

TEAM MATHS CHALLENGE  
2017

NATIONAL 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.

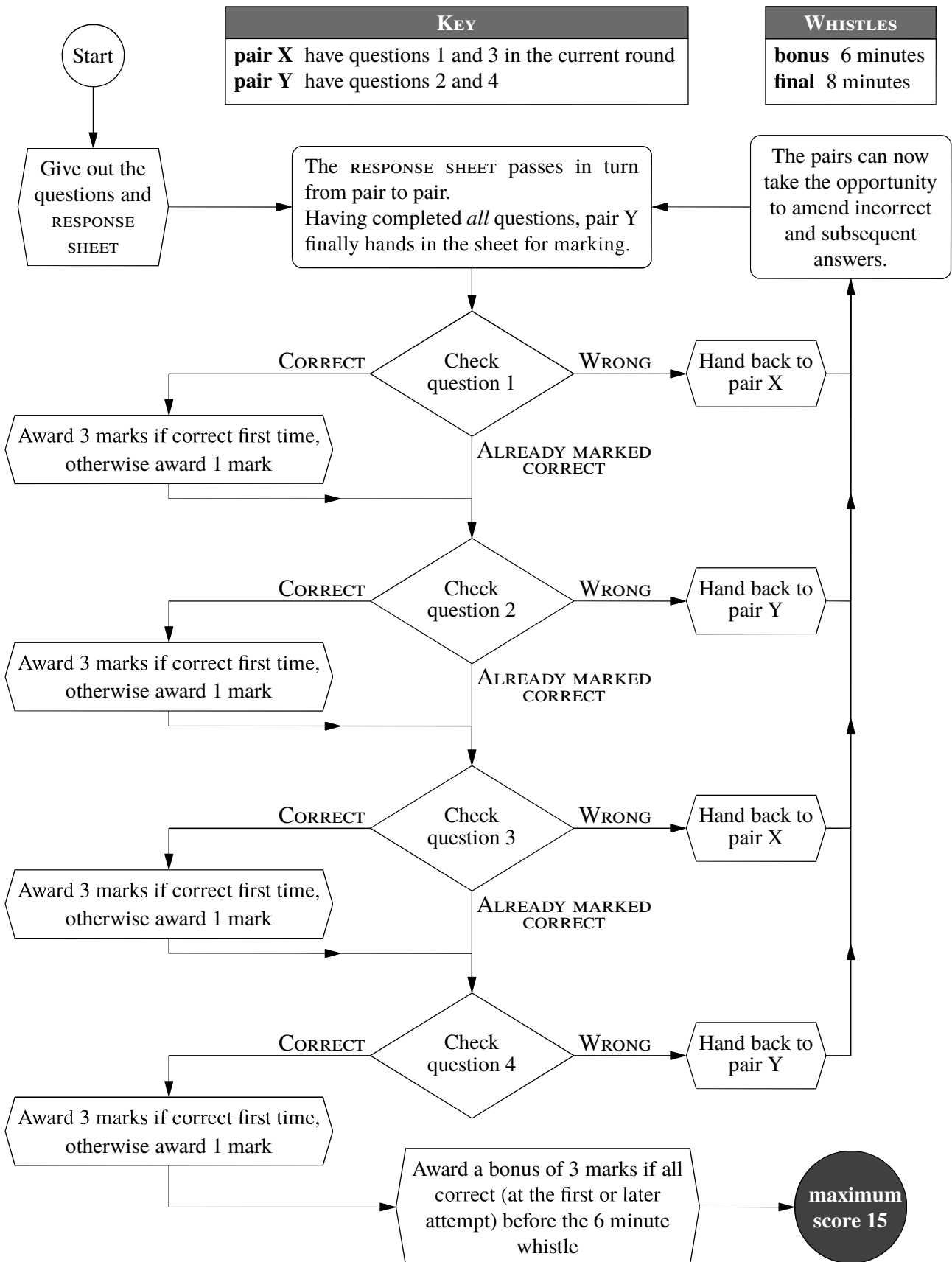
Please ensure that students use blue or black ink to write their answers; teachers are asked to use red ink for marking.

<b>A1</b>  110	<b>B1</b>  30	<b>C1</b>  50	<b>D1</b>  3
<b>A2</b>  11	<b>B2</b>  45	<b>C2</b>  5	<b>D2</b>  20
<b>A3</b>  99	<b>B3</b>  10	<b>C3</b>  12	<b>D3</b>  2
<b>A4</b>  220	<b>B4</b>  16	<b>C4</b>  216	<b>D4</b>  4.5 or $4\frac{1}{2}$ or $\frac{9}{2}$

On the RESPONSE SHEET:

Circle the mark awarded for each question and cross out the others.  
At the end of the round, either circle the bonus mark or cross it out.

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		

## ACROSS

- A triangular number (3)
- The mean of this number and 22 ACROSS is 15 DOWN (5)
- A multiple of 11 (3)
- The difference between 5 DOWN and twice 21 DOWN (3)
- $8^4 + 6^3 + 4^2 + 2^1$  (4)
- The digits of this number sum to 14 (4)
- The 13th prime number (2)
- $x$ , where  $\frac{22}{2x+2} = \frac{1}{3}$  (2)
- $18 \text{ DOWN} \times 21 \text{ DOWN}$  (4)
- $x$ , where  $72 : x = 1 : 48$  (4)
- A square (3)
- A factor of 1155 (3)
- $3 \text{ DOWN} \times 6 \text{ ACROSS} + 13 \text{ DOWN}$  (5)
- The sum of the digits of this row is a square (3)

## DOWN

- The mean of this number and 18 ACROSS is 3 ACROSS (5)
- $x$ , where  $x : 13 = 96 : 1$  (4)
- The 12th prime number (2)
- A triangular number (3)
- A square plus 20 ACROSS (3)
- A multiple of 4 DOWN (4)
- A cube (3)
- The sum of the digits is the same as that of 10 ACROSS (4)
- A multiple of 13 (3)
- $13 \text{ DOWN} \times 21 \text{ ACROSS}$  (5)
- $1^1 + 2^2 + 3^3 + 4^4 + 5^5$  (4)
- The sum of the digits of this column is a square (3)
- A square plus 21 ACROSS (3)
- $x$ , where  $\frac{180}{3x+3} = \frac{5}{2}$  (2)

## CROSSNUMBER

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

### Marking Instructions—a reminder

- Pairs may only communicate through the teacher, and only to request that the other pair works 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
  - 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.


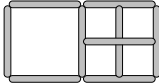
**Station 1**

(a) 135 (b) 216 (c) 198

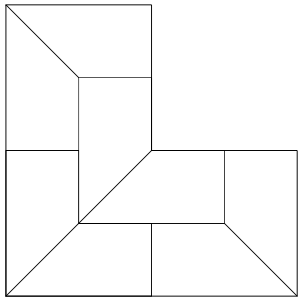
**Station 5**

(a) 16 (b) 24 (c) 128

**Station 2**

(a) For example,  (b) For example, 

**Station 6**



**Station 3**

	1	2	3	4
A				
B				

**Station 7**

(a) 

		11
	2	5
13	3	7

 or 

		13
	2	3
11	5	7

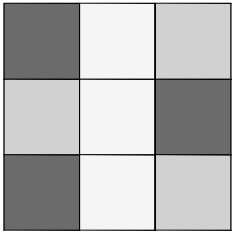
 (b) 

		5
	2	11
13	3	7

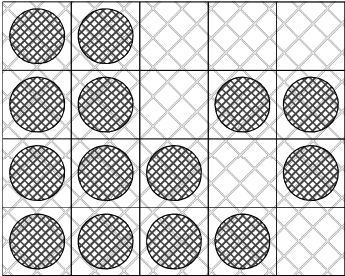
 or 

		13
	2	3
5	11	7

**Station 4**

For example, 

**Station 8**

For example, 

On the RESPONSE SHEET: Circle the mark awarded for each question and cross out the others.

TEAM NUMBER  SCHOOL NAME

<b>A1</b> 60 minutes (0) (2)	<b>A6</b> 70° (0) (2)	<b>A11</b> 11 minutes (0) (2)
<b>B1</b> 202 (0) (2)	<b>B6</b> 3400 (0) (2)	<b>B11</b> 7 cm (0) (2)
<b>A2</b> 2520 (0) (2)	<b>A7</b> 13 June OR 13 (0) (2)	<b>A12</b> 28.8 OR $28\frac{4}{5}$ cm <sup>2</sup> (0) (2)
<b>B2</b> 19 (0) (2)	<b>B7</b> 12 cm (0) (2)	<b>B12</b> 138 (0) (2)
<b>A3</b> $12^3$ (0) (2)	<b>A8</b> $3^{51}$ (0) (2)	<b>A13</b> 28 units (0) (2)
<b>B3</b> 15.58 cm <sup>2</sup> (0) (2)	<b>B8</b> 248 cm <sup>2</sup> (0) (2)	<b>B13</b> 3 : 2 (0) (2)
<b>A4</b> 3.25 OR $3\frac{1}{4}$ OR $\frac{13}{4}$ (0) (2)	<b>A9</b> 64 (0) (2)	<b>A14</b> 414 cm <sup>2</sup> (0) (2)
<b>B4</b> 486 (0) (2)	<b>B9</b> 34° (0) (2)	<b>B14</b> 2331 (0) (2)
<b>A5</b> 2 (0) (2)	<b>A10</b> 9 cm (0) (2)	<b>A15</b> 112 (0) (2)
<b>B5</b> 89 (0) (2)	<b>B10</b> 35 (0) (2)	<b>B15</b> $8^8 > 6^9 > 9^6$ (0) (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

BACK

PAGE