

MATHEMATICS

MID-TERM 2 EXAM

Form 1

MARKING SCHEME

MATHEMATICS

SECTION I (30 MARKS)

| NO | WORKING | MARKS | REMARKS | | | | | | | | | | | | | | | | | | | | |
|----|---|--------------|---------|-----|------|----|------|---|-----|---|-----|---|-----|---|----|---|---|--|---|-------------------------------|---|--------------------|--|
| 1. | (a) 10 010 (b) 102 365 478 001 | B1 B1 | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | | | | | | | | | | | | | | | | | | | | | |
| 2. | (a) 7 532 (b) Total value = 5×100 = 500 | B1 A1 | | | | | | | | | | | | | | | | | | | | | |
| | | 2 | | | | | | | | | | | | | | | | | | | | | |
| 3. | 7056 <table style="border-collapse: collapse; margin-left: 20px;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-right: 5px;">7056</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-right: 5px;">3528</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-right: 5px;">1764</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-right: 5px;">882</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="padding-right: 5px;">441</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="padding-right: 5px;">147</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">7</td><td style="padding-right: 5px;">49</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">7</td><td style="padding-right: 5px;">7</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;"></td><td style="padding-right: 5px;">1</td></tr> </table> $7056 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 7 \times 7$ $= 2^4 \times 3^2 \times 7^2$ | 2 | 7056 | 2 | 3528 | 2 | 1764 | 2 | 882 | 3 | 441 | 3 | 147 | 7 | 49 | 7 | 7 | | 1 | M1 (Table) M1 A1 | | | |
| 2 | 7056 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 3528 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 1764 | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 882 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 441 | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 147 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 49 | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 7 | | | | | | | | | | | | | | | | | | | | | | |
| | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | | 3 | | | | | | | | | | | | | | | | | | | | | |
| 4. | <table border="1" style="margin-left: 20px; border-collapse: collapse; text-align: center;"> <tr><td>3</td><td>9</td><td>15</td><td>21</td></tr> <tr><td>3</td><td>3</td><td>5</td><td>7</td></tr> <tr><td>5</td><td>1</td><td>5</td><td>7</td></tr> <tr><td>7</td><td>1</td><td>1</td><td>7</td></tr> <tr><td></td><td>1</td><td>1</td><td>1</td></tr> </table> $7 \times 5 \times 3 \times 3 = 315 \text{ minutes} = \frac{315}{60} = 5 \text{ hrs } 15 \text{ minutes}$ 11.00 pm – 5 hrs 15 minutes 10.45 p.m | 3 | 9 | 15 | 21 | 3 | 3 | 5 | 7 | 5 | 1 | 5 | 7 | 7 | 1 | 1 | 7 | | 1 | 1 | 1 | M1 M1 A1 | |
| 3 | 9 | 15 | 21 | | | | | | | | | | | | | | | | | | | | |
| 3 | 3 | 5 | 7 | | | | | | | | | | | | | | | | | | | | |
| 5 | 1 | 5 | 7 | | | | | | | | | | | | | | | | | | | | |
| 7 | 1 | 1 | 7 | | | | | | | | | | | | | | | | | | | | |
| | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | |
| | | 3 | | | | | | | | | | | | | | | | | | | | | |
| 5. | <table style="display: inline-table; border-collapse: collapse; vertical-align: middle;"> <tr> <td style="border-right: 1px solid black; padding: 0 10px;">2</td> <td style="border-right: 1px solid black; padding: 0 10px;">108</td> <td style="border-right: 1px solid black; padding: 0 10px;">168</td> <td style="padding: 0 10px;">180</td> </tr> </table> | 2 | 108 | 168 | 180 | M1 | | | | | | | | | | | | | | | | | |
| 2 | 108 | 168 | 180 | | | | | | | | | | | | | | | | | | | | |

| | | | |
|----|---|--------------------|--|
| | $\begin{array}{cccc} 2 & 54 & 84 & 90 \\ 3 & 27 & 42 & 45 \\ & 9 & 14 & 15 \end{array}$ <p>Largest container = $2 \times 2 \times 3$ = 12 litres</p> | M1 A1 | |
| | | 3 | |
| 6. | <p><u>1 478 019</u> $(1+7+0+9) - (4+8+1)$ $17 - 13 = 4$ Therefore 1 478 019 is not divisible by 11</p> | M1 A1 | |
| | | 2 | |
| 7. | <p>NUMERATOR $-4 + 84 + 10$ $= 90$</p> <p>DENOMINATOR $6 \times 3 = 18$</p> <p>QUOTIENT $\frac{90}{18} = 5$</p> | M1 M1 A1 | |
| | | 3 | |
| 8. | <p>$\frac{1}{3}$ of $\frac{7}{12} \div \frac{1}{12}$</p> <p>$\frac{1}{3} \times \frac{7}{12} = \frac{7}{36}$</p> <p>$\frac{7}{36} \div \frac{1}{12} = \frac{7}{36} \times \frac{12}{1} = \frac{7}{3}$</p> <p style="text-align: right;">$2\frac{1}{3}$</p> | M1 A1 | The final answer must be a mixed number. |
| | | 2 | |
| 9. | <p>Let $x = 0.2\dot{3}$ $10x = 2.333333...$</p> | | |

| | | | |
|-----|--|----------------------|--|
| | $100x = 23.333333\dots$ $100x - 10x = 23.333333\dots - 2.333333\dots$ $90x = 21$ $x = \frac{21}{90} = \frac{7}{30}$ | M1 M1 A1 | |
| | | 3 | |
| 10. | $\sqrt{0.792} = \sqrt{79.2 \times 10^{-2}}$ $= 8.899 \times \frac{1}{10}$ $= 0.8899$ | M1 M1 A1 | |
| | | 3 | |
| 11. | $\sqrt{\frac{0.0625 \times 2.56 \times 10^6}{0.25 \times 0.08 \times 0.5 \times 10^6}}$ $= \sqrt{\frac{625 \times 256}{25 \times 8 \times 50}}$ $= \sqrt{16}$ $= 4$ | M1 M1 M1 A1 | |
| | | 4 | |

SECTION II (20 marks)

| NO | WORKING | MARKS | REMARKS |
|----|---------|-------|---------|
|----|---------|-------|---------|

| | | | |
|-------------------|---|---|--|
| <p>12.</p> | <p>(a) School fees = $\frac{1}{4}$</p> <p>Remainder = $\frac{4}{4} - \frac{1}{4} = \frac{3}{4}$</p> <p>Electricity and water = $\frac{1}{4}$ of $\frac{3}{4} = \frac{1}{4} \times \frac{3}{4} = \frac{3}{16}$</p> <p>Fees + electricity and water = $\frac{1}{4} + \frac{3}{16} = \frac{7}{16}$</p> <p>Remainder = $\frac{16}{16} - \frac{7}{16} = \frac{9}{16}$</p> <p>Transport = $\frac{1}{9}$ of $\frac{9}{16} = \frac{1}{9} \times \frac{9}{16} = \frac{1}{16}$</p> <p>Fees + electricity and water + transport</p> <p>= $\frac{1}{4} + \frac{3}{16} + \frac{1}{16} = \frac{8}{16} = \frac{1}{2}$</p> <p>Remaining = $\frac{1}{2} = 8400$</p> <p>Total January salary = $\frac{2}{1} \times 8400 = \text{shs. } 16\ 800$</p> <p>(b) School fees</p> <p>= $\frac{1}{4} \times 16800$</p> <p>= shs. 4200</p> <p>(c) Transport</p> <p>= $\frac{1}{16} \times 16800$</p> <p>= shs. 1050</p> <p>(d) Water and electricity</p> <p>= $\frac{3}{16} \times 16800$</p> <p>= shs. 3150</p> | <p>M1</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> | |
| | | <p>10</p> | |
| <p>13.</p> | <p>(a) Number of cartons</p> <p>= $\frac{30\ 816}{24}$</p> <p>= 1284 cartons</p> | <p>M1</p> <p>A1</p> | |

| | | | |
|--|--|---|--|
| | <p>(b) Total mass of the empty cartons $1284 \text{ cartons} \times 2\text{kg}$ 2568kg</p> <p>(c) Total mass of books in one carton $\text{mass of books in one carton} = 12\text{kg} - 2\text{kg}$ $= 10\text{kg per carton}$</p> <p>(d) Total mass of all the exercise books $\text{Total mass of all the exercise books} = 1284 \times 10\text{kg}$ $= 12\,840\text{ kg}$</p> <p>(e) Mass of one exercise book $\text{mass of one book} = 10\text{kg} \div 24$ $= 0.42\text{kg}$</p> | <p>M1 A1</p> <p>M1 A1</p> <p>M1 A1</p> <p>M1 A1</p> | |
| | | <p>10</p> | |