Nfed Term Cwadratig

1.

Mae $n$fed term dilyniant yn cael ei roi gan $n^2 + 7$.

Ysgrifennwch y tri therm cyntaf yn y dilyniant hwn. [2]

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Term 1af = ... 2il derm = ... 3ydd term = ...

2.

(a) $n$fed term dilyniant yw $3n^2 - n$.
Ysgrifennwch y tri therm cyntaf yn y dilyniant. [2]

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(b) Darganfyddwch $n$fed term pob un o'r dilyniannau canlynol.

(i) 7, 18, 29, 40, 51, ... [2]

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(ii) −2, 1, 6, 13, 22, 33, ... [2]

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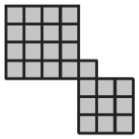
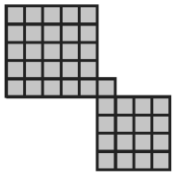
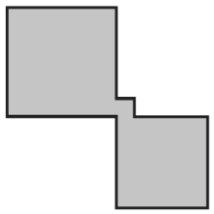
3.

Defnyddiwch y tabl isod i ddarganfod mynegiad ar gyfer nifer y sgwariau bach ym mhatrwm rhif n. [3]

Rhif y patrwm	Siâp	Nifer y sgwariau bach
1		6
2		14
3		26
4		
n		.....

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4. *(a)* Ysgrifennwch fynegiad ar gyfer $n$fed term y dilyniant canlynol.

8, 17, 26, 35, 44, ... [2]

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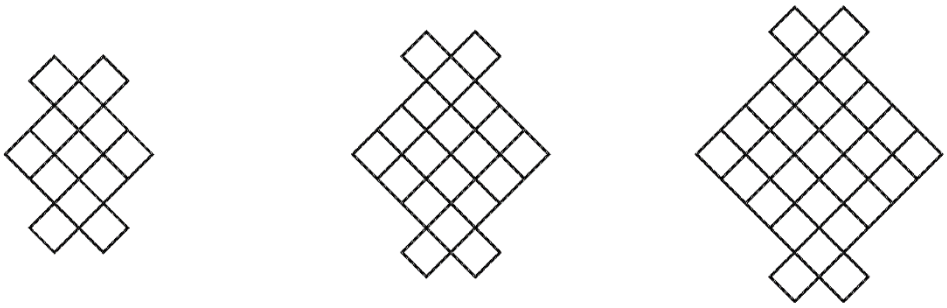
$n$fed term .....

(b) Mae'r patrymau canlynol yn cael eu gwneud gan ddefnyddio sgwariau bach.

Patrwm 1 Patrwm 2 Patrwm 3



Ysgrifennwch fynegiad ar gyfer nifer y sgwariau bach ym mhatrwm n. [3]

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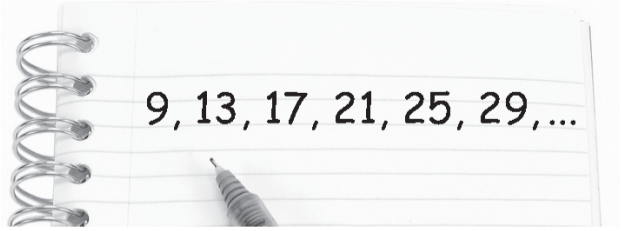
5. Mae Dewi yn ysgrifennu 6 rhif cyntaf dilyniant ar lyfr nodiadau.



(a) (i) Ysgrifennwch $n$fed term dilyniant Dewi. [2]

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(ii) Mae Carys yn dweud bod 149 yn y dilyniant sydd gan Dewi.
Ydy Carys yn gywir?
Rhaid i chi egluro eich ateb. [1]

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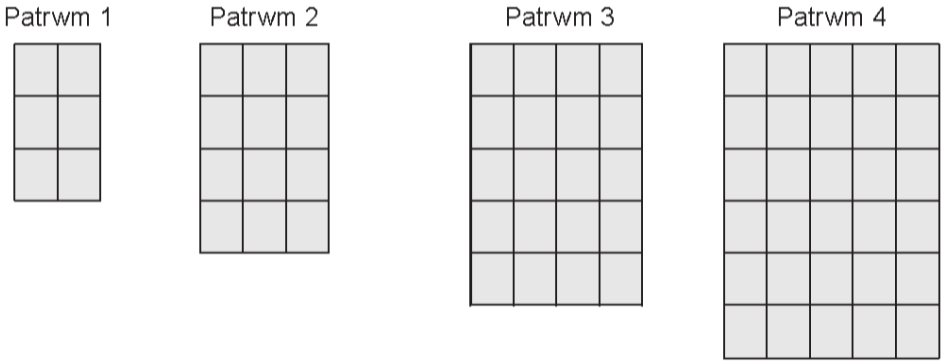
(b) Mae Val yn gweithio i *WindPane*, cwmni sy'n gwneud ffenestri petryal gan ddefnyddio darnau bach o wydr.
Mae pob darn bach o wydr o'r un maint.

Mae Val wedi lluniadu patrymau o ffenestri a'r darnau o wydr, fel sy'n cael eu dangos isod.



(i) Mae Imran yn dweud byddai 110 o ddarnau ym Mhatrwm 8.
Ydy Imran yn gywir?
Rhaid i chi egluro eich ateb. [2]

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(ii) Mae Val yn dweud bod Patrwm n yn cynnwys $n^2 + 3n + 2$ o ddarnau o wydr.
Ydy Val yn gywir?
Rhaid i chi ddangos eich gwaith cyfrifo a chyfiawnhau eich ateb. [2]

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Cynllun Marcio

1.

8 11 16		B2	B1 am ddau yn gywir NEU am 7, 8, 11. NEU am 11, 16, 23.

2.

(a) 2, 10, 24	B2	Ignore any further values given B1 for 2 correct terms in the correct position SC1 for 0, 2, 10
(b)(i) 11n - 4	B2	B1 for sight of 11n
(ii) n^2 - 3	B2	Mark final answer B1 for $n^2 \pm \ldots$, not for n^2 alone, written within an expression of at least 2 terms B0 for $an^2 \pm \ldots$ where $a \neq 1$
	6	

3.

Strategy, e.g. 'square + 1 + square' OR attempt to look at second difference	S1	OR break down, for a couple of patterns into: " 'larger square' + 1 + 'smaller square' " Maybe implied by … + n^2 or $(n+1)^2$ + … or for example '$6^2 + 5^2 + 1$', OR for giving the correct number of squares in any pattern number >4 (strictly >4, not for pattern 4), not for Pattern number 5 written in the table for Pattern n, but allow if shown in a sequence
$(n + 1)^2$+1 + … or … + 1+ n^2 or second difference 4	M1	Implies S1 also. Allow for '$n^2 + 1 + n^2$' or '$n^2 + 1 + (n-1)^2$ or similar
$(n + 1)^2$ + 1 + n^2 or $2n^2 + 2n + 2$ or equivalent	A1	ISW n+1 × n + 1 + 1 + n^2 is awarded S1, M1, A0
	3	

4.

(a) $9n - 1$	B2	B1 for sight of $9n$ or equivalent.
(b) $(n + 2)^2 + 4$ or equivalent	B3	B2 for $(n + 2)^2 + a$ or for omitting brackets. B1 for $(n + k)^2 + 4$ OR B1 for each correct term in $n^2 + 4n + 8$, within a quadratic with more than one term OR B1 for listing the terms of the sequence and finding a 2nd difference of 2. Look out for alternative ways of considering the spatial arrangements leading to e.g. $n^2 + 4(n + 3) - 4$
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5.

2015 Summer Linear Paper 1 Higher Tier		Comments
12(a)(i) $4n + 5$ or equivalent unsimplified	B2	B1 for sight of $4n$
12(a)(ii) States or implies 'YES' with a reason, e.g. ' yes as 149-5 = 144 and this can be divided (exactly) by 4', OR 'correct as 144 is a multiple of 4', OR 'n = 36', OR 'adding 4 repeatedly after the 29 giving 149', OR 'Yes as (149 – 29)÷4 is a whole number'	E1	Do not award for 'correct' or 'yes' without a valid reason Accept 'n=36' as 'implies yes' Accept correct full sequence to 149 or partial sequence shown with at least 3 correct terms including 149, e.g. 145, 149, 153 or 49… 69…. 129 … 149 FT based on 149 – 'their 5' then divided by 4, provided equivalent level of difficulty
12(b)(i) 9×10 or 90 or 10×11 States or implies Imran is incorrect, e.g. 'Imran is incorrect as there are 90 panes', 'It is the number of panes in Pattern 9', '90 is Pattern 8', '110 is Pattern 9'	M1 A1	

2015 Summer Linear Paper 1 Higher Tier		Comments
12(b)(ii) **Shows** that $n^2 + 3n + 2 = (n+1)(n+2)$ Pattern justification: e.g. 'Product of 1 more across than Pattern number and one more vertically than across', OR 'Multiplication of one extra across and two extra up'	E1 E1	Alternative: E2 for working from spatial arrangement $(n+1)(n+2)$ expanding to show $n^2 + 3n + 2$ OR E2 for full spatial description with justification based on shading or labelling parts in diagrams as n^2, $3n$ and 2 OR alternative: E1 for sight of $an^2 + bn + c$ and second difference 2 leading to a = 1, and E1 for use of n = 1 and number of squares 6, with n = 2 and number of squares 12 to find b=3 and c = 2, or other 2 values of n with the correct number of squares *If no marks, allow SC1 for correct substitution and evaluation of n=1, n=2, n=3 and n=4 in n^2+3n+2 giving answers 6, 12, 20 & 30, substitution must be seen, not for answers only*