

Independent Schools  
Examinations Board

## COMMON ENTRANCE EXAMINATION AT 11+

# MATHEMATICS

## MARK SCHEME

*This is a suggested, not a prescriptive, mark scheme*

Monday 14 January 2008

M: 1 means 1 mark for the correct method

A: 2 means 2 marks for the correct answer


The majority of answers are worth two marks.  
Award M: 1 A: 1 unless otherwise stated.

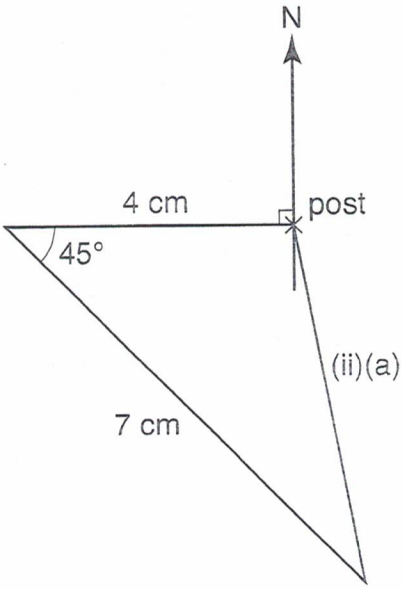
| Q.       | Answer   | Mark | Additional Guidance  |
|----------|----------|------|--|
| 1. (i)   | 212      | 2    | for all parts of Q1, allow full marks for correct answers without any working<br><br>if evidence of working is shown, then 1 mark for method and 1 mark for correct answer |
| (ii)     | 76       | 2    |  |
| (iii)    | 24       | 2    |  |
| (iv)     | 204      | 2    |  |
| 2. (a)   | 301      | 1    |  |
| (b)      | 1098     | 1    |  |
| (c)      | 4000     | 1    |  |
| (d)      | 8.3      | 1    |  |
| (e)      | -8 °C    | 2    | allow 1 mark for attempt to subtract 10 from 2   |
| 3. (i)   | 8        | 1    |  |
| (ii)     | 13 or 89 | 1    |  |
| (iii)    | 3 and 21 | 1    |  |
| (iv)     | 2 and 13 | 1    |  |
| (v)      | 13       | 2    | allow 1 mark for an attempt to find the middle number  |
| 4. (i)   | 9140 cm  | 1    |  |
| (ii)     | 2100     | 1    |  |
| (iii)    | 500 g    | 1    |  |
| (iv) (a) | 8        | 1    |  |
| (b)      | 2        | 1    |  |

| Q.     | Answer                                 | Mark | Additional Guidance   |
|--------|--|------|---|
| 5. (i) | (6,2) and (4,4) plotted                | 2    |   |
|        |  |      |   |
| (ii)   | see triangle <b>A</b> above            | 1    |   |
| (iii)  | isosceles triangle                     | 1    |   |
| (iv)   | see line of symmetry drawn on <b>A</b> | 1    |   |
| (v)    | see triangle <b>B</b> above            | 2    | allow 1 mark for each direction                               |
| (vi)   | see triangle <b>C</b> above            | 2    | 1 mark for correct orientation<br>1 mark for correct position |
| (vii)  | 1                                      | 1    |   |
| (viii) | 4 cm <sup>2</sup>                      | 1    |   |

| Q.              | Answer  | Mark            | Additional Guidance                     |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
|-----------------|---|-----------------|---|----------|--------------|---------|-----|-----------|-------|----------|---------------|--------|-----|----------|------|--------|---------|------|-----|---|--|
| 6. (i)          | <table><thead><tr><th>team name</th><th>time taken to finish, in seconds</th><th>position</th></tr></thead><tbody><tr><td>Active Eight</td><td>51.2</td><td>4th</td></tr><tr><td>Cheetahs</td><td>48.34</td><td>1st</td></tr><tr><td>Speedy Sports</td><td>51.08</td><td>3rd</td></tr><tr><td>Twisters</td><td>59.9</td><td>5th</td></tr><tr><td>X-treme</td><td>50.8</td><td>2nd</td></tr></tbody></table> | team name       | time taken to finish, in seconds        | position | Active Eight | 51.2    | 4th | Cheetahs  | 48.34 | 1st      | Speedy Sports | 51.08  | 3rd | Twisters | 59.9 | 5th    | X-treme | 50.8 | 2nd | 2 | take off 1 mark for each error or omission |
| team name       | time taken to finish, in seconds  | position        |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Active Eight    | 51.2  | 4th             |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Cheetahs        | 48.34   | 1st             |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Speedy Sports   | 51.08   | 3rd             |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Twisters        | 59.9  | 5th             |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| X-treme         | 50.8  | 2nd             |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| (ii)            | 11.56 s   | 2               | allow 1 mark for an attempt to subtract |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| (iii)           | 50.24 s   | 2               | allow 1 mark for an attempt to add      |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| (iv)            | 12.8 s  | 2               | allow 1 mark for an attempt to divide   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| 7. (i)          | 2   | 1               |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| (ii)            | <table><thead><tr><th>day of the week</th><th>number of people</th></tr></thead><tbody><tr><td>Monday</td><td>20</td></tr><tr><td>Tuesday</td><td>34</td></tr><tr><td>Wednesday</td><td>14</td></tr><tr><td>Thursday</td><td>8</td></tr><tr><td>Friday</td><td>30</td></tr><tr><td>Saturday</td><td>10</td></tr><tr><td>Sunday</td><td>22</td></tr></tbody></table>   | day of the week | number of people                        | Monday   | 20           | Tuesday | 34  | Wednesday | 14    | Thursday | 8             | Friday | 30  | Saturday | 10   | Sunday | 22      | 1    |     |   |  |
| day of the week | number of people  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Monday          | 20  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Tuesday         | 34  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Wednesday       | 14  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Thursday        | 8   |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Friday          | 30  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Saturday        | 10  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |
| Sunday          | 22  |                 |   |          |              |         |     |           |       |          |               |        |     |          |      |        |         |      |     |   |  |



| Q.              | Answer  | Mark            | Additional Guidance   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
|-----------------|---|-----------------|---|--------|----|---------|----|-----------|----|----------|---|--------|----|----------|----|--------|----|---|---------------------------------------|
| (iii)           | <table><tr><th>day of the week</th><th>number of people</th></tr><tr><td>Monday</td><td>20</td></tr><tr><td>Tuesday</td><td>34</td></tr><tr><td>Wednesday</td><td>14</td></tr><tr><td>Thursday</td><td>8</td></tr><tr><td>Friday</td><td>30</td></tr><tr><td>Saturday</td><td>10</td></tr><tr><td>Sunday</td><td>22</td></tr></table> | day of the week | number of people  | Monday | 20 | Tuesday | 34 | Wednesday | 14 | Thursday | 8 | Friday | 30 | Saturday | 10 | Sunday | 22 | 2 | allow 1 mark for two or three correct |
| day of the week | number of people  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Monday          | 20  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Tuesday         | 34  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Wednesday       | 14  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Thursday        | 8   |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Friday          | 30  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Saturday        | 10  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| Sunday          | 22  |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (iv)            | Tuesday   | 1               |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| 8. (i)          | £1.07   | 3               | allow 1 mark for six 2-pence coins<br><br>allow 1 mark for adding |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (ii)            | 20%   | 1               |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (iii)           |   |                 |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (a)             | see <b>A</b> on scale   | 1               |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (b)             | see <b>B</b> on scale   | 1               |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |
| (c)             | see <b>C</b> on scale   | 1               |   |        |    |         |    |           |    |          |   |        |    |          |    |        |    |   |                                       |

| Q.       | Answer  | Mark | Additional Guidance   |
|----------|---|------|---|
| 9. (i)   | 100 grams of margarine<br>125 grams of oats<br>100 grams of sugar<br>50 grams of flour<br>$1\frac{1}{2}$ tablespoons of syrup | 3    | allow 1 mark for two or three correct<br><br>allow 2 marks for four correct                               |
| (ii)     | 250 grams   | 2    | allow 1 mark for any suitable method  |
| (iii)    | 150 grams   | 2    | allow 1 mark for attempt to find $\frac{1}{4}$ of 200   |
| 10. (i)  | 600 m   | 1    |   |
| (ii)     | 9.30 am   | 1    |   |
| (iii)    | 800 m   | 1    |   |
| (iv) (a) | 12.30 pm and 1 pm   | 2    | allow 1 mark for each time  |
| (b)      | to have his lunch   | 1    | accept any suitable reason  |
| 11. (i)  |    | 3    | 1 mark for 4 cm ( $\pm 2$ mm)<br>1 mark for 7 cm ( $\pm 2$ mm)<br>1 mark for $45^\circ$ ( $\pm 2^\circ$ ) |
| (ii) (a) | see above   | 1    |   |
| (b)      | 5 cm  | 1    | allow 4.8 cm to 5.2 cm  |
| (c)      | 50 m  | 1    | allow follow through from (ii) (b)  |

| Q.   | Answer  | Mark             | Additional Guidance                        |        |  |                |         |  |                  |
|--|---|------------------|--|--------|--|----------------|---------|--|------------------|
| 12. (i)  | 14  | 2                |  |        |  |                |         |  |                  |
| (ii)   | 8   | 3                |  |        |  |                |         |  |                  |
| (iii)  | 1   | 1                | allow follow through                       |        |  |                |         |  |                  |
| (iv)   | <div>prime number</div> <div>square number</div> <div>cube number</div> | 2                | take off 1 mark for each error or omission |        |  |                |         |  |                  |
| 13. (i) (a)  | 12 m  | 1                |  |        |  |                |         |  |                  |
| (b)  | 16 m <sup>2</sup>   | 1                |  |        |  |                |         |  |                  |
| (ii)   | 9 m   | 1                |  |        |  |                |         |  |                  |
| (iii)  | 5 m   | 2                |  |        |  |                |         |  |                  |
| (iv)   | £180  | 3                | award method marks for correct working     |        |  |                |         |  |                  |
| 14. (i)  |   | 3                | take off 1 mark for each incorrect box     |        |  |                |         |  |                  |
| <table><tr><td>row 5</td><td><math>5^2 - 4^2 \longrightarrow 25 - 16 \longrightarrow 9</math></td><td><math>5 + 4 = 9</math></td></tr><tr><td>row 6</td><td><math>6^2 - 5^2 \longrightarrow 36 - 25 \longrightarrow 11</math></td><td><math>6 + 5 = 11</math></td></tr></table>                            |   |                  |  | row 5  | $5^2 - 4^2 \longrightarrow 25 - 16 \longrightarrow 9$        | $5 + 4 = 9$    | row 6   | $6^2 - 5^2 \longrightarrow 36 - 25 \longrightarrow 11$           | $6 + 5 = 11$     |
| row 5  | $5^2 - 4^2 \longrightarrow 25 - 16 \longrightarrow 9$                   | $5 + 4 = 9$      |  |        |  |                |         |  |                  |
| row 6  | $6^2 - 5^2 \longrightarrow 36 - 25 \longrightarrow 11$                  | $6 + 5 = 11$     |  |        |  |                |         |  |                  |
| (ii)   |   | 2                | take off 1 mark for each incorrect box     |        |  |                |         |  |                  |
| <table><tr><td>row 10</td><td><math>10^2 - 9^2 \longrightarrow 100 - 81 \longrightarrow 19</math></td><td><math>10 + 9 = 19</math></td></tr></table>   |   |                  |  | row 10 | $10^2 - 9^2 \longrightarrow 100 - 81 \longrightarrow 19$     | $10 + 9 = 19$  |         |  |                  |
| row 10   | $10^2 - 9^2 \longrightarrow 100 - 81 \longrightarrow 19$                | $10 + 9 = 19$    |  |        |  |                |         |  |                  |
| (iii)  |   | 3                | take off 1 mark for each incorrect box     |        |  |                |         |  |                  |
| <table><tr><td>row 20</td><td><math>\dots - \dots \longrightarrow 400 - 361 \longrightarrow 39</math></td><td><math>20 + 19 = 39</math></td></tr><tr><td>row 100</td><td><math>100^2 - 99^2 \longrightarrow \dots - \dots \longrightarrow 199</math></td><td><math>100 + 99 = 199</math></td></tr></table> |   |                  |  | row 20 | $\dots - \dots \longrightarrow 400 - 361 \longrightarrow 39$ | $20 + 19 = 39$ | row 100 | $100^2 - 99^2 \longrightarrow \dots - \dots \longrightarrow 199$ | $100 + 99 = 199$ |
| row 20   | $\dots - \dots \longrightarrow 400 - 361 \longrightarrow 39$            | $20 + 19 = 39$   |  |        |  |                |         |  |                  |
| row 100  | $100^2 - 99^2 \longrightarrow \dots - \dots \longrightarrow 199$        | $100 + 99 = 199$ |  |        |  |                |         |  |                  |
| (iv)   | 1999  | 1                |  |        |  |                |         |  |                  |
| Total  |   | 100              |  |        |  |                |         |  |                  |

**Exercise 1.4: A Dragon's Diet from Dragon Boy by Dick King Smith**

| Question | Answer   | Mark | Additional guidance                                     |
|----------|--|------|---|
| 1.       | The tinned knight which he had eaten the night before caused the belching.   | 1    |   |
| 2.(a)    | A knight might taste metallic due to his armour.   | 1    |   |
| (b)      | Montagu does not enjoy eating knights: 'It's not that I really like the taste of the fellows...'   | 1    |   |
| 3.       | A person with a will made of 'iron' is very strong minded. Iron is used metaphorically, as it is a very strong metal.  | 2    | Full marks for a clear explanation.                     |
| 4.       | Mrs Bunsen-Burner would not be pleased to be told this, for dragons take pride in the ugliness of their appearance, not the beauty.  | 2    | Only one mark for a 'no' answer without an explanation. |
| 5.       | Mrs Bunsen-Burner's attitude towards her husband at the beginning seems bossy and in control: '...it was seldom that he summoned up the courage to oppose her will which was of iron.' After he has paid her a compliment, however, her 'blood-red eyes softened' and 'she would have fluttered her eyelashes if she had had any.'   | 3    | Full marks for a clear explanation.                     |
| 6.       | <p><i>Answers may vary; look for references to:</i></p> <ul style="list-style-type: none"> <li>• he often belches, but he apologises afterwards (plus quote to support);</li> <li>• he dislikes eating knights, but does so because they are pests (plus quote to support);</li> <li>• he can usually be found snoozing in the forest and minding his own business (plus quote to support);</li> <li>• he is clever enough to be able to get what he wants by using flattery (plus quote to support).</li> </ul> | 3    | Three marks for several points and explanations.        |