I asked four people on the street how many cats and dogs they owned and here were the answers to this (very rough) survey:

<table>
<thead>
<tr>
<th>Cats</th>
<th>Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

1. (5 points) In the space below, graph the four data points, with:
\[
\text{cats} = x \quad \text{and} \quad \text{dogs} = y
\]

2. (5 points) Which of these is the correlation coefficient between cat and dog ownership given this data? (Circle the correct answer.)

(a) \( r = -0.85 \)
(b) \( r = -0.15 \)
(c) \( r = 0.15 \)
(d) \( r = 0.85 \) (very nearly on a line of positive slope)

Turn the test over! There is a second page!!
3. (5 points) Fill out the following table and find the indicated sums:

\[
\begin{array}{c|cc|cc}
 x & y & x^2 & y^2 & xy \\
0 & 0 & 0 & 0 & 0 \\
1 & 1 & 1 & 1 & 1 \\
1 & 2 & 1 & 4 & 2 \\
2 & 2 & 4 & 4 & 4 \\
\end{array}
\]

\[\sum x = 4 \quad \sum y = 5 \quad \sum x^2 = 6 \quad \sum y^2 = 9 \quad \sum xy = 7\]

4. (5 points) Using the following formulas:

\[m = \frac{n \sum xy - (\sum x)(\sum y)}{n \sum x^2 - (\sum x)(\sum x)}\]

and

\[b = \frac{\sum y}{n} - m \cdot \frac{\sum x}{n}\]

write the equation for the line of regression for the data.

\[m = \frac{4 \cdot 7 - 4 \cdot 5}{4 \cdot 6 - 4 \cdot 4} = \frac{8}{8} = 1\]

\[b = \frac{5}{4} - 1 \cdot \frac{4}{4} = \frac{1}{4}\]

\[y = x + \frac{1}{4}\]