**End of Unit Test** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Sequences, Functions and Graphs - FOUNDATION**

**1.** The diagram shows patterns made with sticks.


Pattern 1            Pattern 2                       Pattern 3

(a) How many sticks are in Pattern 3?

Answer ......................................................................

**(1)**

(b) Draw Pattern 4.

**(1)**

(c) How many sticks are in Pattern 6?

   …………………………………………………………………………………………………..

Answer ......................................................................

**(2)**

**(Total 4 marks)**

**2.** Here is a linear sequence.

46          40          34          28          22          ......

Work out the *n*th term of the sequence.

 …………………………………………………………………………………………………………..

  …………………………………………………………………………………………………………..

Answer ...................................................................................

**(Total 2 marks)**

**3.** Here is the graph of   *y* = 5 − *x*   for values of *x* from 0 to 5

(a) On the same grid, draw the graph of   *y* = *x* + 1   for values of *x* from 0 to 5

**(2)**

(b) Use the graphs to solve the simultaneous equations

*y* = 5 − *x*    and    *y* = *x* + 1

*x* = ............................................

*y* = ............................................

**(1)**

**(Total 3 marks)**

**4.** Here is a straight-line graph.

(a) Use the graph to work out the value of *x* when *y* = 8

Answer ...................................................

**(1)**

(b) Work out the gradient of the line.

 ……………………………………………………

 ……………………………………………………

 ……………………………………………………

 ……………………………………………………

 ……………………………………………………

Answer ...................................................

 **(3)**

**(Total 4 marks)**

**5.** Circle the equation of a line that is parallel to     *y* = 5*x* – 2

*y* = 2*x* – 5                        *y* = 5*x* + 2                        *y* = 3*x* – 2                        *y* = – *x* – 2

**(Total 1 mark)**

**6.** (a) Complete the table of values for *y* = 2 + *x* − *x*2



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| y | -10 |  | 0 | 2 |  | 0 | -4 |

 **(2)**

(b) Draw the graph of *y* = 2 + *x* − *x*2 for values of *x* from −3 to 3

**(2)**

(c) Draw the line *y* = −3 on the same grid.

**(1)**

(d) Write down the solutions to the equation 2 + *x* − *x*2 = −3

Answer ………………………………………

**(1)**

**(Total 6 marks)**

 **(Total for test = 20 marks)**