , 30 *uqiyyah* perfume, 3 bundles silk

CALENDAR

The Pre-Islamic Arabian calendar was a lunisolar system featuring twelve lunar months of 29 or 30 days each, 354- 355 days in a common year, with periodic intercalation to align it with the solar cycle of about 365 days. This adjustment, known as *nasī'*, inserted an extra month roughly every two to three years, following a cycle influenced by Jewish calendrical practices, to prevent seasonal drift and support the timing of crops and trade. The declaration of *nasī'* occurred at the annual fair of 'Ukāẓ near Mecca.

The twelve months were named largely based on nomadic patterns for pasturage and rituals.

1. al-Muḥarram = "the forbidden," a sacred month
2. Ṣafar = "the empty" because dwellings emptied during migrations,
3. Rabī' al-Awwal = "First Spring", onset of the grazing season
4. Rabī' al- al-'Ākhir = "Last Spring"
5. Jumādā al-Ūlā = "First Dry Period" because of scarcity of water (frozen in the high plains, parched along the coast)
6. Jumādā al-'Ākhirah = "Last Dry Period"
7. Rajab = "the exalted", another sacred month for *Umrah* (pilgrimage to lesser sites)
8. Sha'bān = "the scattered", tribes scattering in search of water sources or embarking on expeditions
9. Ramaḍān = "intense heat", related to intense heat making activity difficult (unrelated to pre-Islam fasting)
10. Shawwāl = "raised", referring to camel humps raising as they prepared for winter
11. Dhū al-Qa'dah = "the sitting month", referring to the cessation of warfare
12. Dhū al-Ḥijjah = "pilgrimage month", centered on *haji* pilgrimage to sacred sites

Four months (al-Muḥarram, Rajab, Dhū al-Qa'dah, and Dhū al-Ḥijjah) were designated as *ḥurum* (sacred), during which war was prohibited to enable safe *hajj* (pilgrimage) to the Kaaba in Mecca and regional fairs like those at Dhu al-Majaz and 'Ukāẓ. The annual pilgrimage to the Kaaba pre-dated Islamic tradition.

Winter was determined by the constellations of Aquarius and Pisces, marking the onset of cooler weather and early rains needed for pasture migration. Spring corresponded to Aries and Taurus, signaling renewed growth and changes in pasturing among the high desert tribes. Summer aligned with Gemini through Leo, bringing intense heat and drought, requiring water management. Autumn was Virgo through Capricorn, ushering in harvest periods and preparations for the rainy season ahead.

The calendar incorporated a 7-day week, adopted from Jewish and Syrian traditions. Each day named numerically following the Sabbath rest day

1. al-ʿAwwal or al-ʿAḥad (the first day, corresponding to Sunday)
2. al-ʿIthnayn (the second day),
3. al-Thalāthāʾ (the third day),
4. al-ʿArbaʿā (the fourth day),
5. al-Khamīs (the fifth day),
6. al-ʿArūbah or al-Jumʿah (the sixth day, denoting a gathering or assembly day),
7. al-Sabt (the seventh day, from Hebrew *Shabbat* for the Sabbath).

These days held cultural importance beyond mere chronology, often tied to omens, markets, and rituals; for instance, al-Jumʿah was also associated with communal assemblies in poetry.

TIME

Instead of 24 equal hours, the day and night were divided into distinct stations / phases based on the position of the sun and the changing light.

Daytime Stations (based on sun)

The daylight was generally divided into roughly 12 shifting periods, including:

1. Şubḥ : Early Morning Light, The world regains color; birds begin calling.
2. Al-Shurūq : Sunrise, when the rim of the sun clears the horizon.
3. Al-Bukūr : Early Morning, the cool hour when shepherds and merchants start moving.
4. Al-Duḥa (الضحى): Forenoon, a time for business when the sun is fully risen but the heat is still bearable.
5. Al-Hājirah : Late-Morning Heat, the heat is harsh, animals rest, travelers seek shade.
6. Al-Zahīrah : High noon, the peak of the heat when the sun is directly overhead and shadows disappear. In the Hejaz, all activity stops for *Qaylulah* (midday siesta).
7. Al-Rawāḥ : Early Afternoon, heat starts to ease slightly, people resume movement.
8. Al-Asr : Late Afternoon, when an object's shadow becomes equal to its length.
9. Al-Qaṣr : Declining Afternoon, suns' intensity fades, everything takes on an amber tone.
10. Al-Aṣīl : Golden Hour, long shadows, beautiful light, sky turns honey-colored.
11. Al-ʿAshī : Dusk, sun approaches the horizon, birds quiet, air cools rapidly.
12. Al-Ghurūb : Sunset, sun disappears, horizon glows. Official end of daytime.

Nighttime Phases (based on stars)

Night was equally segmented because desert travel often happened after dark to avoid the blistering sun. They used the passage of stars to know time at night to within minutes.

1. Al-Shafaq : Twilight, the fading red glow after sunset.
2. Al-Ghasaq : Nightfall, the moment when darkness settles after twilight, sky is black.
3. Awwal al-Layl : Early Night, people settle indoors.
4. Al-‘Atmah: The first third of the night, when total darkness settles and stars brighten.
5. Sadafah / Sadaf : Mid-Dark, the night reaches full depth; ideal for stargazing; caravans may travel to avoid heat, using stars for navigation.
6. Huj‘ah : First Sleep, the earliest sleep cycle; associated with vulnerability and dreams.
7. Al-Hazy‘ al-Awwal : First Watch, the first formal “watch” of the night; guards and shepherds rotate duties. Marked by *al-Thurayyā* (Pleiades) rising in the eastern sky after dusk.
8. Al-Hazy‘ al-Thānī : Second Watch, the midpoint of the night; the world is at its quietest. Marked by al-Jabbār (Orion’s belt) reaching the meridian (directly overhead).
9. Al-Hazy‘ al-Thālith : Third Watch, the night begins its slow turn toward dawn; temperatures drop sharply. Marked by *al-Suhayl* (Canopus) rising in the southeast, one of the brightest stars in the sky.
10. Al-Hazy‘ al-Ākhir : Final Watch, the last watch; travelers prepare to move; animals stir. Marked by *al-‘Ayyūq* (Capella) descending toward the western horizon.
11. Al-Sahar : Pre-Dawn, just before the false dawn. A time for packing camp and starting early morning marches.
12. Al-Fajr : Dawn, the very first breaking of light and the official end of night.