

AMATYC

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18 CONTINUED

SUM  $a+c \in \{2, 4, 6, \dots, 18\}$ 

SUM	NUMBER OF WAYS	SUM	NUM. OF WAYS
2	1	12	16
4	4	14	9
6	9	16	4
8	16	18	1
10	25		

TOTAL NUMBER OF WAYS 85  
ANS B

19 E

LOOK AT  $3^n \pmod{100}$  TO GET LAST 2 DIGITS OF  $3^n$ 

n	0	1	2	3	4	5	6	7	...	20
$3^n \pmod{100}$	1	03	09	27	81	43	29	87	...	01

SINCE  $3^{20} \equiv 1 \pmod{100}$      $2007 = 100 \times 20 + 7$     SO  $3^{2007} \equiv 3^7 \pmod{100}$  $3^7 \equiv 87 \pmod{100}$     TENS DIGIT IS 8    ANS E,

20 E

LET  $b_n = \frac{a_n}{a_{n-1}}$ ,  $b_2 = 2$ ,  $b_3 = 2.5$ DIVIDE RECURSION FORMULA BY  $2a_{n-1}a_{n-2}$ TO GET  $\frac{1}{2} = \frac{a_n}{a_{n-1}} - \frac{a_{n-1}}{a_{n-2}} = b_n - b_{n-1}$  SO  $b_n = b_{n-1} + \frac{1}{2}$ SO  $b_n = \frac{n}{2} + 1$ ,  $b_{2006} = \frac{a_{2006}}{a_{2005}} = \frac{2006}{2} + 1 = 1004$   
ANS E.