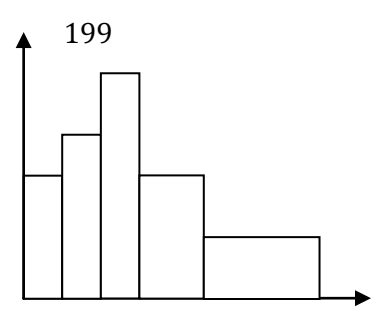
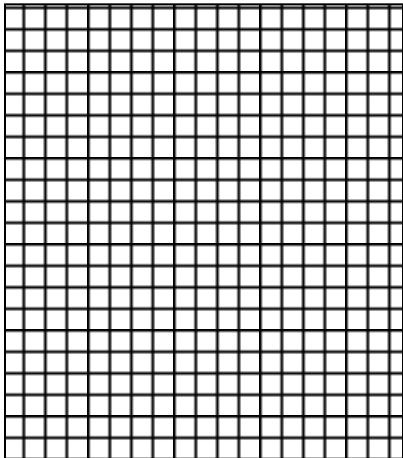
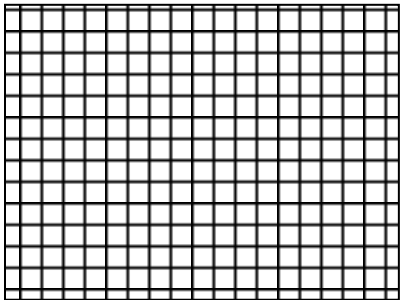
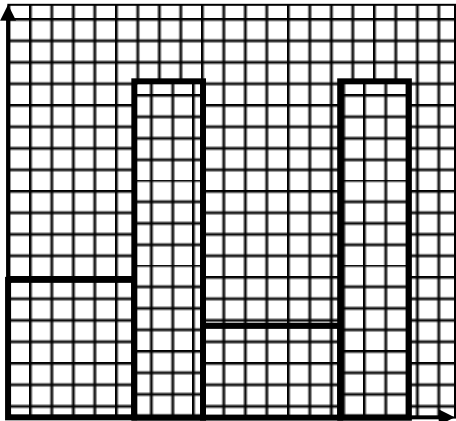


# STATISTICS 1 MARKING SCHEME

1.	$\text{Mean} = \frac{\sum fx}{\sum f} = \frac{255}{40} = 6.375$ <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Size (x)</th> <th>f</th> <th>fx</th> </tr> </thead> <tbody> <tr><td>4</td><td>1</td><td>4</td></tr> <tr><td>5</td><td>14</td><td>20</td></tr> <tr><td>6</td><td>18</td><td>108</td></tr> <tr><td>7</td><td>14</td><td>98</td></tr> <tr><td>8</td><td>2</td><td>16</td></tr> <tr><td>9</td><td>1</td><td>9</td></tr> <tr> <td><b>Σ</b></td> <td><b>40</b></td> <td><b>255</b></td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"><b>1990Q2</b></p>	Size (x)	f	fx	4	1	4	5	14	20	6	18	108	7	14	98	8	2	16	9	1	9	<b>Σ</b>	<b>40</b>	<b>255</b>	2M																																									
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2.	$\text{Median} = L + \frac{\frac{N}{2} - c.f}{f} \times i$ $41.5 + \frac{\frac{60}{2} - 18}{15} \times 3$ <p style="text-align: center;"><b>=43.9cm</b></p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>L</th> <th>Height</th> <th>f</th> <th>c.f</th> </tr> </thead> <tbody> <tr><td></td><td>33-35</td><td>1</td><td>1</td></tr> <tr><td></td><td>36-38</td><td>3</td><td>4</td></tr> <tr><td></td><td>39-41</td><td>14</td><td>18</td></tr> <tr><td>41.5</td><td>42-44</td><td>15</td><td>33</td></tr> <tr><td></td><td>45-47</td><td>16</td><td>49</td></tr> <tr><td></td><td>48-50</td><td>8</td><td>57</td></tr> <tr><td></td><td>51-53</td><td>2</td><td>59</td></tr> <tr><td></td><td>54-56</td><td>1</td><td>60</td></tr> <tr> <td></td> <td><b>Σ</b></td> <td><b>60</b></td> <td></td> </tr> </tbody> </table> <p style="text-align: right; margin-top: 10px;"><b>1991Q6</b></p>	L	Height	f	c.f		33-35	1	1		36-38	3	4		39-41	14	18	41.5	42-44	15	33		45-47	16	49		48-50	8	57		51-53	2	59		54-56	1	60		<b>Σ</b>	<b>60</b>		3M	<p>4. Median = <math>L + \frac{\frac{N}{2} - c.f}{f} \times i</math></p> $= 7.5 + \frac{\frac{39}{2} - 15}{8} \times 4 = 9.75$ <p style="text-align: right;"><b>1995Q3</b></p> <p>5. (a) cumulative frequency</p> <p style="text-align: center;">3, 11, 30, 44, 50</p> <p>(b) median = <math>\frac{8.5 + 14.5}{2} = 11.5</math></p> <p style="text-align: right;"><b>1998Q12</b></p> <p>6. No. of people = <math>\frac{360}{144} \times 1080 = 2700</math></p> <p>No. of children = <math>2700 - (510 + 1080) = 1110</math></p> <p>L of children = <math>\frac{1110}{2700} \times 360 = 148^0</math></p> <p style="text-align: right;"><b>1999Q13</b></p> <p>7.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>class</th> <th>x&lt;5</th> <th>x&lt;15</th> <th>x&lt;25</th> <th>x&lt;45</th> <th>x&lt;75</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>14</td> <td>20.5</td> <td>29.5</td> <td>17.5</td> <td>2.5</td> </tr> <tr> <td>10</td> <td>28</td> <td>41</td> <td>29</td> <td>35</td> <td>5</td> </tr> <tr> <td>H.f.w.</td> <td>2.8</td> <td>4.1</td> <td>5.9</td> <td>3.5</td> <td>0.5</td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 10px;">Mean of x = 4975</p> <div style="text-align: center;">  <p style="margin-left: 100px;">199</p> </div> <p style="text-align: right; margin-top: 10px;"><b>1999Q19</b></p>	class	x<5	x<15	x<25	x<45	x<75	5	14	20.5	29.5	17.5	2.5	10	28	41	29	35	5	H.f.w.	2.8	4.1	5.9	3.5	0.5
L	Height	f	c.f																																																																
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3.	<p>(15x19) -</p> <p>(10+22+16+18+17+21+18+20+17+18+19+20+20+19+21)</p> <p>285 - 266</p> <p>19years</p> <p style="text-align: right;"><b>1993Q4</b></p>	3M																																																																	

8.	<p>a) Model class is 150 - 154</p> <p>b) Median = <math>149.5 + \frac{7}{19} \times 5</math></p> <p style="padding-left: 40px;"><math>= 151.34</math></p> <p style="padding-left: 40px;"><math>= 151. \underline{13}</math></p> <p style="padding-left: 80px;">38</p>	<p>B1</p> <p>M1</p> <p>A1</p>
9.	 <p style="text-align: right;"><b>2000Q16</b></p>	
10.	<p>a) Mode = 1</p> <p>b) Mean = <math>\frac{0.5 + 1 \times 6 + 2 \times 4 + 3 \times 3 + 4 \times 1 + 5 \times 1}{20}</math></p> <p style="padding-left: 40px;"><math>= 1.6</math></p> <p style="text-align: right;"><b>2003Q3</b></p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>3 M</p>
11.	<p>Area A = <math>5 \times 3.2</math></p> <p>B = <math>10 \times 1.2</math></p> <p>16:12 = f:6</p> <p>12f = 96</p> <p>F = 8</p> <p style="text-align: right;"><b>2006Q15</b></p>	<p>M1</p> <p>M1</p> <p>A1</p> <p>3 M</p>

12.	<p>a). i).</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Marks</th> <th>Frequency</th> <th>Area of rectangle</th> <th>Height of rectangle</th> </tr> </thead> <tbody> <tr> <td>0-10</td> <td>12</td> <td>60</td> <td>6</td> </tr> <tr> <td>10-30</td> <td>40</td> <td>200</td> <td>10</td> </tr> <tr> <td>30-60</td> <td>36</td> <td>180</td> <td>6</td> </tr> <tr> <td>60-70</td> <td>8</td> <td>40</td> <td>4</td> </tr> <tr> <td>70-100</td> <td>24</td> <td>120</td> <td>4</td> </tr> </tbody> </table> <p>ii).</p> <div style="text-align: center;">  </div> <p>b). i). Median in group 30-60</p> <p>ii). <math>60 + 200 + 6x</math></p> <p style="padding-left: 40px;"><math>= \frac{1}{2} (60 + 200 + 180 + 40 = 120)</math></p> <p style="padding-left: 40px;"><math>260 + 6x = 300</math></p> <p style="padding-left: 40px;"><math>x = 6 \frac{2}{3}</math></p> <p style="padding-left: 40px;">Median = <math>30 + 6 \frac{2}{3}</math></p> <p style="padding-left: 40px;"><math>= 36 \frac{2}{3}</math></p> <p style="text-align: right;"><b>2007Q19</b></p>	Marks	Frequency	Area of rectangle	Height of rectangle	0-10	12	60	6	10-30	40	200	10	30-60	36	180	6	60-70	8	40	4	70-100	24	120	4	<p>A1</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>4M</p> <p>M1</p> <p>A1</p> <p>2 M</p> <p>M1</p> <p>M1</p> <p>A1</p> <p>3 M</p>
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13.	 <p style="text-align: left;">Check height</p> <p>1.5 - 5.5 - 4</p> <p>5.5 - 7.5 - 10</p> <p>7.5 - 13.5 - 3</p> <p>13.5 - 15.5 - 7 given</p> <p style="text-align: right;"><b>2009Q16</b></p>																									

14.	a). i). Modal class 60-69	B1																																												
	ii). Class where median mark lies	B1																																												
	0-9 .....1	B1																																												
	10-19 .....3 median is 35	B1																																												
	20-29.....7 median class	B1																																												
	30-39.....14 50 - 59	B1																																												
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<b>2009Q18</b>																																														
15.	Total number of seedlings (5x1) + (10 x3) + (15x1) + (20x4) + (30x1) + 10x2) = 5+30+15+80+30+20 = 180 % of height (h) : 23 ≤ h < 27 = $\left(\frac{30+15}{180}\right) \times 100$ = 25%																																													
<b>2010Q16</b>																																														
16.	a) Modal frequency = 8	B1																																												
	no of kg of meat	Freq. (f)	mid pts (x)	Fx	Cf	M1																																								
	1 - 5	2	3	6	2	M1																																								
	6 - 10	3	8	24	5	A1																																								
	11 -15	6	13	78	11	A1																																								
	16-20	8	18	144	19	B1																																								
	21-25	3	23	69	22	B1																																								
	26-30	2	28	56	24	B1																																								
	31 -35	1	33	33	25	B1																																								
	Σf = 25 Σfx = 410																																													

	Mean = $410/25$ M1 = 16.4 A1 Median = $15.5 + \frac{12.5 - 11}{8} \times 5$ = 16.4375 c) 2,5,11,19,22,24,25 Median = $15.5 + \frac{2}{8} \times 5$ = 16.75 <b>2010Q23</b>	A1
17.	Midpoints: 42, 47, 52, 57, 62, 67, 72. fx = 42, 94, 624, 570, 124, 134, 72 $\bar{x} = \frac{\sum fx}{\sum f} = \frac{1660}{30} = 55\frac{1}{3}$ <b>2011 Q10</b>	
17.	Modal class 40-44 (a) (b) (i) Midpoints 22,27,32,37,42,52,57 $\frac{22 \times 2 + 27 \times 15 + 32 \times 18 + 37 \times 25 + 42 \times 30 + 47 \times 6 + 52 \times 3 + 57 \times 2}{101}$ = 37.25 (ii) Cumulative frequencies 2,17,35,60,90,96,99,101 $\frac{16 \times 5}{25} = 3.2$ 34.5 + 3.2 = 37.7 Difference 37.7 - 37.25 = 0.45	B1 B1 M1 M1 A1 B1 M1 M1 A1 A1 B1
<b>10</b>		

