{Divident Q and Divisor M are positive & |M| < |Q|}

$Q \div M$

Restoration

A	Q	Count	Operation

Steps in one cycle:

1) shift left
2) $A \leftarrow A - M$
3) if MSB of A: 0 $\Rightarrow Q_0 = 1$ (No restore)
   if MSB of A: 1 $\Rightarrow Q_0 = 0$ and then Restore i.e $A \leftarrow A + M$

Repeat this cycle for n-count
where n is no. of bits in A

$Q \div M$

Non-Restoration

A	Q	Count	Operation

Steps in one cycle:

1) shift left
2) if MSB: A = 0 $\Rightarrow A \leftarrow A - M$
   if MSB: A = 1 $\Rightarrow A \leftarrow A + M$
3) if MSB: A = 0 $\Rightarrow Q_0 = 1$
   if MSB: A = 1 $\Rightarrow Q_0 = 0$

Repeat this cycle for n-count
n: bit size of "A"

At the end

if MSB: A = 1 $\Rightarrow A \leftarrow A + M$ (Restore)

if MSB: A = 0 $\Rightarrow$ No action

Booths Algorithm for Multiplication

$Q \times M$

Accumulator A	Multiplicand Q	Previous bit Q_{-1}	Count	Operation

1) if Q_0 (LSB bit of Q) Q_{-1} = 00 or 11 $\Rightarrow$ only Right shift by 1-bit

if $Q_0 Q_{-1} = 01 \Rightarrow A \leftarrow A + M$
and then shift Right by 1 bit

if $Q_0 Q_{-1} = 10 \Rightarrow A \leftarrow A - M$
and then shift Right by 1 bit.