



Odds, Evens and More Evens

Here are the first few sequences from a family of related sequences:

$$A_0 = 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29 \dots$$

$$A_1 = 2, 6, 10, 14, 18, 22, 26, 30, 34, 38, 42 \dots$$

$$A_2 = 4, 12, 20, 28, 36, 44, 52, 60 \dots$$

$$A_3 = 8, 24, 40, 56, 72, 88, 104 \dots$$

$$A_4 = 16, 48, 80, 112, 144 \dots$$

$$A_5 = 32, 96, 160 \dots$$

$$A_6 = 64 \dots$$

$$A_7 = \dots$$

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Which sequences will contain the number 1000?