

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		
29			30			31			32			33			34
			35						36						
37						38						39			



Senior Team Maths Challenge
National Final 2010
Crossnumber



Across

- 1 Fifty-three less than a perfect cube.
- 3 A square number.
- 5 The product of a prime number and 26 Down.
- 7 The cube of a prime number.
- 8 Difference between 34 Down and 33 Down.
- 9 100 more than the difference between 15 Across and 34 Down.
- 11 A number that is between 1200 and 1300 and is also two less than the product of a triangle number and a Fibonacci number.
- 13 The cube of a prime number.
- 15 A rearrangement of the digits of 34 Down.
- 17 Value of y in the solution of $3x + 16y = 50801$ and $5y = 4x + 21$.
- 19 A fourth power.
- 21 A multiple of 3 Down.
- 22 Four times a Fibonacci number.
- 23 Five more than a triangle number.
- 25 p^p , where p is a prime number.
- 27 A palindromic number.
- 29 Value of x in the equations in 17 Across.
- 31 Forty five more than a triangle number, twenty seven less than the following triangle number.
- 33 33 more than the difference between 34 Down and 25 Across.
- 35 One less than three times a Fibonacci number.
- 36 The minimum value of $n^2 + 6n + 2009$.
- 37 Mean of 33 Across and 34 Down.
- 38 10 times the highest common factor of 7 Across and 27 Across.
- 39 A fourth power.

Some help for the Crossnumber:

- (a) The first three triangle numbers over 1000 are 1035, 1081 and 1128.
The largest four digit triangle number is 9870.
- (b) Here is a list of all the cube numbers with at most four digits:
1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197, 2744, 3375, 4096,
4913, 5832, 6859, 8000 and 9261.



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Down

- 1 The product of a prime number and 3 Down.
- 2 Coefficient of x in expansion of $(x^2 + 350x + 13)^2$.
- 3 A palindromic number.
- 4 Sum of 26 Down and 39 Across.
- 5 Mean of 26 Down, 32 Down and 34 Down.
- 6 Value of y in the solution of $12x - 6y = 690$ and $11x - 5y = 2084$.
- 10 Difference between 21 Across and 1 Down.
- 12 One more than a Fibonacci number.
- 14 A square number.
- 15 Sum of 25 Across and 19 Across.
- 16 32 Down added to the reverse of 18 Down.
- 17 Three less than a square number.
- 18 A cube number.
- 19 The cube of a prime number.
- 20 Value of x in equations in 6 Down.
- 24 Two less than twice a Fibonacci number.
- 26 A fourth power.
- 28
$$\frac{4 \times 10^7 \times 5 \times 10^9}{2 \times 10^{19} \times 2 \times 10^{-6}}$$
- 29 Seven less than nineteen times a triangle number.
- 30 Thirty less than the sum of the interior angles in a dodecagon.
- 31 Three hundred less than a fourth power.
- 32 Twice a Fibonacci number.
- 33 Larger solution of $x^2 - 1010x + 6024 = 0$.
- 34 A sixth power.

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- (a) The first three triangle numbers over 1000 are 1035, 1081 and 1128.
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1, 8, 27, 64, 125, 216, 343, 512, 729, 1000, 1331, 1728, 2197, 2744, 3375, 4096,
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Team Number.....

School / College Name

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29			30			31			32			33			34
			35						36						
37						38						39			

Total (12)
Total (10)
Total (6)
Total (12)
Total (3)
Total (3)
Total (12)
Total (10)
Total (6)
Total (12)
Total (3)
Total (3)
Total (12)
Total (10)
Total (6)
Total (12)

Score out of 132 = _____

Final Crossnumber Score = Score out of 132 ÷ 2

= _____



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