

Chinese Rod Numerals

- History
 - Goes back to Qin and Han dynasty, probably invented earlier
 - Rods originally made of ivory or bamboo
 - During Han dynasty-rods were round bamboo sticks about 2.5 mm in diameter and 140 mm long
 - By 6th Century AD, became shorter and rectangular
 - Counting rods also made from wood, cast iron, jade, or ivory
 - Rods also used in Korea and Japan
- Black rods (fu) = *negative numbers*
- Red rods (zheng) = *positive numbers*
- Two types of rods:
 - **Zongs** - units, hundreds, ten thousands, etc
 - **Hengs**- tens, thousands, hundred thousands, etc

	1	2	3	4	5	6	7	8	9
<i>Zongs</i>						┌	┐	┑	┒
<i>Hengs</i>	—	=	≡	≡≡	≡≡≡	└	┘	┙	┚

Writing numbers:

$$\begin{array}{ccccccc}
 \equiv & \text{T} & - & |||| & & & \\
 3 & 6 & 1 & 4 & = & 3614 &
 \end{array}$$

Write out 295, 6782, 97354 using Chinese Rod Numerals.

Addition: 8 + 7 = 15

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Subtraction: $12 - 6 = 6$

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Write out $43+26=$

$456-15=$

$627+244=$

Multiplication:

3 8 7			3 8 7			8 7			7				
			4 4 1			5 5 8 6			5 6 8 8 9				5 6 8 8 9
1 4 7			1 4 7			1 4 7			1 4 7				1 4 7

(a) (b) (c) (d) (e)

Division:

						3					3 8 7
5 6 8 8 9			5 6 8 8 9			5 6 8 8 9			1 2 7 8 9		1 0 2 9
		1 4 7			1 4 7				1 4 7		1 4 7

(a) (b) (c) (d)

Solve $46*37=$

Solve $120204/126=$