

**Q1.** The  $n$ th even number is  $2n$ .

The next even number after  $2n$  is  $2n + 2$

(a) Explain why.

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(1)

(b) Write down an expression, in terms of  $n$ , for the next even number after  $2n + 2$

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(1)

(c) Show algebraically that the sum of any 3 consecutive even numbers is always a multiple of 6

(3)  
(Total 5 marks)

M1.

	Working	Answer	Mark	Additional Guidance
(a)		Add on 2	1	<b>B1</b> 'even numbers go up in twos' or 'even numbers are 2 apart' oe
(b)		$2n + 4$	1	<b>B1</b> $2n + 4$ oe
(c)	$2n + 2n + 2 + 2n$ $+ 4 = 6n + 6$ $= 6(n + 1)$		3	<b>M1</b> for $2n (+) 2n + 2 (+) '2n + 4'$ or any 3 consecutive even numbers written as expressions; any variable may be used <b>A1</b> for " $6n + 6$ " <b>A1</b> for " $6(n + 1)$ " or stating there is a factor of 6 oe SC: <b>B1</b> for $n + n + 2 + n + 4$
<b>Total for Question: 5 marks</b>				

- E1.** There was a mixed response to part (a) with many variations of the correct answer. Part (b) was answered well but some pupils wrote  $4n + 2$  instead of  $2n + 4$ . Very few pupils gained marks on part (c). Candidates did not follow the lead given in the earlier parts of the question. Many gave a purely numerical answer and  $n + (n + 2) + (n + 4)$  was frequently seen.