

**United Kingdom  
Mathematics Trust**

TEAM MATHS CHALLENGE  
2019

REGIONAL FINAL

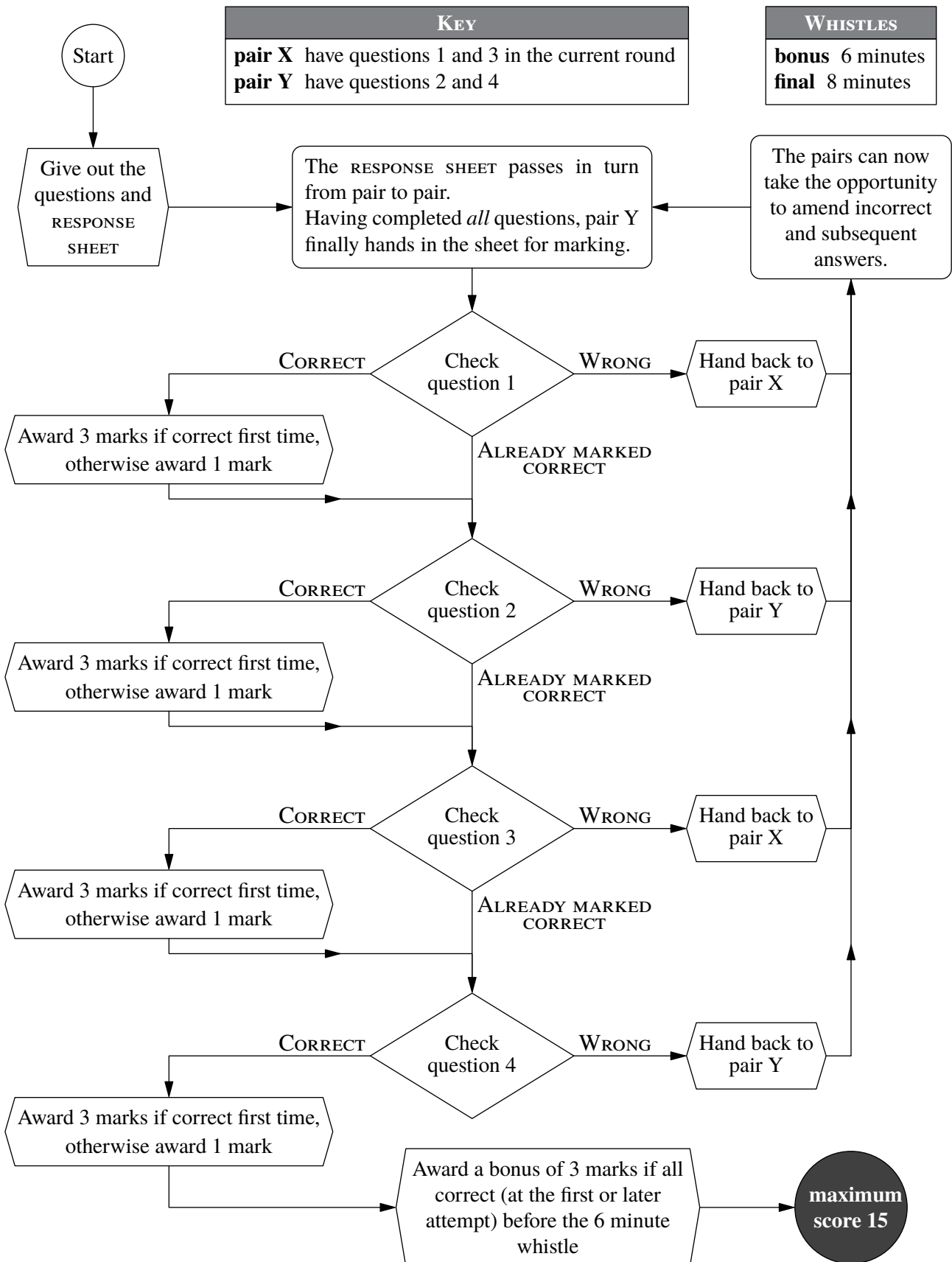
## SUPERVISOR'S BOOKLET

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

Please ensure that students use blue or black ink to write their answers; teachers are asked to use red ink for marking.



The flowchart explains the order in which questions should be marked.



# 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			

## ACROSS

- The remainder when 11 DOWN is divided by 19 ACROSS (3)
- The mean of 25 ACROSS and 10 DOWN (4)
- The product of 16 ACROSS and the difference between 1 DOWN and 20 DOWN (2)
- Three less than 4 DOWN (3)
- The number of digits in  $25^{55} \times 1024^{11}$  (3)
- A power of 2 (3)
- A cube (3)
- A prime number that is the sum of the first few consecutive prime numbers (2)
- A factor of 10 DOWN that is a multiple of a square greater than 1 (2)
- A multiple of 18 DOWN (3)
- The square of a prime number, with digits in descending order (3)
- A Fibonacci number where all adjacent digits differ by one (3)
- 23 DOWN increased by 1130% (3)
- A number with an odd number of factors (2)
- The product of the first five prime numbers (4)
- $4x + 14$  where

$$x = \frac{10 \text{ DOWN}}{22} - 15 \text{ DOWN} \quad (3)$$

## DOWN

- A multiple of 8 DOWN (3)
  - The sum of two squares (3)
  - The sum of the first five prime numbers (2)
  - Three more than 6 ACROSS (3)
  - A factor of 1 DOWN (2)
  - A Fibonacci number divisible by 11 (2)
  - The mean of 25 ACROSS and 11 DOWN (4)
  - This number is reversed if you multiply it by 4 (4)
  - A cube (2)
  - The remainder when 21 ACROSS is divided by 9 DOWN (2)
  - An odd number that is a fourth power (2)
  - The product of two triangular numbers that is not itself a triangular number (2)
  - The number of degrees in a rhombus plus 23 ACROSS (3)
  - The difference between 21 ACROSS and 9 DOWN (3)
  - $x$  where
- $$3 \text{ ACROSS} - \frac{25 \text{ ACROSS}}{30} = 3x - 2 \quad (3)$$
- The number of digits in  $2 \times 125^3 \times 4^4$  (2)

## CROSSNUMBER

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

### Marking Instructions—a reminder

- Pairs should write their own answers in the Answer Grid; teachers should not do this on their behalf.
- Pairs may only communicate through the teacher, and only 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, place a tick in the dotted circle and award one mark
  - if it is wrong, cross it out, write in the correct digit, and place a cross in the dotted circle
  - show the correct answer 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.

1.

£101.17

6.

29

2.

(a) 26 (b) 5

7.

(a) 2109 (b) 3018

3.

(a) 126 (b) 399

8.

63

4.

(a) 2 hours 48 minutes (b) 10.1 seconds

9.

20

5.

5

10.

(a) 5 (b) 29

On the RESPONSE SHEET:

Circle the mark awarded for each question and cross out the others.

TEAM NUMBER  SCHOOL NAME

<b>A1</b> 1499 minutes <input type="radio"/> 0 <input type="radio"/> 2	<b>A6</b> 11 <input type="radio"/> 0 <input type="radio"/> 2	<b>A11</b> 25 cm <sup>2</sup> <input type="radio"/> 0 <input type="radio"/> 2
<b>B1</b> 36444 <input type="radio"/> 0 <input type="radio"/> 2	<b>B6</b> 2019 <input type="radio"/> 0 <input type="radio"/> 2	<b>B11</b> 84 cm <sup>2</sup> <input type="radio"/> 0 <input type="radio"/> 2
<b>A2</b> 135 cm <sup>2</sup> <input type="radio"/> 0 <input type="radio"/> 2	<b>A7</b> 338 <input type="radio"/> 0 <input type="radio"/> 2	<b>A12</b> 248832 <input type="radio"/> 0 <input type="radio"/> 2
<b>B2</b> 12 <input type="radio"/> 0 <input type="radio"/> 2	<b>B7</b> 9 <input type="radio"/> 0 <input type="radio"/> 2	<b>B12</b> 12 <input type="radio"/> 0 <input type="radio"/> 2
<b>A3</b> 13 <input type="radio"/> 0 <input type="radio"/> 2	<b>A8</b> 160 £ <input type="radio"/> 0 <input type="radio"/> 2	<b>A13</b> 9:2 <input type="radio"/> 0 <input type="radio"/> 2
<b>B3</b> 14 <input type="radio"/> 0 <input type="radio"/> 2	<b>B8</b> 7 <input type="radio"/> 0 <input type="radio"/> 2	<b>B13</b> 64 cm <input type="radio"/> 0 <input type="radio"/> 2
<b>A4</b> 23844 <input type="radio"/> 0 <input type="radio"/> 2	<b>A9</b> 11 <input type="radio"/> 0 <input type="radio"/> 2	<b>A14</b> 170 marks <input type="radio"/> 0 <input type="radio"/> 2
<b>B4</b> 1381 minutes <input type="radio"/> 0 <input type="radio"/> 2	<b>B9</b> 29 % <input type="radio"/> 0 <input type="radio"/> 2	<b>B14</b> 14 seconds <input type="radio"/> 0 <input type="radio"/> 2
<b>A5</b> 9 ladles <input type="radio"/> 0 <input type="radio"/> 2	<b>A10</b> 2000 <input type="radio"/> 0 <input type="radio"/> 2	<b>A15</b> 3 <input type="radio"/> 0 <input type="radio"/> 2
<b>B5</b> 2553 <input type="radio"/> 0 <input type="radio"/> 2	<b>B10</b> 2880 <input type="radio"/> 0 <input type="radio"/> 2	<b>B15</b> 12 <input type="radio"/> 0 <input type="radio"/> 2

Correct answers score 2 points: circle 2 or 0 for each question and cross out the other number.

At the end of the round, draw a line under the last question attempted.

FINAL SCORE /60

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