



Regional Final

Supervisor's Booklet

Please ensure that students do not have access to this booklet, and take care to hold it so that answers cannot be seen.



for Information only: DO NOT USE! Mini-Relay Score Sheet

School number:

School name: _____

Circle the appropriate score for each round.

Round A	Round B	Round C
10	10	10
8	8	8
6	6	6
4	4	4
2	2	2
0	0	0

Round D	Round E	Round F
10	10	10
8	8	8
6	6	6
4	4	4
2	2	2
0	0	0

Grand Total:

Marking Instructions – a reminder

10 points if a correct answer to Qu 4 is handed in before the 4 minute whistle.

8 points if a correct answer to Qu 4 is handed in before the 6 minute whistle.

Following the 6 minute whistle any answer to Question 4 is ignored. Answers are marked from Qu 1 with 2 marks for each correct answer given before the first wrong answer. If an answer is wrong, no subsequent answers are to be marked.

Remember, only three attempts at Qu 4 are allowed. After a third failure the question is ignored for all subsequent marking.



MINI-RELAY ANSWERS

A1	7
A2	13
A3	12
A4	30π

D1	12
D2	6
D3	45
D4	36

B1	$\frac{1}{2}$
B2	1
B3	11
B4	$11 - 17\sqrt{3}$

E1	8
E2	32
E3	24
E4	90

C1	-10
C2	35
C3	1.5
C4	1.2 or $\frac{6}{5}$

F1	3
F2	8
F3	-1
F4	12



Senior Team Maths Challenge 2008



		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		

Across

- 1 $p^3 - p^2 - 3$, where p is a prime number
- 3 Half the product of the distinct factors of 12
- 4 x where $x^2 - 40x + 144 = 0$
- 6 Mean of 1 Across, 8 Across and 9 Across
- 8 Sum of the prime factors of 15 Down
- 9 A triangle number squared
- 12 7 Down times 2 Down minus twice 1 Down
- 14 Multiple of both the square root of 4 Across and 7 Down
- 16 Twice a Fibonacci number
- 18 8 Across plus a multiple of 10 Down but not divisible by four
- 20 27 Across minus 7 Down
- 22 To the nearest whole number, the result of twice 11 Down divided by 1 Down
- 23 The difference between 25 Across and 23 Across is 2 Down
- 25 *see 23 Across*
- 26 20 Across plus the smallest difference between 27 Across and a Fibonacci number
- 27 A cube

Down

- 1 $p^2 + 2(p - 7)$ where p is a prime number
- 2 Exterior angle in degrees of a regular polygon
- 3 Multiple of 1 Down
- 5 One more than a multiple of four and one less than a multiple of three
- 7 Four more than a triangle number, two less than a square number
- 10 Twice a Fibonacci number
- 11 One more than the difference between 5 Down and 15 Down
- 12 Half the lowest common multiple of 6 Across and 8 Across
- 13 Number where consecutive digits differ by two
- 15 Product of two consecutive primes, its digit product being less than its digit sum
- 17 $x^2 + 2x + 2$ where x is an integer
- 19 Eight more than a multiple of eleven
- 20 Product of one sixth of 24 Down and one more than one sixth of 24 Down
- 21 Multiple of 7 Down
- 22 Number whose digit sum is equal to the highest common factor of 4 Across and 8 Across
- 24 Two thirds of a square number



CROSS NUMBER

Completed Grid

¹ 2	9	² 1		³ 2	7	3		⁴ 3	⁵ 6
1		⁶ 2	5	4			⁷ 1		4
	⁸ 3	0		3			⁹ 4	¹⁰ 4	1
¹¹ 4			¹² 1	6	3	¹³ 8		6	
2			9			¹⁴ 6	7	6	¹⁵ 2
¹⁶ 1	¹⁷ 2	2	0			4			2
	9		¹⁸ 5	6	¹⁹ 2	2			1
²⁰ 2	0	²¹ 2			2		²² 4	0	
7		8			²³ 1	4	0		²⁴ 9
²⁵ 2	0		²⁶ 2	1	9		²⁷ 2	1	6

Marking Instructions – a reminder

Pairs may only communicate through the teacher, for instance to request that the other pair work on a particular clue.

When a pair enters an answer in the Answer Grid, the teacher checks each digit of the answer.

If it is correct, tick it and award one mark; if it is wrong, cross it out and enter the correct digit. The correct answer is then shown to both pairs so that they are up-to date.

A pair may enter just one digit if they wish, rather than a complete answer.

A pair may sacrifice a square, by guessing, if they wish.



GROUP ROUND ANSWERS

<p>1. Sum of digits:</p> <p style="text-align: center;">253</p>	<p>2. Area of parallelogram:</p> <p style="text-align: center;">$\frac{2Qx}{y} \text{ cm}^2$</p>
<p>3. Number of numbers:</p> <p style="text-align: center;">32</p>	<p>4. Factorised quadratic:</p> <p style="text-align: center;">$(3x + 4)(40x - 21)$</p>
<p>5. Ages of daughters (in any order):</p> <p style="text-align: center;">2, 2, 9</p>	<p>6. Values of x:</p> <p style="text-align: center;">-1, -5</p>
<p>7. Angle QMR:</p> <p style="text-align: center;">75 degrees</p>	<p>8. Diameters of the circles (in any order):</p> <p style="text-align: center;">3, 7, 11</p>
<p>9. Fraction of the volume of the cube:</p> <p style="text-align: center;">$\frac{1}{6}$</p>	<p>10. Smallest of the 101 integers:</p> <p style="text-align: center;">10151</p>

6 points for each correct answer.

TOTAL SCORE (/60)= _____



Feedback Questionnaire

Which heat did you attend?

In questions 1, 2 and 3, please rate the following aspects of the course using a scale of 1 to 4, where:

1 = Poor; 2 = Adequate; 3 = Good; 4 = Excellent.

Please circle the appropriate answer.

1: The suitability of the venue 1 2 3 4

Comments _____

2: Refreshments (if applicable) 1 2 3 4

Comments _____

3: The organisation of the event 1 2 3 4

Comments _____

4: What are your comments on each of the three rounds?

Comments _____

5: How did you find the difficulty level of the questions?

Comments _____

6: Would you recommend this event to others? Yes / No

7. Would you have preferred a different start time for the event? Yes / No
If yes what start time would you have preferred? _____

8. Please detail any suggestions for improvement to this event and give any other comments that you would like to make.

Thank you for completing this questionnaire.



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