**Stanground Academy**



Year 9 Higher work

Week beginning July 6th 2020

Student’s name.............................................................................

Teacher..........................................................................................

# Task 1: Basic number recap

1. Which of the following are prime numbers...

47 27 106 91 67 73

1. Two consecutive prime numbers below 100 multiply together to equal 437.

What are the two prime consecutive prime numbers?

1. Calculate the following…
2. -6 + - 13 =
3. (-7)2 + (5 - - 3) =
4. (-4)3 - - 22 + (-5 x 3) =
5. Fill in the venn diagram of factors of 68 and 102 out of the following…

1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 17, 21, 34, 51, 68, 102

102

68

# Task 2: Basic algebra recap

1. Factorise the following expressions…
2. 15x2 + 35x
3. 27ab – 36a2b2c
4. 24x3y4z + 60x5yz3
5. g3h2i2 – gh3i
6. 49a8b3c9 – 35abc6 + 14abc
7. 42r2s2t – 70r4
8. Expand and simplify the following…
9. (a + 3)(a – 4)
10. (2b + 3)(b + 5)
11. (6c – 3)(2c + 3)
12. (d – 6)(6d – 5)
13. 6(2e + 3)(4e – 5)
14. (4f + 4)(7 – 3f)
15. (g + 2)(g – 3)(g + 4)
16. (2h + 3)(4 + 3h)(6h – 8)

# Topic Test 1

## Equations - Higher

**1** This formula is used to work out the cost, £*C*, of tiling a floor with *n* tiles.

*C* = 25 + 

56 tiles are needed to tile a floor.

Can the floor be tiled for less than £275?

You **must** show your working.

**[2 marks]**

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**2** Check if –2 and 2 are solutions of the equation 

You **must** show your working. **[3 marks]**

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**3** Solve 

**[3 marks]**

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| *x* = |  |  |

**4** Here are two number machines.

Both machines have the same input, *x*.

*x*

+ 1

× 3

*B*

Output

– 2

*x*

Input

× 5

*A*

Work out the value of *x* when *A* = *B*

**[4 marks]**

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| *x* = |  |  |

**5** The diagram shows two rectangles.

All dimensions are in cm

Not drawn accurately

*x* – 1

2*x* + 3

7

3

The shaded area is 84.5 cm2

Work out the perimeter of the white rectangle.

**[5 marks]**

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| Answer |  | cm |

**6** Solve  **= *w* + 2

**[3 marks]**

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| *w* = |  |  |

# Topic Test 2

## Sequences - Higher

1 Here are the first five terms of a sequence.

15 13 11 9 7

Circle the expression for the *n*th term of the sequence.

**[1 mark]**

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| --- | --- | --- | --- |
| 2*n* + 13 | *n* – 2 | 17 – 2*n* | 15 – 2*n* |

2 Circle the value that is **not** a term in the geometric series with *n*th term 2 × 3*n*

**[1 mark]**

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| 18 | 54 | 152 | 486 |

3 The *n*th term of sequence *A* is 2*n* + 3

The *n*th term of sequence *B* is 5*n* – 4

Work out **two** terms that are in both sequences.

**[2 marks]**

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| Answer |  |  |

4 The *n*th term of sequence *P* is *an* + *b*

The *n*th term of sequence *Q* is *bn* + *a*

4 (a) Show that the sequences both start with the same term.

**[1 mark]**

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4 (b) The 2nd term of sequence *P* equals the 3rd term of sequence *Q*.

Show that *a* = 2*b*

**[2 marks]**

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5 The *n*th term of a sequence is 

Work out the first term of the sequence that is a recurring decimal.

**[2 marks]**

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| Answer |  | th term |

6 The *n*th term of a sequence is *n*2(*n* + 1)

6 (a) Show that the 3rd term of the sequence is 36

**[1 mark]**

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6 (b) Work out the 10th term of the sequence.

**[2 marks]**

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| Answer |  |  |

6 (c) Prove that all the terms of the sequence are even.

**[2 marks]**

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7 The first four terms of a quadratic sequence are

9 23 45 75

7 (a) Work out the next two terms of the sequence.

**[2 marks]**

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| Answer |  | and |  |  |

7 (b) Work out the *n*th term of the sequence.

**[4 marks]**

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| Answer |  |  |