



MHR-2015

hav - DONIOL

Quick Sight Reduction by Hand

enter L

enter d

n: look up hav >

q = sum

L, d have:
same name L - d
contr name L + d

enter L

enter d

< p: look up hav <

L, d have:
same name L + d
contr name L - d

const 1 0 0 0 0

copy q

(1 - q): subtr.

enter LHA look up hav(LHA)

multiply (1 - q) * hav(LHA)

carry

product = total

round product

copy n

hav (s2s) = sum

90° 8 9 ° 6 0

enter hav (s2s)

Hc: subtr.

hav (s2s) = n + (1 - q) * hav (LHA)

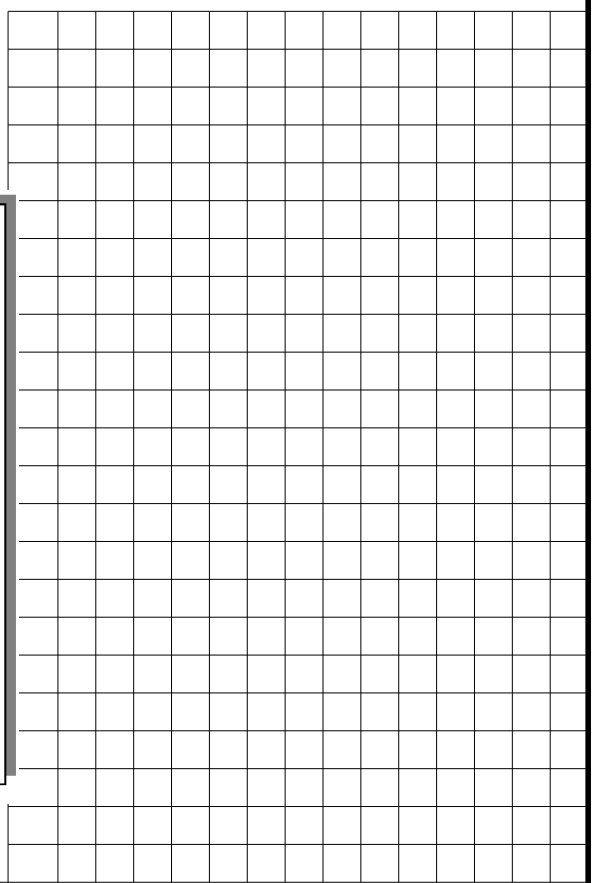
Hc = 90° - s2s

s2s distance ship to star, aka ZD

L: Latitude set: n = hav(L - d)

d: declination p = hav(L + d)

LHA: Loc. Hour Angle q = n + p



Example: 9 8 7 6 Find product's four leading digits fast

* 1 2 3 5

9	1	9*1=	09
9	2	9*2=	18
1	8	8*1=	08
9	3	9*3=	27
8	2	8*2=	16
1	7	7*1=	07
9	5	9*5=	45
8	3	8*3=	24
2	7	7*2=	14
1	6	6*1=	06

carry 1 2 2 1

8 digit res: 1219 6860

error: 0000 to 0001

total 1 2 1 8 9

round 1 2 1 9

Butterfly Mult. xls

