

Secrets of Noah's Ark

Handout for Class 1: Introduction to Noah's Ark

A. Key verses about Noah and the Ark, with explanations by Rashi.

These give us a more accurate and deeper understanding of the situation and events in that part of history.

(a) The first mention of Noah (Gen. 5:28-32):

28. And Lamech lived **a hundred and eighty-two years**, and he begot a son.

29. And he named him Noah, saying, "**This one will give us rest from our work and from the toil of our hands from the ground**, which the L-rd has cursed."

*Rashi explains: **This one will 'give us rest':** (in Hebrew *yenachameinu*, from which comes his name in Hebrew, *Noach*) {Lemach prophesied:} He {Noah} will give us rest from the toil of our hands. Before Noah came, they did not have plowshares, and he prepared [these tools] for them. And the land was producing thorns and thistles when they sowed wheat, because of the curse of the first man (Adam), but in Noah's time, it [the curse] subsided. This is the meaning of *yenachameinu*. [i.e., If we explain the word according to its apparent meaning, "this one will console us," the child should have been called *Menachem*, the consoler.]*

30, 31. And Lamech lived ... and he died. {No mention of anything about Noah!}

32. And Noah was **five hundred years old**, and Noah begot Shem, Ham, and Japheth.

*Rashi explains: **five hundred years old:** Said Rabbi Judan: "What is the reason that all the generations begot children at [the age of approximately] one hundred years and this one [Noah, had children] at [the age of] five hundred years? Said the Holy One, blessed be He, 'If they [his children] are wicked, they will perish in the [flood] water, and it will be bad for this righteous man, and if they are righteous, I will have to burden him with making many arks.' He {G-d} closed his fountain {Noah's ability to father children}, and he did not beget [children] until the age of five hundred years, so that Japheth, his eldest son, should not be liable for punishment before the Flood, as it is written (Isaiah 65:20): 'For the youth who is one hundred years old shall {in the future} die.' [This means: at the age when he] will be liable for punishment in the future {the age of legal maturity in the first phase of the Messianic Era, before the Resurrection, when the human lifespan will be much longer}, and so it was before the giving of the Torah." - [Gen. Rabbah 26:2]*

Note: the Torah skips 500 years of Noah's life, until he began to father children at the age of 500. Rashi explains why G-d kept him from having children until then. Building the Ark (or any number of Arks) to save any righteous people at that time was a spiritual task that was uniquely connected with Noah, due to his special soul. Similarly, the future building of the Third Temple is uniquely reserved for the Messiah, who will be from the House of David.

(b) First mention of G-d's decree that mankind would be wiped out, after 120 years:

6:3. And the L-rd said, "Let My spirit not quarrel forever concerning man, because he is also flesh, and **his days shall be a hundred and twenty years.**"

*Rashi explains: **and his days shall be:** Until 120 years {from now} I will delay My wrath towards them, but if they do not repent, I will bring a flood upon them. Now if you ask: from the time that Japheth was born until the Flood are only a hundred years, [I will answer that] there is no [sequence of] earlier and later events in the Torah {i.e. the Torah does not always follow chronological order}. This decree had already been issued twenty years before Noah begot children, {G-d told this to Noah *then*, along with the instructions to begin building the Ark, *by himself*, so that people would already start questioning him, and he could tell them that they need to repent before G-d brings the Flood.}*

(c) The convergence of Noah's life with the Flood when he was 600 (and Japheth was 99-100), in Gen. 7:11.

B. Noah's mission: Zohar teaches that Noah's soul descended from the Divine Attribute of Yesod (Foundation/Bonding) in the highest spiritual world, Atzilut. His mission is hinted in Prov. 10:25 - "When the whirlwind passes, the wicked man is no more [the people destroyed in the Flood], but the righteous ("tzaddik") is the foundation ("yesod") of the world. To be the righteous foundation for life on the face of the earth, Noah had to separate from the evil people of his time, and they were warned by seeing him building the Ark. After the purifying Flood, the mission of Abraham was possible: to bring others close to G-d by reaching out and teaching them the Seven Laws.

C. The spiritual and physical dimensions of the Ark.

The textual basis for the reality of Noah's Ark is presented through the Bible verses that describe its size and construction. According to the scriptural dimensions, the Ark was 300 cubits long, 50 cubits wide, and 30 cubits tall. Using 25 inches as the length of the "Holy Hebrew Cubit," based on ancient Egyptian writings, the Ark was 627 feet long and 104.5 feet wide, with 65,000 square feet of usable room on each floor. This size makes it one of the largest floating vessels ever built.

In the original dimensions, the volume of the Ark was $300 \times 50 \times 30$ cubic Cubits = 450,000 cubic Cubits. We note that $450,000 = 45 \times 10 \times 10 \times 10 \times 10$, where 45 is the numerical value of G-d's Tetragrammaton Name in Hebrew, when its four letters are spelled out by filling their spellings with the letter Aleph = 1, which represents the One G-d. The four factors of 10 can be said to represent the 10 Sefirot (G-dly Attributes) in each of the 4 spiritual worlds, as the higher worlds become en clothed in the lower worlds: Atzilut (Emanation) en clothed in Beriah (Creation), which en clothed in Yetzirah (Formation), which en clothed in Asiyah (Action). In more detail, all of the 10 Sefirot of Atzilut en clothe in each of the 10 Sefirot of Beriah, etc., resulting in 10,000 combinations of Sefirot within the 10 Sefirot of Asiyah, with the Divine Light of G-d's Tetragrammaton Name en clothed within each one.

Thus, the Ark represented and encapsulated the G-dliness in all levels of the spiritual and physical creation, and it was the "House of G-d" at that time. The spiritual revelation that took place there, with the animals dwelling in peace, was a foretaste of the Messianic Era (Is. 11:6-7, 9): "And a wolf shall live with a lamb, and a leopard shall lie with a kid; and a calf and a lion cub and a fattened calf together ... And a cow and a bear shall graze together, their children shall lie [together]; and a lion, like cattle, shall eat straw... They shall neither harm nor destroy..."

To validate the engineering of the Ark, its design (as instructed by G-d to Noah) was submitted to a naval architecture firm, which evaluated it for seaworthiness. A digitized model of Noah's Ark was analyzed using software developed for the U.S. Navy and Coast Guard. They found that Noah's Ark exceeded the present-day international codes for an ocean-going vessel of its class. For design purposes, the Ark can be considered to be an ocean barge, and it was found to comply with the standards required by our modern-day regulatory agencies.

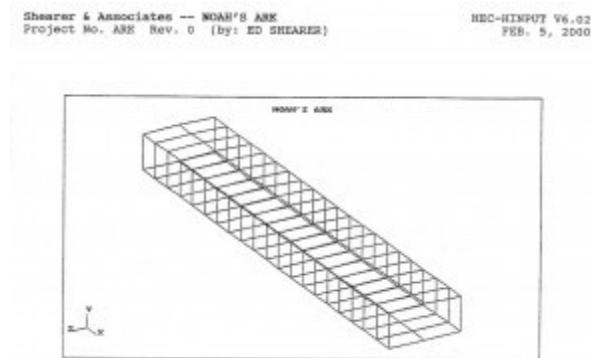


FIGURE 1. Digitized Ark model for Naval Engineering computer analysis.

The Ark had three floors. The animals were located on the middle deck, the soil, food (crops) and human contingent on the top deck, and the waste was dropped to the bottom, in the hold. A validated estimate considers between 18,000 and 36,000 animals on the Ark, and within this entire range the stability of the Ark was acceptable by modern standards for passenger ships, with the weight of the animals distributed evenly on their deck.

Based on the engineering analysis of two key parameters, the Ark was structurally sound, with sufficient stability and buoyancy for the precious cargo it carried:

- The ratio of length to submerged depth was 15:1, and the modern standard for ocean barges is 15:1 or more.
- The Transverse Metacentric Height (GMt) is a measurement of the initial static stability of a floating body. It is calculated as the distance between the centre of gravity of a ship and its metacenter (see https://en.wikipedia.org/wiki/Metacentric_height). The GMt is required to be greater than 14.4 ft, and the range for the Ark was 24 ft (with ~ 18,000 animals) to 37 ft (with ~ 36,000 animals).

So the Ark was fully stable, even if it was maximally loaded. We can assume it was, for G-d wouldn't waste space!