\[
\begin{align*}
\text{positive (linear)} &\quad \text{negative (linear)} \\
(x > 0) &\quad (r < 0) \\
\text{above } x &\quad \text{above } y \\
\text{below } x &\quad \text{below } y \\
&\quad \text{average }
\end{align*}
\]

\[
\begin{align*}
\text{weight}
\end{align*}
\]

\[
\begin{align*}
\text{Correlation (correlation coefficient)}
\end{align*}
\]

\[
\begin{align*}
r &= \frac{1}{n} \sum_{i=1}^{n} \left( \frac{x_i - \bar{x}}{s_x} \right) \left( \frac{y_i - \bar{y}}{s_y} \right)
\end{align*}
\]

\[
\begin{align*}
s_x^2 &= \sqrt{\frac{1}{n} \sum_{i=1}^{n} (x_i - \bar{x})^2} \\
&\quad \text{and similar for } s_y^2
\end{align*}
\]

\[
\begin{align*}
\text{mean } \bar{x} \quad \text{mean } \bar{y}
\end{align*}
\]

\[
\begin{align*}
\text{mean } \bar{y} \quad \text{mean } \bar{y}
\end{align*}
\]

\[
\begin{align*}
\text{var } \text{to } n-3 \text{ to } \sqrt{\frac{\sum_{i=1}^{n} x_i}{n-1}} \text{ to } \sqrt{n-3} \text{ to } 0
\end{align*}
\]

\[
\begin{align*}
\text{mean } \bar{x} \quad \text{mean } \bar{y}
\end{align*}
\]

\[
\begin{align*}
\sigma_y^2 &= \sum_{i=1}^{n} (y_i - \bar{y})^2
\end{align*}
\]