Outcome 1 – Linear Patterns/Calculating the n^{th} term

Bronze example

Examples...

For the table below...
- Write down a rule connecting the number of tables and people.
- Complete the table.

Add 2 each time!

tables (T)	1	2	3	12	33
people (P)	7	9	11	29	71

$P = 2T + 5$

$2 \times 12 + 5$

$(71 - 5) \div 2$

Silver example

Examples...

Find the 'nth' term for the following sequence and hence find the 10^{th} term in the sequence...

-3 (7, 14, 21, ...
4, 11, 18, ...
$+7$ $+7$

Goes up in 7's!

Compare with 7 times table!

n^{th} term $= 7n - 3$

10^{th} term $= 7 \times 10 - 3 = 67$

Gold example

Examples...

Find the 'nth' term for the following sequence and hence find the 10^{th} term in the sequence...

$+10$ (-5, -10, -15, ...
5, 0, -5, ...
-5 -5

Goes down in 5's!

Compare with -5 times table!

n^{th} term $= -5n + 10 = 10 - 5n$

10^{th} term $= 10 - 5 \times 10 = -40$

Bronze Questions

For the following tables...
- Write down a rule
- Complete the table

1

cross number (N)	1	2	3	9	?
squares (S)	5	9	13	?	69

2

shelf size (S)	1	2	3	16	?
pieces of wood (W)	4	7	10	?	76

3

paving stones (P)	2	3	4	25	?
edges joined (E)	3	6	9	?	96

4

no. of sections (S)	1	2	3	33	?
metal rings (R)	4	9	14	?	199

Silver Questions

Find the 'n^{th}' term for the following sequences and hence find the 10^{th} term in each sequence...

1. 0, 3, 6, ...
2. 5, 12, 19, ...
3. 12, 19, 26, ...
4. 7, 9, 11, ...
5. 6, 13, 20, ...
6. 5, 8, 11, ...
7. -2, 0, 2, ...
8. 4, 10, 16, ...
9. 8, 14, 20, ...
10. 0, 5, 10, ...

Gold Questions

Find the 'n^{th}' term for the following sequences and hence find the 10^{th} term in each sequence...

1. 0, -4, -8, ...
2. 2, -4, -10, ...
3. -3, -8, -13, ...
4. 6, 2, -2, ...
5. -1, -8, -15, ...
6. -1, -4, -7, ...
7. 3, 0, -3, ...
8. -3, -10, -17, ...
9. 0, -6, -12, ...
10. 5, 2, -1, ...

Bronze Answers

1.	S = 4N + 1	37, 17
2.	W = 3S + 1	49, 25
3.	E = 3P - 3	72, 33
4.	R = 5S - 1	164, 40

Silver Answers

1. 3n - 3, 10th term = 27
2. 7n - 2, 10th term = 68
3. 7n + 5, 10th term = 75
4. 2n + 5, 10th term = 25
5. 7n - 1, 10th term = 69
6. 3n + 2, 10th term = 32
7. 2n - 4, 10th term = 16
8. 6n - 2, 10th term = 58
9. 6n + 2, 10th term = 62
10. 5n - 5, 10th term = 45

Gold Answers

1. 4 - 4n, 10th term = -36
2. 8 - 6n, 10th term = -52
3. 2 - 5n, 10th term = -48
4. 10 - 4n, 10th term = -30
5. 6 - 7n, 10th term = -64
6. 2 - 3n, 10th term = -28
7. 6 - 3n, 10th term = -24
8. 4 - 7n, 10th term = -66
9. 6 - 6n, 10th term = -54
10. 8 - 3n, 10th term = -22