the n^{th} term

1. Find the **n^{th} and 10th term** of the following linear sequences:

a) 6, 10, 14, 18, 22…
b) 1, 6, 11, 16, 21…
c) 4, 6, 8, 10, 12…
d) 13, 16, 19, 22, 25…
e) 7, 8, 9, 10, 11…
f) 1, 9, 17, 25, 33…
g) 2, 11, 20, 29, 38…
h) 5, 15, 25, 35, 45…
i) 0, 3, 6, 9, 12…
j) -1, 5, 11, 17, 23…
k) -3, 7, 17, 27, 37…
l) -10, -8, -6, -4, -2

2. Find the **n^{th} term** of the following linear sequences, these either increase by fractional amount or a negative amount:

a) 12, 10, 8, 6, 4…
b) 3.5, 4, 4.5, 5, 5.5…
c) 0.2, 0.4, 0.6, 0.8, 1.0…
d) 15, 12, 9, 6, 3…
e) 0, -4, -8, -12, -16…
f) 99, 98, 97, 96, 95…

3. Find the **first 5 terms** of each linear sequence whose n^{th} term is:

a) $6n+2$
b) $3n+9$
c) $5n-1$
d) $n+5$
e) $4n-3$
f) $8n+11$
g) $9n-6$
h) $5n$
i) $-3n+24$
j) $-6n+66$
k) $2.5n+1$
l) $-7n+50$

4. Identify which of the terms does **not** belong to the sequence with n^{th} term:

a) $5n+1$	54	61	86	b) $10n-4$	16	56	74
c) $2n+1$	36	37	38	d) $4n+3$	51	83	105
e) $11n+3$	101	124	146	f) $5n+6$	151	199	236
g) $2n-4$	888	925	1000	h) $4n+5$	156	201	705

5. Find the first 5 terms of the following quadratic sequences

a) n^2
b) n^2+1
c) n^2-4
d) $2n^2$
e) $2n^2+1$
f) n^2+n
g) Look at the difference between successive terms in your quadratic sequences. What do you notice? How is this different to what you saw before with the linear sequences?

6. Find the first 5 terms of the following power sequence:

a) 2^n to do this work out the following $2^1, 2^2, 2^3, 2^4, 2^5$

b) Use your answer to part a) to help you match the following sequences to their nth terms.

i) $3, 5, 9, 17, 33\ldots$
ii) $0, 3, 7, 15, 31\ldots$
iii) $1, 2, 4, 8, 16\ldots$
iv) $6, 12, 24, 48, 96\ldots$
v) $3, 6, 11, 20, 37\ldots$

2^n+1 $\quad$ $\frac{2^n}{2}$ $\quad$ 2^n+n $\quad$ 2^n-1 $\quad$ $3(2^n)$