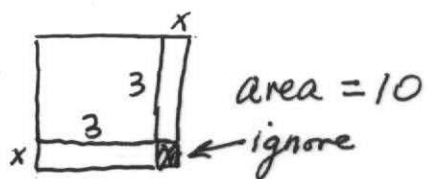


Find  $\sqrt{10}$ : Guess 3



$$3^2 + 6x = 10$$

$$6x = 1$$

$$x = \frac{1}{6} (0; 10)$$

$$\left(3\frac{1}{6}\right)^2 = \frac{361}{36} = 10.028$$

False Position:

YBC 4652: I found a stone but did not weigh it; after I added one-seventh and then one-eleventh, it weighed 1 mina. What was the original weight of the stone?

$x = \text{weight in mina}$   
( $\cong 1 \text{ pound}$ )

Answer:  $x = 48\frac{1}{8}$  gin (60 gin equals one mina)

A gin' is also called a shekel.

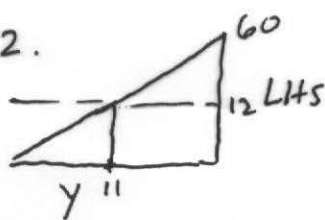
Modern Solution

$$\underbrace{\left(x + \frac{x}{7}\right)}_y + \frac{1}{11} \left(x + \frac{x}{7}\right) = 60 \text{ gin, or } y = x + \frac{x}{7}, y + \frac{y}{11} = 60$$

1. Guess  $y = 11$ . Then LHS = 12.

$$y: 11 = 60: 12 = 5$$

$$\text{so } y = 55$$



$$y = \frac{60 \cdot 11}{12} = 55$$

$$x = \frac{55 \cdot 7}{8} = 48\frac{1}{8}$$

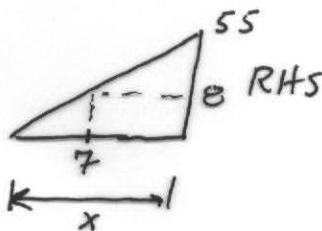
2. Guess  $x = 7$ . Then RHS = 8

$$\text{so } x: 7 = 55: 8 = 6\frac{7}{8}$$

$$\text{so } x = 7(6; 52, 30)$$

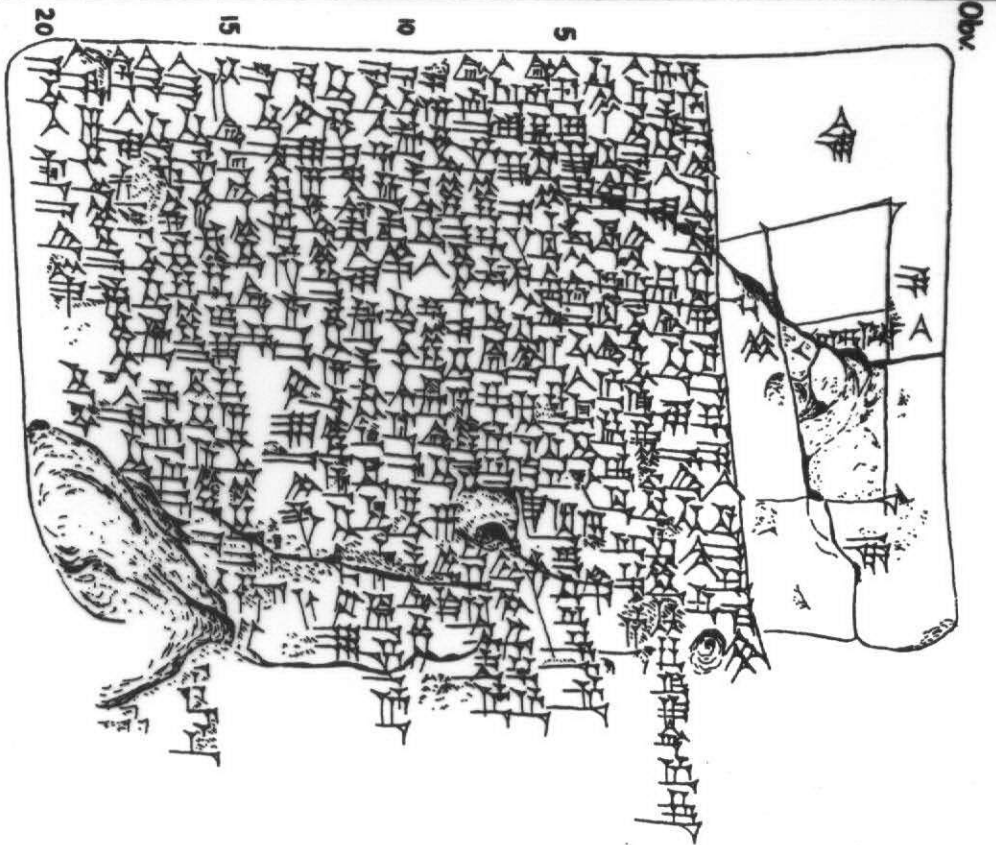
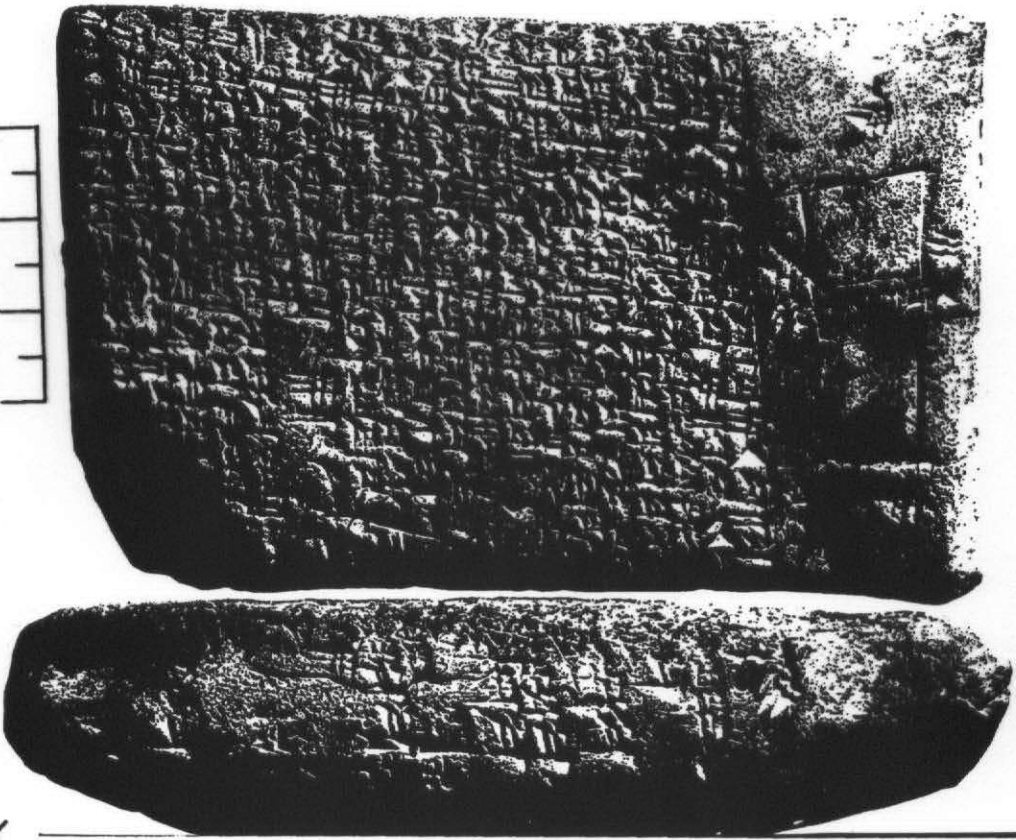
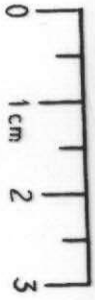
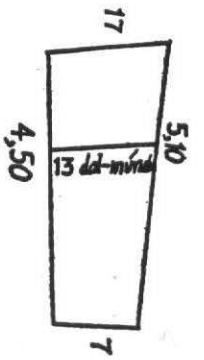
$$= 42 + (6; 4) + (0; 3, 30)$$

$$= (48; 7, 30)$$



$$1/8 = 0; 7, 30$$

$$7/8 = 0; 52, 30$$



YBC 4675

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