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| **Topic 4: Statistics and Probability**  | **Correlation Coefficient and Linear Regression** |
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| 1. The table below contains the pulse rates of students before and after exercise in beats per minute.

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| Pulse Rate Before Exercise (x) | 86 | 88 | 75 | 88 | 64 | 84 | 85 | 91 | 89 | 86 | 87 | 96 |
| Pulse Rate After Exercise (y) | 160 | 161 | 150 | 160 | 140 | 155 | 154 | 163 | 158 | 156 | 159 | 160 |

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| Find:* 1. Pearson’s product-moment correlation coefficient, $r$
	2. The equation of the regression line $y$ on $x$
	3. Use the line $y$ on $x$ to estimate the pulse rate of a student after exercise if their pulse rate before exercise was 90 beats per minute
 | (2 marks)(2 marks)(2 marks) |
| Mark scheme:1. $r=0.9$
2. $y=0.7x+95.6$
3. $y-0.7\left(90\right)+95.6$$$y=158.6$$
 | (A2)(A1)(A1) For correct gradient and correct y-intercept. Must be in the form of an equation to receive both marks.(M1)(A1) |