

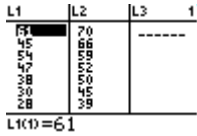
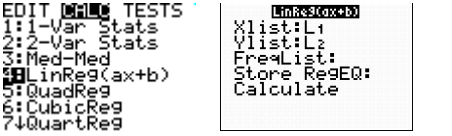


## Regression

(aka "Line of best fit", aka "Pearson correlation coefficient", aka "r")

<p>Make sure you have "DiagnosticOn" (When your teacher checks your calculator before the exams the program they use will automatically do this for you.)</p>	<p><b>2nd</b>[CATALOG] then select DiagnosticOn from the list  (Use <b>x<sup>-1</sup></b> to hop down to the "D" section) ... and finally ... <b>ENTER</b> <b>ENTER</b></p>																																			
<p>Preparing the calculator by clearing all lists:</p>	<p><b>2nd</b>[MEM][4] <b>ENTER</b></p>																																			
<p>Here is the data we want to analyse. It is the "goals scored" (x) and the "final points" (y) from the 2008-2009 Liga Sagres. It is essential that the data is entered in the correct order so that the x and y form a coordinate pair. Do not be tempted to sort both lists separately since then the goals and points may be from different teams! The data is entered into L<sub>1</sub> and L<sub>2</sub>, <b>STAT</b> <b>1</b></p>	<table border="1"> <thead> <tr> <th>Goals scored</th> <th>Points</th> </tr> </thead> <tbody> <tr><td>61</td><td>70</td></tr> <tr><td>45</td><td>66</td></tr> <tr><td>54</td><td>59</td></tr> <tr><td>47</td><td>52</td></tr> <tr><td>38</td><td>50</td></tr> <tr><td>30</td><td>45</td></tr> <tr><td>28</td><td>39</td></tr> <tr><td>32</td><td>38</td></tr> <tr><td>35</td><td>37</td></tr> <tr><td>37</td><td>34</td></tr> <tr><td>26</td><td>34</td></tr> <tr><td>20</td><td>30</td></tr> <tr><td>25</td><td>29</td></tr> <tr><td>21</td><td>26</td></tr> <tr><td>28</td><td>24</td></tr> <tr><td>25</td><td>23</td></tr> </tbody> </table>	Goals scored	Points	61	70	45	66	54	59	47	52	38	50	30	45	28	39	32	38	35	37	37	34	26	34	20	30	25	29	21	26	28	24	25	23	
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<p>Now get it to perform the calculation</p>	<p><b>STAT</b> <b>4</b> Then check it has the correct lists for the x and y values.</p>																																			
<p>Interpret the results (If you do not see r<sup>2</sup> or r then you did not turn on the diagnostics!)</p>	<p>The r value tells us that the variables are strongly correlated, and that it is positive correlation. (See your textbook for more details on interpreting r.) The a and b tell us that the calculated line of best fit is <math>y = 1.11x + 2.81</math> ie gradient of 1.11 with a y-intercept of 2.81  In other words you expect to score roughly a point per goal – and if you failed to score any goals all season you should still end up with 3 points from draws!</p>	