

**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.
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| **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.
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| **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.
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| **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 5cLevel 6bLevel 6cLevel 5aLevel 6aLevel 6cLevel 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
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| **Keywords**

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| construct |  | HCF | angle bisector |
| square |  | LCM |  |
| cube |  | prime factors |  |
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| **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) |
|  |  |  |
| 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√169202√2500 | (4 marks) |
| 4.a.b.c.d. | Find the value for each of the following numbers:533√8433√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:2501240 | (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

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| --- | --- | --- | --- | --- | --- |
| **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 bEquation 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 circleJoe 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) ABCD   EFGH      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:ABCD   EFGH   IJKL   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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