

Hello Mark, Totton, Steve, Hannu and everyone,

As I can't resist to solve this exercise
by division by complementary numbers,
here is the way I solved it !

61 402 896 ÷ 7 836 by division with complementary numbers...

1 Chinese short division table (compact)
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Chinese Short Division Table  
Divisor Dividend

|         | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|         | FdR | FdR | FdR | FdR | FdR | FdR | FdR | FdR | FdR | FdR |
| ...1... | 000 | 100 |     |     |     |     |     |     |     |     |
| ...2... | 000 | 050 | 100 |     |     |     |     |     |     |     |
| ...3... | 000 | 031 | 062 | 100 |     |     |     |     |     |     |
| ...4... | 000 | 022 | 050 | 072 | 100 |     |     |     |     |     |
| ...5... | 000 | 020 | 040 | 060 | 080 | 100 |     |     |     |     |
| ...6... | 000 | 014 | 032 | 050 | 064 | 082 | 100 |     |     |     |
| ...7... | 000 | 013 | 026 | 042 | 055 | 071 | 084 | 100 |     |     |
| ...8... | 000 | 012 | 024 | 036 | 050 | 062 | 074 | 086 | 100 |     |
| ...9... | 000 | 011 | 022 | 033 | 044 | 055 | 066 | 077 | 088 | 100 |

Of course we will use the line  
for eight, as  $7836 = 8000 - 164$ .  
In this example I'll use an educational extra rod  
in case of remainder carry.

2 Some vocabulary :

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Original divisor = Od
Complemented divisor = Cd

_____ FdCR

abcDefghIjklmn

8164..61402896 : Setup for DCN, upper line shows FdCR, C = carry of remainder.

8164.7.5402896 : 6/8 -> 074. add 07 to ef rods and add 4 to h rod.

8164.7.6550896 : Add $7 \times 164 = 1148$ to hIjk. $+7(I)+42(j)+28(k)$, $R = 06550 < Od \Rightarrow$ next rod !

_____ FdCR

abcDefghIjklmn

8164.77.950896 : 6/8 -> 074. add 07 to fg rods and add 4 to I rod.

8164.771065696 : Add 1148 on Ijkl rods. $+7(j)+42(k)+28(l)$, $R = 10656 > Od$ keep on !

8164.78.265696 : 1/8 -> 012. add 01 on fg and add 02 on hI rods.

8164.78.282096 : Add $1 \times 164 = 164$ to jkl. $+1(j)+6(k)+4(l)$, $R = 02820 < Od$ next rod !

_____ FdCR

abcDefghIjklmn

8164.782122096 : 2/8 -> 024. add 02 on gh rods and 04 on Ij rods.

8164.782125376 : Add $2 \times 164 = 328$ to klm. $+2(k)+12(l)+8(m)$, $R = 12537 > Od$ keep on !

8164.783.45376 : 1/8 -> 012. add 01 on gh and add 02 on Ij rods.

8164.783.47016 : add $1 \times 164 = 164$ on klm. $+1(k)+6(l)+4(m)$, $R = 04701 < Od$ next rod !

_____ FdCR

abcDefghIjklmn

8164.7835.7016 : 4/8 -> 050. add 05 on rods hI.

8164.7835.7836 : add $5 \times 164 = 820$ on lmn. $+5(l)+30(m)+20(n)$, $R = Od$. Fini !

8164.7836..... : we add 1 to rod I. Tadaa ! Voilà !

No revision as promised !

Sorobanly yours !

Fabrice Bouillerot