

Mark schemes

Q1.

- (a) 3 or 35 or 291 seen
or $8 \times \text{their } 3 + 11$

M1

35 chosen

A1

- (b) Subtract 11 and divide by 8

accept – or \div for words subtract and divide but not / for divide

B1

Additional Guidance

Do not accept use of algebra e.g. $10/8$

B0

[3]

Q2.

- (a) $2n + 2$

B1

- (b) Yes and valid reason

eg $2(n + 1)$

$2n + 2$ is a multiple of 2

$2n + 2$ is divisible by 2

It is the 2 times table

It is a multiple of 2

It starts even and then add 2 each time

B1

Additional Guidance

Even + even = even

B1

Even + 2 = even

B1

Because you add 2 all the time

B0

[2]

Q3.

- (b =) $2a - 4$

oe

M1

(c =) $2b - 4$ or $2(2a - 4) - 4$
 oe

M1

(c =) $4a - 8 - 4$
 or

(c =) $2a - 4 + 2a - 4 - 4$

*SC1 for substitution of value for a and checked in
 eg $a = 10, b = 16, c = 28$ and $4 \times 7 = 28$*

A1

Clear and logical algebraic solution

Strand (ii)

Must have both M marks

Do not award for a numerical verification

Q1

[4]

Q4.

(a) $8 \times 5 - 2 \times 42 (=) 8$

B1 $8 \times 5 - 2 \times 42$ or 8

B2

(b) 19

B1

(c) $2n^2 + 2n - 2$ or $2n(n+1 - n)$

B1

[4]

Q5.

30

B1

37

ft their $30 + 7$

B1 ft

[2]

Q6.

(a) 17 and 21

B1

(b) $4n + 1$

oe

B1 $4n (\pm)k$

B2

Additional Guidance

$4 \times n + 1$ is B2

$4 \times n (+ k)$ is B1

(c) $4n + 1 = 53$ or $4n = 52$

M1

13

A1

Alternative method 1

$(53 - 1) \div 4$

oe

eg $1 + 4 + 4 + 4 + 4 + 4 + 4 + 4$
 $+ 4 + 4 + 4 + 4 + 4 + 4 (= 53)$

M1

13

A1

Alternative method 2

Counts up in 4s to within 4 of 53

oe

allow one error or omission

M1

13

A1

Additional Guidance

5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49

Answer 12

is M1A0

5, 9, 13, 17, 25, 29, 33, 37, 41, 45, 49

Answer 12

is M1A0

5, 9, 13, 17, 21, 24, 28, 32, 36, 40, 44, 48

Answer 12

is M1A0

[5]

Q7.

$52 - 6n$ or $-6n + 52$

B1 - $6n + k$ where k is any value, including zero (ie no constant), other than 52

Do not accept $-n6$ but $-n6 + 52$ is B1

B2

Additional Guidance

If $52 - 6n$ seen in script and 16 (next term) given on answer line allow B2

Allow any letter used, eg $52 - 6x$

Accept equivalent expressions such as $46 - 5(n + 1)$

Allow \times signs, eg $-6 \times n + 52$, $n \times -6 + 52$

$$46 - n - 5(n + 1)$$

B1

$$52 - 6n = 0$$

B1

[2]

Q8.

(a) Alternative method 1

$$43 - 28 \text{ or } 15 \text{ seen}$$

M1

$$15 - 13 (= 2)$$

or 2, 13 and 15

A1

Alternative method 2

$$x + 2y = 28 \text{ and } 2x + 3y = 43$$

oe equations

M1

Solves equations correctly obtaining x

A1

Additional Guidance

If setting up two equations, they must be correct

(b) $b - a$

Second term

M1

$$2b - a$$

oe

Fourth term

M1dep

$$3b - a$$

A1

[5]

Q9.

Lists at least three terms from first sequence between 20 and 40

eg 21, 23, 25, ...

M1

Lists at least three terms from second sequence between 20 and 40

eg 20, 23, 26, ...

M1

23 29 35

SC2 for any two correct with at most one incorrect
SC1 for any one correct with at most two incorrect

A1

[3]

Q10.

(third term =) $4a$
or (fourth term =) $8a$
or $7a (= 63)$
or $15a$

M1

$a = 63 \div 7$ or $a = 9$
or 8×9
or 15×9

seen or implied

M1

135

M1

Additional Guidance

$a = 9$ is implied by second term 18 or third term 36 or fourth term 72, not from an incorrect sequence

[3]

Q11.

(a) $8n - 3$

B1

(b) Alternative method 1

$x + 6$

oe

B1

$4x + 9$

oe

B1

their $(x + 6) + 2x + 7 +$ their $(4x + 9) = 57$
or $7x + 22 = 57$

oe

M1

5

SC2 11, 17, 29

A1

Alternative method 2

$$x + 6$$

oe

B1

$$4x + 9$$

oe

B1

$$\text{their } (x + 6) = 11$$

$$\text{or } 2x + 7 = 17$$

$$\text{or their } (4x + 9) = 29$$

oe

M1

$$5$$

SC2 11, 17, 29

A1

Additional Guidance

$$(2x + 7 + 5) \div 2 \text{ or } (2x + 12) \div 2 \text{ are oe for } x + 6$$

B1

$$2(2x + 7) - 5 \text{ or } 4x + 14 - 5 \text{ are oe for } 4x + 9$$

B1

[5]

Q12.

$$2, 6, 18, 54, 162$$

B1

[1]

Q13.

$$8n - 3$$

B1

[1]

Q14.

(a) 51

B1

(b) 123 - 2 or 121

or 112 seen

M1

$$11$$

A1

Additional Guidance

11 × 11 + 2 (= 123) or 112 + 2 (= 123) embedded answer with or without an incorrect answer

M1A0

$$\sqrt{123} = 11.09, 11 \text{ or } \sqrt{123} = 11$$

MOA0

T & I follow scheme

[3]

Q15.

- (a) 6, 9, 12, 15
 or difference of 3
 or $3n$ or $2n$ seen

M1

$$(n +) 2n + 3$$

or $3n + 3$ or $3(n + 1)$
 or $3 \times 100 + 3$

oe

M1dep

303

A1

- (b) $\times 2 + 3$

B1

[4]

Q16.

- + 8, + 12, + 16 seen or implied
 or $40 + 20$

M1

60

A1

[2]

Q17.

$$4n - 1$$

B1

[1]

Q18.

$$2n - 12$$

B1

[1]

Q19.

- (a) 21

B1

- (b) 8

B1

(c) 34×2

Correct scaling

or 14×5

or $42 \times 8 \div 5$

or 42×1.6

M1

[67, 70]

A1

(d) $8 + 21$

Correct scaling

or $8 + 8 + 13$

or $8 + 8 + 8 + 5$

or $18 \times 8 \div 5$

or 18×1.6

or $18 \div 3 \times 5$

or $34 - 5$

M1

[28, 30]

A1

[6]

Q20.

(a) -5 and 4

B1

(b) 3

*ft provided at least one negative answer
in (a)*

B1ft

-1 next then all positive

oe

*ft provided at least one negative answer
in (a)*

B1ft

Additional Guidance

If both terms are negative in (a) then must circle 'more than 4' in (b)
3 must follow -5 and 4 or be correct for their answers in (a)

[3]

Q21.

3 6 9 ... or

$23 + 12$

or

$1.5n^2...$

M1

35

A1

Additional Guidance

Answer line blank with 35 as next term in sequence

M1A1

Answer line has attempt at term to term rule on ~~line~~ but 35 seen

M1A0

35 seen on dotted line in sequence but a different answer given e.g. 50

M1A0

[2]