$A_1 \cdot A_2 \cdot A_3 \quad A_4$

$5\times4 \quad 4\times6 \quad 6\times2 \quad 2\times7$

$m[1,1]=0$
$m[2,2]=0$
$m[3,3]=0$
$m[4,4]=0$

m

	1	2	3	4
1	0	120	84	158
2		0	48	104
3			0	84
4				0

$A_1 \cdot A_2$

$m[1,2]=5\times4\times6=120$
↳ split at 1: $s[1,2]=1$

$A_2 \cdot A_3$

$m[2,3]=4\times6\times2=48$
↳ split at 2: $s[2,3]=2$

$A_3 \cdot A_4$

$m[3,4]=6\times2\times7=84$
↳ split at 3: $s[3,4]=3$

S

	1	2	3	4
1		1	1	3
2			2	3
3				3
4				

$A_1 \cdot A_2 \cdot A_3$

$m[1,3]$

$A_1 \cdot (A_2 \cdot A_3)$ | $(A_1 \cdot A_2) \cdot A_3$

$m[1,1]+m[2,3]+5\times4\times2$
$0+48+40=88$

$m[1,2]+m[3,3]+5\times6\times2$
$120+0+60=180$

$\min(88,180)=84$

Split at 1: $s[1,3]=1$

$(A_1 \cdot A_2 \cdot A_3) A_4$

$(A_1) \cdot A_2 A_3$

$A_2 \cdot A_3$

$A_2 \cdot A_3 \cdot A_4$

$m[2,4]$

$A_2 \cdot (A_3 \cdot A_4)$

$m[2,2] + m[3,4] + 4 \times 6 \times 7$

$0 + 84 + 168 = 252$

$(A_2 \cdot A_3) \cdot A_4$

$m[2,3] + m[4,4] + 4 \times 2 \times 7$

$98 + 0 + 56 = 104$

$\min(252, 104)$

split at 3: $S[2,4] = 3$.

$m[4,4]$

$A_1 \cdot A_2 \cdot A_3 A_4$

$= \min\{$

$m[1,1] + m[2,4] + 5 \times 4 \times 7$ $\quad 0 + 104 + 140 = 244$

$m[1,2] + m[3,4] + 5 \times 6 \times 7$ $\quad 120 + 84 + 210 = 414$

$m[1,3] + m[4,4] + 5 \times 7 \times 7$ $\quad 98 + 0 + 70 = 168$

$\}$ $= 158$

$A_1 (A_2 \cdot A_3 A_4)$

$(A_1 A_2)(A_3 \cdot A_4)$

$(A_1 A_2 A_3) \cdot A_4$

split at 3:

$S[4,4] = 3$