

**7C**

**Year 7 Maths ILA (Units 9/10)**

**Mathslinks 7c Book**

**Unit 9 (SSM) & Unit 10 (Algebra)**

Level 5 Level 6

**ONLY USE A CALCULATOR WHERE YOU SEE THIS SYMBOL C:\Users\cblaymire\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\C0A4LQYK\MC900389698[1].wmf**

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| **What is the purpose of this ILA?** | |
| * To encourage independent learning by students outside the classroom. * To develop a stronger understanding shape, space and measure and algebra work at level 5-6. | |
| **What is expected from you?** | |
| * To complete your own work, to the best of your ability, with pride. * To show clear methods; show **all** your working out not just the answer. * Some students may struggle. If you find yourself “in the pit” you need to find a way out. * The Investigation is an important part of the ILA and must be attempted, showing reasonable effort. | |
| **Where can you get help?** | |
| * Look at the 7c Maths Links book (units 9 and 10). * Use the Maths ILA/homework Club after school on Tuesdays in S1. * Use the Unity College VLE (KS3). * Use the Learning Zone before or after school (8.00-8.35 Mon - Fri and 3.10-4.30 Mon - Thurs). * Use MyMaths.co.uk and Sam Learning. * Seek extra help at the Maths ILA Club. You are **expected** to attend to complete any parts you struggle with. | |
| **Learning Objectives** | |
| **SSM**   1. To know the properties of 2D and 3D shapes. 2. To be able to construct bisectors and triangles.   **Algebra**   1. To be able to find squares, cubes and their roots without a calculator. 2. To be able to find the HCF and LCM of numbers. 3. To be able to write any whole number as a product of its prime factors. 4. To be able to draw straight line graphs using equations. 5. To be able to find the equation of a graph of a straight line. | Level 5c  Level 6b  Level 6c  Level 5a  Level 6a  Level 6c  Level 6a |
| **Hints and Tips** | |
| * Factors will divide into the number * Multiple means numbers that are in your times table * Square numbers have two square roots, positive and negative * In constructions, use protractors and compasses | |
| **Keywords**   |  |  |  |  | | --- | --- | --- | --- | | construct |  | HCF | angle bisector | | square |  | LCM |  | | cube |  | prime factors |  | |  |  |  |  | |  |  |  |  | | |
| **Learning Objective 1. To know the properties of 2D and 3D shapes.**  **Level 5c** | |

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| 1. | Complete the table below for the following shapes. |  |

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| |  |  |  |  | | --- | --- | --- | --- | | Name of Solid | Number of Faces | Number of Vertices | Number of edges | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |

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|  |  | (4 marks) |

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| ../../02_Illustrations/BMPS%20(grayscale)/03-06.bmp**Learning Objective 2. To be able to construct bisectors and triangles. Level 6b.** |

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| 2a. | Draw a 600 angle with a protractor. Then using compasses and a ruler construct the Angle Bisector of the angle. | (4 marks) |
| b. | Draw a 1300 angle with a protractor. Then using compasses and a ruler construct the Angle Bisector of the angle. | (4 marks) |
| c. | Construct the line bisector for a 6 cm line. | (4 marks) |
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| d. | Construct a triangle with a side 8 cm long and angles of 30o and 100o. | (4 marks) |
| e. | Construct a rhombus with a pair of angles of size 600 and 1200. | (6 marks) |

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| **Learning Objective 3. To be able to find squares, cubes and their roots without a calculator. Level 6c** |

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| 3.  a.  b.  c.  d. | Find the value for each of the following numbers:  112  √169  202  √2500 | (4 marks) |
| 4.  a.  b.  c.  d. | Find the value for each of the following numbers:  53  3√8  43  3√27 | (4 marks) |
| 5. | Estimate the value of √55 and give a reason for your answer.  Estimate = \_\_\_\_\_\_\_  Reason = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2 marks) |
| 6. | John says that 25 is 10. Explain his mistake and state what the answer should be. | (2 marks) |

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| **Learning Objective 4. To be able to find the HCF and LCM of numbers. Level 5a** |

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| 7. | Find all the factors of 75. | (1 mark) |
| 8. | Write down the first five multiples of 13. | (1 mark) |
| 9. | Find the highest common factor of 12 and 36. | (1 mark) |
| 10. | Find the lowest common multiple of 8 and 10. | (1 mark) |
| 11. | Two numbers have a HCF of 6 and a LCM of 72. What are the two numbers? | (2 marks) |
| 12. | By writing down the first 10 multiples of each number, find the LCM of the pair of numbers: 8 and 14 | (2 marks) |

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| **Learning Objective 5. To be able to write any whole number as a product of its prime factors. Level 6a** |

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| 13. | Write the definition of a prime number. | (1 mark) |
| 14. | Find all the prime numbers between 40 and 60. | (2 marks) |
| 15.  a.  b. | Write each of these numbers as a product of its prime factors:  250  1240 | (2 marks) |
| 16. | Use prime factor decomposition to find the square root of:  576 | (2 marks) |

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| **Learning Objective 6. To be able to draw straight line graphs using equations. Level 6c** |

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| 17.  a.  b.  c.  d. | Complete these tables for the equations y = x + 1 and y = 3x.  y = x + 1   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **x** | **0** | **1** | **2** | **3** | **4** | | **y** |  |  |  |  |  |   y = 3x   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **x** | **0** | **1** | **2** | **3** | | **y** |  |  |  |  |   Draw the graphs of y = x + 1 and y = 3x on the same axis.  Write their point of intersection**.**    **9**  **8**  **7**  **6**  **5**  **4**  **3**  **2**  **1**  **0**  **0 1 2 3 4 5 6**  Point of intersection is (\_\_\_\_,\_\_\_\_) | (8 marks) |

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| **Learning Objective 7. To be able to find the equation of a graph of a straight line. Level 6a** |

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| 18.  a.  b. | Find the equations of these lines:  *y*  *x*  line a  *y*  *x*  line b  Equation of line a is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Equation of line b is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (2 marks) |

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| **Investigation** | | |
| 1.  a.  b.  c.  d. | 2D shapes in a circle  Joe has a board with a circle on it and some large elastic bands. He fixes 8 evenly spaced pegs on the circle and puts an elastic band round the pegs to make a triangle.  Using the circles A – H below investigate how many different triangles you can make by joining the dots on the circles below. (one has been done for you already)  A  B  C  D    E  F  G  H      What types of triangles have you drawn?  Joe now decides to make quadrilaterals on his board. He starts off with a square:  Investigate how many other different quadrilaterals can he make. Draw them on the circles B – L below:  A  B  C  D    E  F  G  H    I  J  K  L    Can you work out the angles of in all the quadrilaterals you have drawn in (c)? (Here are some empty circles to help in your calculations.)    A All angles are 90°\_\_\_\_\_ .  B \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  D \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  E \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  F \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  G \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  H \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  J \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  K \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  L \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | (5 marks)  (5 marks)  (9 marks)  (9 marks) |

**Year 7 ILA – Mathslinks Book 7c Units 9 & 10**

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| **Level** | **Learning Objective** | **Pupil Assessment** | **Teacher Assessment** |
| 5c | To know the properties of 2D and 3D shapes. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 6b | To be able to construct bisectors and triangles. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 6c | To be able to find squares, cubes and their roots without a calculator. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 5a | To be able to find the HCF and LCM of numbers. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 6a | To be able to write any whole number as a product of its prime factors. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 6c | To be able to draw straight line graphs using equations. | ☹ 😐 ☺ | ☹ 😐 ☺ |
| 6a | To be able to find the equation of a graph of a straight line | ☹ 😐 ☺ | ☹ 😐 ☺ |

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| **Parental Comment** |
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| **Teacher General Comment** |
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| **Teacher Investigation Comment** |
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