



UKMT Team Maths Challenge  
National Final 2013  
Crossnumber

|    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|
| 1  |    |    | 2  |    | 3  |    | 4  |    |
|    |    |    | 5  | 6  |    |    | 7  | 8  |
| 9  | 10 |    |    |    |    |    |    |    |
|    |    |    | 11 |    | 12 |    | 13 |    |
| 14 |    | 15 |    |    | 16 |    |    |    |
| 17 |    |    | 18 | 19 |    |    | 20 |    |
|    |    |    |    |    |    | 21 |    | 22 |
| 23 | 24 |    | 25 |    | 26 |    |    |    |
|    | 27 |    |    |    | 28 |    |    |    |

Across

- 1      A multiple of 28 Across (4)
- 3      A palindromic square whose square root is not palindromic (3)
- 5      Twice 6 Down plus six (3)
- 7      Fourteen less than 4 Down (2)
- 9      A Fibonacci number (3)
- 11     The sum of 11 Down and 20 Down (3)
- 13     The cube root of 8 Down (2)
- 15     An angle of an isosceles triangle that has  $76^\circ$  as one of its angles (2)
- 16     The sum of the first six triangular numbers (2)
- 17     A square which is a multiple of the sum of its digits (2)
- 18     The number of different ways to arrange the letters in "MATHS" (3)
- 21     Product of two consecutive primes (3)
- 23     The hypotenuse of a triangle with two sides of 39 and 80 (2)
- 25     An even number (3)
- 27     A cube that is the sum of three cubes as well as being a square (3)
- 28     A twelfth power (4)



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|    |    |    | 5  | 6  |    |    | 7  | 8  |
| 9  | 10 |    |    |    |    |    |    |    |
|    |    |    | 11 |    | 12 |    | 13 |    |
| 14 |    | 15 |    |    | 16 |    |    |    |
| 17 |    |    | 18 | 19 |    |    | 20 |    |
|    |    |    |    |    |    | 21 |    | 22 |
| 23 | 24 |    | 25 |    | 26 |    |    |    |
|    | 27 |    |    |    | 28 |    |    |    |

Down

- 1 The product of nine and the largest two digit prime (3)
- 2 The square root of 3 Across (2)
- 3 One more than 4 Down (2)
- 4 One side of a right-angled triangle with other sides 15 Across and 25 Down (2)
- 6 A multiple of the product of its digits (3)
- 8 The number of cubic inches in a cubic foot (4)
- 10 A number which is a multiple of the sum of the digits of 1 Down (2)
- 11 The sum of the divisors of 81 (3)
- 12 Ten times a Fibonacci number (3)
- 14 28 Across minus 8 Down (4)
- 19 A sixteenth of the difference between 28 Across and 1 Across (3)
- 20 The magic constant of a four by four magic square that uses the numbers from 1 to 16 (2)
- 22 The sum of the squares of its digits is the square of a prime (3)
- 24 One of a pair of consecutive primes that differ by eight (2)
- 25 A multiple of a factor of 21 Across (2)
- 26 The product of the square root of 11 Down and the sixth root of 28 Across (2)



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Team Number..... School Name.....

|  |
|--|
| Teachers<br>must<br>complete<br>this<br>column |
| Marks (7)                                      |
|  |
| Marks (6)                                      |
|  |
| Marks (5)                                      |
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| Marks (6)                                      |
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| Marks (6)                                      |
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| Marks (6)                                      |
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| Marks (5)                                      |
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| Marks (6)                                      |
|  |
| Marks (7)                                      |
|  |

|        |    |    |    |    |    |    |    |    |    |   |
|--------|----|----|----|----|----|----|----|----|----|---|
| Answer |    | 1  |    |    | 2  |    | 3  |    | 4  |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer |    |    |    |    | 5  | 6  |    |    | 7  | 8 |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer | 9  | 10 |    |    |    |    |    |    |    |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer |    |    |    | 11 |    | 12 |    |    | 13 |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer | 14 |    | 15 |    |    | 16 |    |    |    |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer | 17 |    |    | 18 | 19 |    |    | 20 |    |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer |    |    |    |    |    |    | 21 |    | 22 |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer | 23 | 24 |    |    | 25 |    | 26 |    |    |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |
| Answer |    | 27 |    |    |    |    | 28 |    |    |   |
| Mark   |    |    |    |    |    |    |    |    |    |   |

Total = \_\_\_\_\_ /54

+ 6

**SCORE =** \_\_\_\_\_