

One point questions

Write the next two terms in these:

1. 1, 3, 5, 7, _____, _____

2. 6, 10, 14, _____, _____

3. 1, 7, 13, _____, _____

4. 1, 4, 9, 16, _____, _____

5. 1, 3, 6, 10, _____, _____

6. $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8},$ _____, _____

7. $\frac{1}{2}, \frac{3}{5}, \frac{5}{8}, \frac{7}{11},$ _____, _____

8. 100, 99, 97, _____, _____

Two point questions (1)

e.g. $T_n = 4n - 1$... gives a function machine

n	1	2	3	4	5
T_n	$= 4 \times 1 - 1$ $= 3$	$= 4 \times 2 - 1$ $= 7$	$= 4 \times 3 - 1$ $= 11$	$= 4 \times 4 - 1$ $= 15$	$= 4 \times 5 - 1$ $= 19$

So $T_n = 4n - 1$ gives

3, 7, 11, 15, 19, ... [goes up in 4s]

Write down the first five terms of:

1. $T_n = 3n + 1$

_____, _____, _____, _____, _____

2. $T_n = 2n + 3$

_____, _____, _____, _____, _____

3. $T_n = 5n - 1$

_____, _____, _____, _____, _____

4. $T_n = 4n - 3$

_____, _____, _____, _____, _____

Two point questions (2)

e.g. Find the n^{th} term of:

5, 9, 13, 17, "goes up in 4's"

Draw a function machine...

$$\therefore n^{\text{th}} \text{ term} = \frac{4n + 1}{3} \times 4 + 1$$

1	x4	5
2		9
3		13

Write down the n^{th} terms of:

1. 3, 5, 7, 9, ...

2. 5, 8, 11, 14, ...

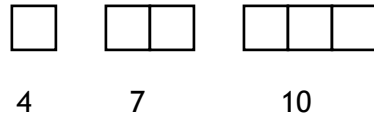
3. 5, 11, 17, 23, ...

4. 1, 8, 15, 22, ...

5. -1, 4, 9, 14, ...

Five point questions

Example: find the n^{th} term and the 20^{th} term from this matchstick pattern



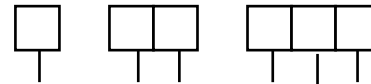
n	1	2	3
	4	7	10

) x3
+1

i. n^{th} term = $3n + 1$

ii. 20^{th} term = $20 \times 3 + 1$
 = $60 + 1 = \underline{61}$

1. Find the (i) n^{th} term and (ii) 20^{th} term



i. n^{th} term =

ii. 20^{th} term =
 =

2.



i. n^{th} term =

ii. 20^{th} term =
 =

Answers:

One-point questions [8]

(1) 9, 11 (2) 18, 22 (3) 19, 25 (4) 25, 36 (5) 15, 21 (6) $\frac{5}{10}, \frac{6}{12}$ (7) $\frac{9}{14}, \frac{11}{17}$ (8) 94, 90

Two-point questions (1) [8]

(1) 4, 7, 10, 13, 16

(2) 5, 7, 9, 11, 13

(3) 4, 9, 14, 19, 24

(4) 1, 5, 9, 13, 17

Two-point questions (2) [10]

(1) $2n + 1$

(2) $3n + 2$

(3) $6n - 1$

(4) $7n - 6$

(5) $5n - 6$

Five-point questions [10]

(1) 5, 9, 13, 17, . . .

n^{th} term = $4n + 1$

$20 \times 4 + 1 = 81$

(2) 6, 11, 16, 21, . . .

n^{th} term = $5n + 1$

$20 \times 5 + 1 = 101$

Total points = 36

Additional guidance:

Two-point questions (1) - assign 1 mark for either the first term correct (bold) or the full sequence goes up by the equivalent amount

*e.g. Q.2 **5**, 8, 11, 14 or 3, **5**, 7, 9, 11 etc. gets 1 mark*

Two-point questions (2) - assign 1 mark for each correct term

e.g. Q.4 $7n + 6$ gets 1 mark; $6n - 6$ gets 1 mark

Five-point questions - assign 1 mark for a correct sequence (at least 3 terms) seen - maybe implied by correct nth term.

Assign 1 mark for each correct part for nth term.

Follow through for their nth term, giving 1 mark for a valid method and 1 for their correct answer.