



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2012

MATHEMATICAL LITERACY: PAPER I

MARKING GUIDELINES

Time: 3 hours

150 marks

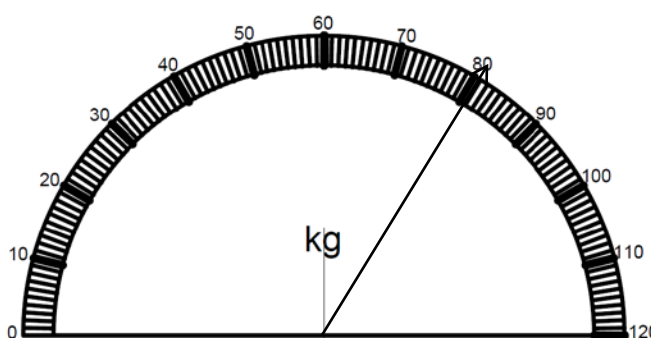
These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

TL = Thinking Level
AO = Answer Only
MA = Mark Allocation

| | Give full marks for answers only, unless question stipulates. | TL | AO | MA |
|-------|--|----|----|----|
| | QUESTION 1 | | | |
| 1.1.1 | $\frac{4}{5} \times 23^2 + 1,8$ $\frac{4}{5} \times 529 + 1,8$ $423,2 + 1,8$ $= 425$ m Any part of calculation correct a Final answer correct | 1 | 2 | 2 |
| 1.1.2 | = R122,50 *Penalise decimal. Must have zero showing place value m for multiplying ca for final answer | 1 | 2 | 2 |
| 1.2 | = 595 g Penalise unit. m Calculating $15\% \times 700 = 105$ g OR $85\% \times 700$ ca Subtracting to get final answer *If they increase or decrease by 15% : 1 mark | 1 | 2 | 2 |
| 1.3 | a $\frac{128}{100}$ a $\frac{32}{25}$ or $1\frac{7}{25}$ *If they attempt to simplify it further only 1 mark. $\frac{28}{100}$ m $1,28/100$ m | 1 | 2 | 2 |
| 1.4 | = 8: 1 or 1:0,125 (Unit form) m Dividing both sides by a common factor a Final answer (Can be written in a fraction) Must show : 1 | 1 | 2 | 2 |
| 1.5 | $24 \text{ min} \times 4^a$ or $24 \times 12 \div 3^a$ $= 96 \text{ minutes}^{ca}$ OR $1,6 \text{ hrs}$ OR $1 \text{ hr } 36 \text{ min}$ | 1 | 2 | 2 |

| | | | | |
|------------|--|----------|----------|----------|
| <p>1.6</p> | <p>$0,2 \times 60^m = 12$ 12 hours 12 minutes ^a</p> <p>*732 min : 1 mark *12hrs 20 min : 0 marks if no working *12hrs 2 min : 0 marks if no working</p> | <p>1</p> | <p>2</p> | <p>2</p> |
| <p>1.7</p> | <p>= R482,85 Method 1 : $\frac{R550,45}{114\%} = R482,85$</p> <p>^m dividing OR Method 2: $R550,45 \times \frac{100}{114} = R482,85$</p> <p>^m 114% OR Method 3: $\frac{R550,45}{1,14} = R482,85$</p> <p>^a Final answer OR Method 4: $x \times 114\% = R550,45$ $x = \frac{R550,45}{114\%}$ $x = R482,85$</p> <p>OR Method 5: $100\% \div 114\% \times R550,45$ $= R482,85$</p> <p>*NOTE: If the learners calculate 14% of R550,45 and then subtract they only get 1 method mark! But ONLY if they show working. [R550,45 – 77,063 = R473,39] *If they show only VAT : 0 marks.</p> | <p>2</p> | <p>3</p> | <p>3</p> |
| <p>1.8</p> | <p>$R1,15 \times 30 = R34,50$ ^m $\times 30$ ^a Final answer</p> <p>*If a dozen is 6, then $R1,15 \times 15^m = R17,25$ *12,5 × R1,15 : 0 marks *2,5 × R1,15 = R2,89 : 0 marks</p> | <p>1</p> | <p>2</p> | <p>2</p> |
| <p>1.9</p> | <p>$R17,99 \times 4 = R71,96^a$ $R36,99 \times 2 = R73,98^a$ 10 kg = R74,99 The 2,5 kg is the best buy. Option 1.^a</p> <p>OR $R17,99 \div 2,5 = R7,20/\text{kg}^a$ $R36,99 \div 5 = R7,40/\text{kg}^a$ $R74,99 \div 10 = R7,50/\text{kg}$ The 2,5 kg is the best buy. Option 1.(Spar)^a</p> | <p>3</p> | <p></p> | <p>3</p> |

| | | | | |
|--------|--|---|---|---|
| 1.10 | $> 27^{\circ} \leq 28^{\circ} \text{C}$ ^{aa} Final correct answer ^m if answer between 20 and 30 e.g. 24 | 1 | 2 | 2 |
| 1.11.1 | $25 \div 2,2 = 11,36 \text{ kg}$ (Rounding not penalised) ^m _a *If multiplying (55kg) : 0 marks | 2 | 2 | 2 |
| 1.11.2 | $92 \text{ kg} - 11,4 \text{ kg} = 80,64 \text{ kg}$ ^{ca} from previous answer OR $92 \text{ kg} - 11 \text{ kg} = 81 \text{ kg}$ ^{ca} from previous answer OR $92 \text{ kg} - 11 \text{ kg} = 81,6 \text{ kg}$ ^{ca} from previous answer | 1 | 1 | 1 |
| 1.11.3 | ^{ca} from previous answer. If between 80kg and 81kg ^{am} If between 80kg and 90kg ^m  | 1 | 2 | 2 |
| 1.12 | $4,1 \text{ cm} \times 50\,000 = 205\,000 \text{ cm}$ ^m $205\,000 \text{ cm} \div 100\,000 = 2,05 \text{ km}$ ^m for dividing, even if it's the incorrect number of zeros ^a Final answer *NOTE: If they don't know how many cm in a km they cannot get 3 marks. | 1 | 3 | 3 |
| 1.13.1 | $= 8$ ^a Final correct answer | 1 | 1 | 1 |
| 1.13.2 | 4 ^{am} OR $\frac{4}{8}$ ^{a m} OR $\frac{1}{2}$ ^{am} 2 ^m OR $\frac{2}{4}$ ^m OR $\frac{2}{8}$ ^m | 2 | 2 | 2 |

| | | | | |
|--------|--|-----------|-----------|-----------|
| 1.12.3 | House on beachfront – 3 Bedrooms – Pool House on beachfront – 4 Bedrooms – Pool House two blocks from beachfront – 3 Bedrooms – Pool House two blocks from beachfront – 4 Bedrooms – Pool (ANY TWO) ^a each correct one *If sentences not complete then 1 mark. *If they write only “3 bed or 4 bed” : 0 marks. | 1 | 2 | 2 |
| | | | | 37 |
| | QUESTION 2 | TL | AO | MA |
| 2.1 | True ^a | 1 | 1 | 1 |
| 2.2 | True ^a | 1 | 1 | 1 |
| 2.3 | True OR False ^a | 1 | 1 | 1 |
| 2.4.1 | False ^a | 1 | 1 | 1 |
| 2.4.2 | True ^a | 1 | 1 | 1 |
| 2.5.1 | False ^a | 1 | 1 | 1 |
| 2.5.2 | False ^a | 1 | 1 | 1 |
| 2.5.3 | False ^a | 1 | 1 | 1 |
| 2.5.4 | False ^a | 1 | 1 | 1 |
| 2.5.5 | False ^a | 1 | 1 | 1 |
| 2.5.6 | False ^a | 1 | 1 | 1 |
| 2.5.7 | True ^a | 1 | 1 | 1 |
| 2.5.8 | True ^a | 1 | 1 | 1 |
| | | | | 13 |
| | QUESTION 3 | TL | AO | MA |
| 3.1 | A = Wear It Well ^a B = Jackets-R-Us ^a *If A = Wear It Well ^a OR A = Jackets-R-Us B = Wear It Well B = Jackets-R-Us ^a | 1 | 2 | 2 |
| 3.2 | $C = 50 \times R225^m = R11\ 250^{ca}$ If they use values of other company correctly, they get 1 mark. ($50 \times R200 = R1\ 000$) | 2 | 5 | 5 |

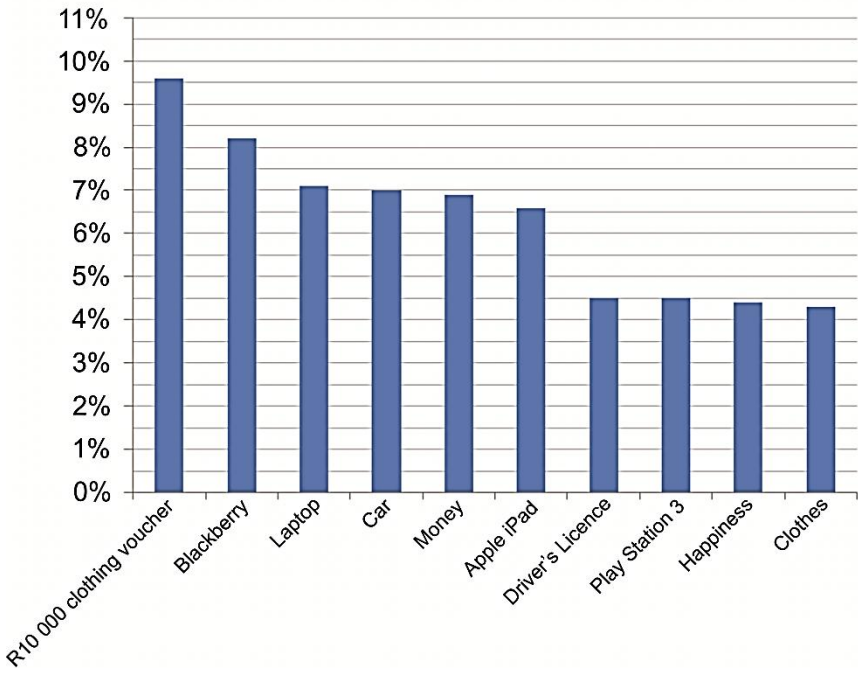
| | $D = (200 \times R200)^a + R2\,500^a = R42\,500^{ca}$ If they use values of other company correctly, they get 1 mark. $* D = \text{Cost of 150 jackets} + \text{cost of 50 jackets} = R45\,000^{mca}$ | | | | | | | | | | | | | | |
|---------------------------|---|-------------------------------------|--------------------------------------|-------------------------------------|---|---|------|-----|-------|-------|-----|-------|-------|---|---|
| 3.3.1 | $x \text{ axis} = \text{Number of Jackets ordered}^a$ $y \text{ axis} = \text{Amount of Money}^a$ | 1 | 2 | 2 | | | | | | | | | | | |
| 3.3.2 | a starting point ca end point ca graph a for key <p style="text-align: center;">A comparison of costs from Wear It Well and Jackets-R-Us</p> <table border="1"> <caption>Data points from the graph</caption> <thead> <tr> <th>Number of jackets ordered</th> <th>Wear It Well (Black Line) Total Cost</th> <th>Jackets-R-Us (Grey Line) Total Cost</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>2500</td></tr> <tr><td>100</td><td>22500</td><td>22500</td></tr> <tr><td>200</td><td>45000</td><td>42500</td></tr> </tbody> </table> | Number of jackets ordered | Wear It Well (Black Line) Total Cost | Jackets-R-Us (Grey Line) Total Cost | 0 | 0 | 2500 | 100 | 22500 | 22500 | 200 | 45000 | 42500 | 2 | 4 |
| Number of jackets ordered | Wear It Well (Black Line) Total Cost | Jackets-R-Us (Grey Line) Total Cost | | | | | | | | | | | | | |
| 0 | 0 | 2500 | | | | | | | | | | | | | |
| 100 | 22500 | 22500 | | | | | | | | | | | | | |
| 200 | 45000 | 42500 | | | | | | | | | | | | | |
| 3.3.3 | A comparison of costs from Wear it Well and Jackets-R-Us. a | 1 | 1 | 1 | | | | | | | | | | | |
| 3.4.1 | R12 000 to R13 000 aa (Accurate calculated answer = R12 375) | 2 | 2 | 2 | | | | | | | | | | | |
| 3.4.2 | 141 / 142 / 143 / 144 aa 140 a OR 145 a OR 142.2 a | 2 | 2 | 2 | | | | | | | | | | | |

| | | | | |
|-------|--|-----------|-----------|-----------|
| 3.4.3 | Company A: Wear It Well ^{ca} (according to their graphs) The line representing 'Wear it Well' is below the line representing Jackets-R-Us ^{ca} (Any correct suitable explanation) *If they state reason being because of no fixed price: 0 marks. | 2 | | 2 |
| 3.4.4 | 90 - 110 ^a Labelling point E on Graph ^a (See 3.3.1 above) | 2 | | 2 |
| 3.5 | $R225 - R75 = R150^a$ $\frac{R150}{R75} \times 100\% \checkmark^m = 200\%^{ca}$ | 2 | 4 | 4 |
| 3.6.1 | $A = 3\,000(1 + 5\% \cdot 1)$ substitution $n = 1^a$ $A = R3\,150^{ca}$ *Note: If $n = 12$, $A = R4\,800$ (2 marks) *If compound interest formula used correctly: ^{ca} | 2 | 3 | 3 |
| 3.6.2 | $R3\,150 \div 12^a = R262,50^{ca}$ * $R4800 \div 12^a = R400^{ca}$ | 2 | 2 | 2 |
| | | | | 31 |
| | | | | |
| | QUESTION 4 | | | |
| | | TL | AO | MA |
| 4.1.1 | $1111,9 \text{ feet} \times 0,305 = 339,1295 \text{ m}^m \text{ }^a = 339 \text{ m}^r$ * $1111,9 \div 0,305 = 3645,57^a \approx 3646^r$ | 1 | 3 | 3 |
| 4.1.2 | $339 \text{ m} \div 4,13 \text{ m} = 82,08 \text{ cars}^m$ $82 / 83 \text{ cars}^{ca}$ * $3646 \div 4,13^m \approx 882 / 883^{ca}$ | 1 | 2 | 2 |
| 4.2 | $40 \text{ km/h} \times 24 \text{ h}^m = 960 \text{ km}^a$ | 2 | 2 | 2 |
| 4.3 | $113 \text{ m}^2 \div 11,3 \text{ m}^m = 10 \text{ m}^a$ *If they show $L \times B :^m$ | 2 | 2 | 2 |
| | | 1 | 1 | 1 |

| 4.4.1 | $\$22\ 000 - \$1\ 900 = \$20\ 100^a$ | | | | | | | | | | | | | | | | | |
|--------------|--|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|-----|---|---|---|
| 4.4.2 | $\$20\ 100 \times R7,92340^m = R159\ 260,34^{ca}$ *If cents dropped, still 2 marks. *If conversion decimals dropped: $\$20\ 100 \times R7,29 = R159\ 192^m$ | 1 | 2 | 2 | | | | | | | | | | | | | | |
| 4.5.1 | $R32,95 \times 5400^a = R177\ 930^{ca}$ | 1 | 2 | 2 | | | | | | | | | | | | | | |
| 4.5.2 | $11\ 500 \times 340\ ml^m = 3\ 910\ 000\ ml^a = 3\ 910\ \ell^{ca}$ * Students are expected to know that $1\ 000\ ml = 1\ \ell$ | 2 | 3 | 3 | | | | | | | | | | | | | | |
| 4.5.3 (a) | $A = 5\ 700\ \ell - 4\ 900\ \ell^a \text{ or } ^m = 800\ \ell^a$ | 1 | 2 | 2 | | | | | | | | | | | | | | |
| (b) | <p>^{ca} per correct value / point</p> <p style="text-align: center;"><u>Litres of Milk available at the beginning of each day</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Day 1</th> <th>Day 2</th> <th>Day 3</th> <th>Day 4</th> <th>Day 5</th> <th>Day 6</th> <th>Day 7</th> </tr> </thead> <tbody> <tr> <td>5700</td> <td>4900</td> <td>3800</td> <td>2900</td> <td>2500</td> <td>1750</td> <td>800</td> </tr> </tbody> </table> | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | 5700 | 4900 | 3800 | 2900 | 2500 | 1750 | 800 | 2 | 3 | 7 |
| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 | | | | | | | | | | | | |
| 5700 | 4900 | 3800 | 2900 | 2500 | 1750 | 800 | | | | | | | | | | | | |
| 4.6.1 | 12^a | 2 | | 1 | | | | | | | | | | | | | | |
| 4.6.2 | $H^a\ 35\ \text{and}\ 36^a$ OR $H^a\ 20\ \text{and}\ 21^a$ | 2 | 2 | 2 | | | | | | | | | | | | | | |

| | | | | |
|-----|---|-----------|-----------|----------------|
| 4.7 | SE ^a | 1 | 1 | 1 |
| | | | | 30 |
| | QUESTION 5 | TL | AO | M A |
| 5.1 | <p>$P = 145\text{cm} + 145\text{cm} + 75\text{cm} + 75\text{cm}^{\text{m}}$ $P = 440^{\text{a}} \text{cm}^{\text{u}}$ accept 4 400 mm or 4,4 m</p> <p>*If perimeter of border = 460cm : 2 marks</p> | 1 | 3 | 3 |
| 5.2 | <p>Method 1: $440\text{cm} \div^{\text{m}} 2,5\text{cm}^{\text{a (converting)}} = 176$ $176 + 4^{\text{a}} = 180 \text{ tiles}^{\text{ca}}$</p> <p>Method 2: $145\text{cm} \div 2,5 \text{ cm}^{\text{a}} = 58 \text{ tiles} \times 2 = 116 \text{ tiles}$ $75\text{cm} \div 2,5 \text{ cm} = 30 \text{ tiles} \times 2 = 60 \text{ tiles}$ $116 + 60 = 176 \text{ tiles}$ $176 + 4^{\text{a}} = 180 \text{ tiles}^{\text{ca}}$</p> <p>Method 3: Area of Border \div Area of Tile = 180 $1125^{\text{a}} \div^{\text{m}} 6,25^{\text{a}} = 180^{\text{ca}}$</p> <p>Method 4: $80 \div 2,5 = 32$ $150 \div 2,5 = 60$ $(32 + 60) \times 2^{\text{m}} = 184^{\text{ca}} - 4^{\text{a}} = 180^{\text{ca}}$</p> <p>*Inside border = 172 tiles</p> | 2 | 4 | 4 |
| 5.3 | <p>Method 1: $180 \times 2^{\text{m}} = 360 \text{ tiles}^{\text{ca}}$ $360 +^{\text{m}} 8^{\text{a}} = 368 \text{ tiles}^{\text{ca}}$</p> <p>Method 2: $145 \text{ cm} + 5 \text{ cm}^{\text{a}} = 150 \text{ cm}$ $150 \text{ cm} \div 2,5 \text{ cm} = 60 \text{ tiles} \times 2 = 120 \text{ tiles}^{\text{m}}$ $75\text{cm} + 5\text{cm} = 80\text{cm}$ $80\text{cm} \div 2,5\text{cm} = 32 \text{ tiles} \times 2 = 64 \text{ tiles}$ $120 \text{ tiles} + 64 \text{ tiles} = 184 \text{ tiles}$ $184 + 180 + 4^{\text{ma}} = 368 \text{ tiles}^{\text{ca}}$</p> <p>Method 3: Area of two borders = $13\,175\text{cm}^2^{\text{a}}$ Area of mirror = $10\,875 \text{ cm}^2$ $13\,175\text{cm}^2 -^{\text{m}} 10\,875 \text{ cm}^2$ $= 2300\text{cm}^2^{\text{ca}} \div^{\text{m}} 6,25\text{cm}^2$ $= 368^{\text{ca}}$</p> | 3 | 5 | 5 |
| 5.4 | <p>$368 \text{ tiles} \div 20 = 18,4^{\text{ca}}$ She will need 19 boxes.^{ca (round up)}</p> | 1 | 2 | 2 |
| | | | | 14 |

| | QUESTION 6 | TL | AO | M A |
|-------|--|-----------|-----------|----------------|
| 6.1 | 7242 ^a | 1 | 1 | 1 |
| 6.2 | Feb – March ^a 2011 ^a Accept Feb <u>or</u> March | 1 | 2 | 2 |
| 6.3 | $22 - 8^m = 14^a$ | 2 | 2 | 2 |
| 6.4 | McDonalds ^a | 1 | 1 | 1 |
| 6.5 | Nike ^a | 1 | 1 | 1 |
| 6.6.1 | KwaZulu-Natal ^a | 1 | 1 | 1 |
| 6.6.2 | Gauteng ^a | 1 | 1 | 1 |
| 6.6.3 | Free State ^a | 1 | 1 | 1 |
| 6.7 | $100\% - (39.6 + 25.1)^m$ $= 35.3\%a$ | 1 | 2 | 2 |
| 6.8.1 | Cellphone ^a | 1 | 1 | 1 |
| 6.8.2 | 'Mxit ^a and Bible ^a | 1 | 2 | 2 |
| 6.8.3 | $\approx 6,2\%aa$ 6,1 to 6,4% ^{aa} 6 ^a OR 6,5 ^a | 1 | 2 | 2 |

| 6.8.4 | Love ^a | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|--|------|------------|--------------------------|------|------------|------|--------|------|-----|------|-------|------|------------|------|------------------|------|----------------|------|-----------|------|---------|------|---|---|----|
| 6.9 | ^a heading of graph ^{aa} label on each axis ^{aa} 7 to 10 bars accurate OR ^a 4 to 6 bars accurate ^{aa} If it is a bar graph <p style="text-align: center;"><u>Top 10 Birthday Wishes</u></p>  <table border="1" data-bbox="279 560 1141 1232"> <caption>Top 10 Birthday Wishes Data</caption> <thead> <tr> <th>Wish</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>R10 000 clothing voucher</td> <td>9.5%</td> </tr> <tr> <td>Blackberry</td> <td>8.2%</td> </tr> <tr> <td>Laptop</td> <td>7.1%</td> </tr> <tr> <td>Car</td> <td>7.0%</td> </tr> <tr> <td>Money</td> <td>6.9%</td> </tr> <tr> <td>Apple iPad</td> <td>6.6%</td> </tr> <tr> <td>Driver's Licence</td> <td>4.5%</td> </tr> <tr> <td>Play Station 3</td> <td>4.5%</td> </tr> <tr> <td>Happiness</td> <td>4.4%</td> </tr> <tr> <td>Clothes</td> <td>4.3%</td> </tr> </tbody> </table> | Wish | Percentage | R10 000 clothing voucher | 9.5% | Blackberry | 8.2% | Laptop | 7.1% | Car | 7.0% | Money | 6.9% | Apple iPad | 6.6% | Driver's Licence | 4.5% | Play Station 3 | 4.5% | Happiness | 4.4% | Clothes | 4.3% | 2 | 7 | 25 |
| Wish | Percentage | | | | | | | | | | | | | | | | | | | | | | | | | |
| R10 000 clothing voucher | 9.5% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blackberry | 8.2% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Laptop | 7.1% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Car | 7.0% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Money | 6.9% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apple iPad | 6.6% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Driver's Licence | 4.5% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Play Station 3 | 4.5% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Happiness | 4.4% | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clothes | 4.3% | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | 25 | | | | | | | | | | | | | | | | | | | | | | |

Total: 150 marks