Get Ready for A Level Maths: Bridge It and Summer Challenge

Key Skills Development

On top of your transition material set on the school system here is something to get you going which is a little 'different'. These two activities demonstrate the standard you need to be at the start of Year 12.

- Reviewing topics from GCSE mathematics
- Strengthening skills from GCSE mathematics to get ready for the next level
- Developing deeper problem-solving skills demanded at post-GCSE level.

Work through each of the 23 levels, recording your score for each section and the date it was completed into the record sheet below.

Key Skills Development: MEI Bridge It Game (https://mei.org.uk/bridgeit) (Flash Required, needs allowing in internet settings)

Work through the MEI 'Bridge It' Game, recording your scores and the date you completed each section. This will indicate to you if there are any gaps in your learning you can address between now and September.

Unit	Topic	Out of 10 – Date Achieved
Number &Algebra	1. Arithmetic	
	2. Fractions, Ratios and Proportion	
	3. Percentages	
	4. indices and Surds and Standard Form	
	5. Algebraic Relationships, Formulae and Substitution	
	6. Simplifying Algebraic Expressions and Brackets	
	7. Rearranging Formulae and Solving Equations	
	8. Quadratics	
	9. Simultaneous Equations	
	10. Linear Functions and their Graphs	
	11. Quadratic Functions and their Graphs	
Probability & Statistics	12. Displaying and Interpreting Data	
	13. Probability	
	14. Measure of Central Trend and Measures of Spread	
Geometry & Measure	15. Lines and Shapes	
	16. Circles	
	17. Units, Length, Area and Volume	
	18. Real Life Graphs and Measures	
	19. Pythagoras	
	20. Trigonometry	
	21. Sine and Cosine Rule	
	22. Vectors	
Bonus	23. Problem Solving	

The Summer Challenge: 15 Multiple Choice Questions

Please send Mr Bee (ab@johnport.derbyshire.sch.uk) this answer sheet (or an email detailing your answers and chosen letters) by Tuesday 1st September. Complete the below 15 questions, circling the correct answer for each. **The top 5 scorers will get a prize in September.**

Question	1	2	3	4	5	6	7	8	9	10
Answer (circle one)	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*	*A*
	B	*B*	*B*	*B*	*B*	*B*	*B*	*B*	*B*	*B*
	C	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*	*C*
	D	*D*	*D*	*D*	*D*	*D*	*D*	*D*	*D*	*D*

Question	11	12	13	14	15
Answer (circle one)	*A*	*A*	*A*	*A*	*A*
	B	*B*	*B*	*B*	*B*
	C	*C*	*C*	*C*	*C*
	D	*D*	*D*	*D*	*D*

Total Score: _____ out of 15

The Questions

Question 1

You are given that $x = 3$, $y = 7$ and $z = -2$.

Three of the following statements are true and **one** is false. Which one is **false**?

A $y - z = x^2$

B $x = y + 2z$

C $x + y + 5z = 0$

D $y^2 - x^2 = 20z$

Question 2

The first four terms of a sequence are –7, –2, 3, 8.

Three of the following statements are true and **one** is false. Which one is **false**?

A The next two terms of the sequence are 13 and 18.

B 93 is a term of the sequence..

C The nth term of the sequence is $5n - 7$.

D The 20th term is 50 more than the 10th term.

Question 3

Three of the following statements are true and **one** is false. Which one is **false**?

A $x^2 - 9 = (x-3)(x+3)$

B $x^2 - 9x + 20 = (x-4)(x+5)$

C $(2x-3)(x+3) = 2x^2 + 3x - 9$

D $x(x+3) - x(x-3) = 6x$

Question 4

Which **one** of the following is the **correct** solution of the inequality $3(x - 5) > 2 - x$?

A $x > 8\frac{1}{2}$ **B** $x > 4\frac{1}{4}$ **C** $x > 3\frac{1}{2}1$ **D** $x > 1\frac{3}{4}$

Question 5

Michael and Madison are rearranging equations.

Michael has rearranged $v^2 = u^2 + 2as$ to give $a = \frac{(v-u)(v+u)}{2s}$.

Madison has rearranged $s = \frac{1}{2}(u+v)t$ to give $v = u + \frac{2s}{t}$.

Which **one** of the following statements is **true**?

A Both Michael and Madison are incorrect.

B Both Michael and Madison and correct.

C Michael is correct and Madison is incorrect.

D Michael is incorrect and Madison is correct.

Question 6

Three of the following statements are true and **one** is false. Which one is **false**?

A 234.611 correct to the nearest integer is 235.

B 10 100 correct to the nearest thousand is 10 000.

C 0.003672 correct to 3 significant figures is 0.004.

D 2.0099 correct to 1 decimal place is 2.0.

Question 7

Three of the following statements are true and **one** is false. Which one is **false**?

A 48 is a factor of 144.

B 91 is a prime number.

C The lowest common multiple (LCM) of 24 and 40 is 120.

D The highest common factor (HCF) of 24 and 40 is 8.

Question 8

Which **one** of the following expressions can be correctly simplified to $\frac{x+1}{12}$?

A $\frac{x+2}{24}$

B $\frac{x+3}{15} - \frac{2}{3}$

C $\frac{5-x}{24} + \frac{x-1}{8}$

D $\frac{x}{2} + \frac{1}{6}$

Question 9

In a group of students, twenty are male and thirty are female.
Three tenths of the students are aged 20 years or less and one fifth are over 40 years old.

Three of the following statements are true and **one** is false. Which one is **false**?

A The ratio, the number of males: the number of females = 2:3.

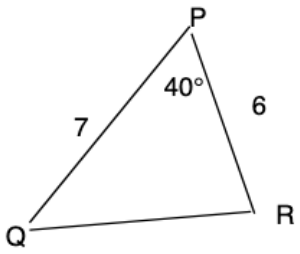
B 35 students are aged over 20.

C The number of males in the group is 0.4 × (the total number in the group).

D 60% of students are aged over 20 but not over 40.

Question 10

In the triangle PQR, PQ = 7 cm, PR = 6 cm and angle QPR = 40°.



Three of the following statements are true and **one** is false. Which one is **false**?

A QR = 4.54 cm, correct to 2 decimal places.

B Angle Q = 58°, correct to the nearest degree.

C Angle R = 82°, correct to the nearest degree.

D P is approximately 6.5 cm from QR.

Question 11

Which **one** of the following is the **correct** simplification of $2(x+3) - 3(5 - 2x)$?

A $-4x - 9$

B $8x - 9$

C $8x - 12$

D $4x - 12$

Question 12

Three of the following statements are true and **one** is false. Which one is **false**?

A $\left(3xy^2\right)^3 = 27x^3y^6$

B $\left(3xy^2\right) \times 3 = 27xy^2$

C $\dfrac{x^5 \times x^3}{x^4} = x^4$

D $2(x-1) - 3(2-x) = 5x - 8$

Question 13	Three of the following statements are true and **one** is false. Which one is **false**? **A** $x = 3$ is the solution of the equation $2(x + 1) = 8$. **B** $x = -4$ is the solution of the equation $3x - 12 = 0$. **C** $x = -3$ is one of the roots of the equation $x^2 - 9 = 0$. **D** The two roots of the equation $x^2 = 8x$ are $x = 0$ and $x = 8$.
Question 14	In this question, $a = 2$, $b = 3$, $c = -1$. Three of the following statements are true and **one** is false. Which one is **false**? **A** $ab^2 = 18$ **B** $abc^3 = -6$ **C** $ab + bc + ca = 1$ **D** $\frac{a+2b}{4-2c} = 4$
Question 15	Which one of the following gives the solution, correct to one decimal place, of the equation $x^2 + 3x = 1$ **A** $x = 0.3$ and $x = -3.3$ **B** $x = -0.3$ and $x = 3.3$ **C** $x = -0.4$ and $x = 2.6$ **D** $x = 0.4$ and $x = -2.6$