1. Ordering data gives: 11, 21, 36, 44, 54, 62, 71, 84, 87

\[ Q_1 = \frac{21+36}{2} = 28.5 \quad \text{and} \quad Q_3 = \frac{71+84}{2} = 77.5 \]

\[ \text{IQR} = 77.5 - 28.5 = 49 \]  

[3 marks]

2. Mean for 15 students is 5.2, so

\[ \sum_{i=1}^{15} x_i \]

\[ 5.2 = \frac{\sum_{i=1}^{15} x_i}{15} \]

\[ \Rightarrow \sum_{i=1}^{15} x_i = 78 \]

\[ \therefore \sum_{i=1}^{16} x_i = 78 + 4 = 8 \]

So the mean for the whole class = \( \frac{82}{16} = 5.125 \).  

[4 marks]

3. (a) mean = 75.48, standard deviation = 15.37 (4SF)  
(b) 0.719 (3SF)  
(c) \( y = 2.724x + 5.327 \)  
(d) \( y = (2.724 \times 29) + 5.327 = 84.32 \) (4SF)  
(e) Outside range of given data – extrapolation needed.  

[2 marks]  
[2 marks]  
[2 marks]  
[1 mark]  
[1 mark]
4. (a) 

<table>
<thead>
<tr>
<th>Time in minutes (t)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6 &lt; t \leq 10$</td>
<td>6</td>
</tr>
<tr>
<td>$10 &lt; t \leq 15$</td>
<td>6</td>
</tr>
<tr>
<td>$15 &lt; t \leq 20$</td>
<td>10</td>
</tr>
<tr>
<td>$20 &lt; t \leq 30$</td>
<td>16</td>
</tr>
<tr>
<td>$30 &lt; t \leq 45$</td>
<td>7</td>
</tr>
</tbody>
</table>

(b) Mean = 21.3 min, Variance = 82.8 min$^2$

(c) Actual data values are not given, only groups. [10 marks]

5. Average monthly expenditure from January to August is $620, means:

\[
620 = \frac{\sum_{i=1}^{8} x_i}{8}
\]

\[
\Rightarrow \sum_{i=1}^{8} x_i = 4960
\]

Average monthly expenditure over the whole year is $586, means:

\[
586 = \frac{\sum_{i=1}^{12} x_i}{12}
\]

\[
\sum_{i=1}^{12} x_i = 7032
\]

So, total expenditure for September to December = 7032 – 4960 = 2072

Therefore, the mean for September to December \( \frac{2072}{4} = 518 \) [5 marks]