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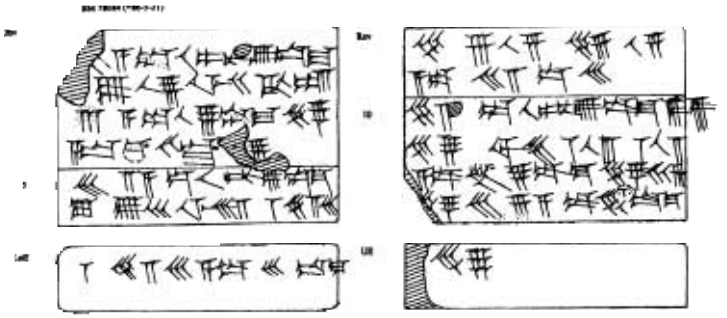
Nemet-Nejat

A Late-Babylonian Mathematical Text — BM 78084 [86-5-21] was purchased by the British Museum from J.M. Shemtob, London, and is dated to the Late Babylonian period.[1] Though it was purchased with a group of tablets from Babylon and its surroundings, the provenance of BM 78084 is not certain.[2] The tablet measures 45 × 55 × 18 mm, is in good condition, with one small corner lost. It contains three problems dealing with reciprocals. The following is a copy, transliteration, translation, and commentary on the tablet.



Transliteration :

1. ⌜20⌝ a-rá min-nu-ú DU-ma
2. [lu]-ú 19 igi-gál-bi 3
3. a-rá 19 DU-ma 57
4. <57>a-rá 20 DU-m[a 1]9

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5. 32 a-rá min-nu-ú DU-ma
6. lu-ú 30 igi-32-<gál-bi> 1,52,30
7. 1,52,30 a-rá 30 DU-ma
8. 56,15 56,15
9. a-rá 32 DU-ma

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10. 50 a-rá min-nu-ú DU-ma lu-ú
11. 48 igi-50-<gál-bi> 1,12(sic),1,1,2
12. a-rá 48 DU-ma 57,36
13. 57,36 a-rá 50 DU-ma
14. 48

Translation :
By what should I multiply 20 so that the result would be 19? The reciprocal of 20 is 0 ;3. Multiply 0 ;3 by 19 and (the result is) 0 ;57. Multiply 0 ;57 by 20 and (the result is) 19.

By what should I multiply 32 so that the result would be 30? The reciprocal of 32 is 0 ;1,52,30. Multiply 0 ;1,52,30 by 30 and (the result is) 0 ;56,15. Multiply 0 ;56,15 by 32 and (the result is) 30.

By what should I multiply 50 so that the result would be 48? The reciprocal of 50 is 0 ;1,12. Multiply 0 ;1,12 by 48 and (the result is) 0 ;57,36. Multiply 0 ;57,36 by 50 and (the result is) 48.

Commentary :
Each problem uses the equation $x \times n = y$ in its solution.
When each side of the equation is divided by n, $\frac{x \times n}{n} = \frac{y}{n}$
or $x = y \times \frac{1}{n}$
For example, in problem no.1, the following values are given :

$n = 20$

$\frac{1}{n} = 0\ ;3$

$y = 19$

x remains unknown.

By substituting the above values in the equation, $x = y \times \frac{1}{n}$

the solution is : $x = 19 \times 0;3 = 0;57$

For the phraseology of the text, see mi GAM mi lu DU-ma lu (*x*) "what should I multiply by what so that (the result would be *x*)" in Neugebauer and Sachs, *MCT* Text y obv. 5,9 [*MCT* : 141-45] and AG 6484 problems $_1$14-$_1$17 (= rev. 12, 16, 21, 25) in *MKT* I : 96-107. Also, see *MCT* index s. v. DU "to multiply" and lū "so that" and mi (abbreviation for *minū*) "what."

NOTES

1. I would like to thank the Trustees of the British Museum for permission to use this tablet and Mr. Christopher Walker, Assistant Keeper, in the Department of Western Asiatic Antiquities, for his comments. All errors are my own.

2. Mr. Walker traced the history of ownership and provenance.

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