



Province of the  
**EASTERN CAPE**  
EDUCATION

**EC CURRICULUM: FET MATHEMATICS, MATHEMATICAL LITERACY AND TECHNICAL MATHEMATICS**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**MATHEMATICS TOPIC TEST 1 OF 2020:  
STATISTICS  
MARKING GUIDELINES**

**MARKS: 20**

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This Marking Guidelines consists of 3 pages.

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**QUESTION/VRAAG 1**

1.1	45 children	✓ answer (1)																								
1.2	$\bar{x} = \frac{\sum fx}{n} = \frac{(4 \times 2) + (8 \times 10) + (12 \times 9) + (16 \times 7) + (20 \times 8) + (24 \times 7) + (28 \times 2)}{45}$ $\bar{x} = \frac{692}{45} \text{ OR } \bar{x} = 15,38 \text{ minutes}$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only: full marks</div>	✓ 692 ✓ answer (2)																								
1.3	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Time taken (<i>t</i>) (in minutes)</th> <th>Number of children</th> <th>Cumulative frequency</th> </tr> </thead> <tbody> <tr> <td><math>2 &lt; t \leq 6</math></td> <td>2</td> <td>2</td> </tr> <tr> <td><math>6 &lt; t \leq 10</math></td> <td>10</td> <td>12</td> </tr> <tr> <td><math>10 &lt; t \leq 14</math></td> <td>9</td> <td>21</td> </tr> <tr> <td><math>14 &lt; t \leq 18</math></td> <td>7</td> <td>28</td> </tr> <tr> <td><math>18 &lt; t \leq 22</math></td> <td>8</td> <td>36</td> </tr> <tr> <td><math>22 &lt; t \leq 26</math></td> <td>7</td> <td>43</td> </tr> <tr> <td><math>26 &lt; t \leq 30</math></td> <td>2</td> <td>45</td> </tr> </tbody> </table>	Time taken ( <i>t</i> ) (in minutes)	Number of children	Cumulative frequency	$2 < t \leq 6$	2	2	$6 < t \leq 10$	10	12	$10 < t \leq 14$	9	21	$14 < t \leq 18$	7	28	$18 < t \leq 22$	8	36	$22 < t \leq 26$	7	43	$26 < t \leq 30$	2	45	✓ first 4 cum freq correct ✓ last 3 cum freq correct  (2)
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1.4	<p style="text-align: center;"><b>CUMULATIVE FREQUENCY GRAPH (OGIVE)</b></p>	✓ plotting cum freq at upper limits correctly (all points) ✓ shape (smooth) ✓ grounding (2;0)  (3)																								
1.5	On graph at the y-value of 22,5 or 23 Median = ± 15 minutes. <div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only: full marks</div>	✓ graph ✓ answer (2)																								
		<b>[10]</b>																								

**QUESTION/VRAAG 2**

2.1	$a = 12,44$ $b = 0,98$ $y = 12,44 + 0,98x$	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only: full marks</div>	✓ value of $a$ ✓ value of $b$ ✓ equation (3)
2.2.1	Percentage = $\frac{15}{50} \times 100$ $= 30\%$		✓ answer (1)
2.2.2	$\hat{y} = 12,44 + 0,98x$ $\hat{y} = 12,44 + 0,98(30)$ $\hat{y} = 41,84$ $= 42$	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only: full marks</div>	✓ substitution of 30 ✓ answer as integer (2)
	OR $\hat{y} = 41,87$ (if using calculator) $\hat{y} = 42$		✓ value of $y$ ✓ answer as integer (2)
	OR $\hat{y} = \frac{21}{50}$		✓ ✓ answer (2)
2.3.1	standard deviation = 13,88		✓ ✓ answer (2)
2.3.2	$x = 50,67 - 45,67$ $= 5\%$	<div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only: full marks</div>	✓ 50,67 - 45,67 ✓ answer (2)
			<b>[10]</b>

**TOTAL: 20**