Correlation Coefficient Notes

vocab

- explanatory variable: similar to independent variable but may have other things effecting it.

- response variable: similar to dependent variable

correlation vs. causation

- a correlation does not imply causation

  → there could be other factors

correlation coefficient

- tells how correlated the x & y values are
- represented w/ "r"
- can be between -1 & 1

$r = 1$	$r = 0$	$r = -1$
* positive correlation	*no correlation	* negative correlate.
* linear		* linear

| $r = 0.3$	$r = -0.9$
* positive but low correlation	* negative strong correlation
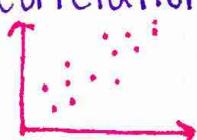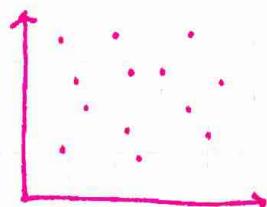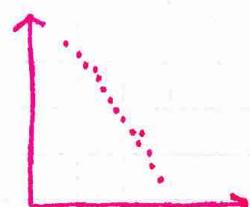
The value shows **how good the correlation is** (not how steep the line is), and if it is positive or negative

The correlation does not imply causation

Perfect Positive Correlation	High Positive Correlation	Low Positive Correlation	No Correlation	Low Negative Correlation	High Negative Correlation	Perfect Negative Correlation
1	0.9	0.5	0	-0.5	-0.9	-1
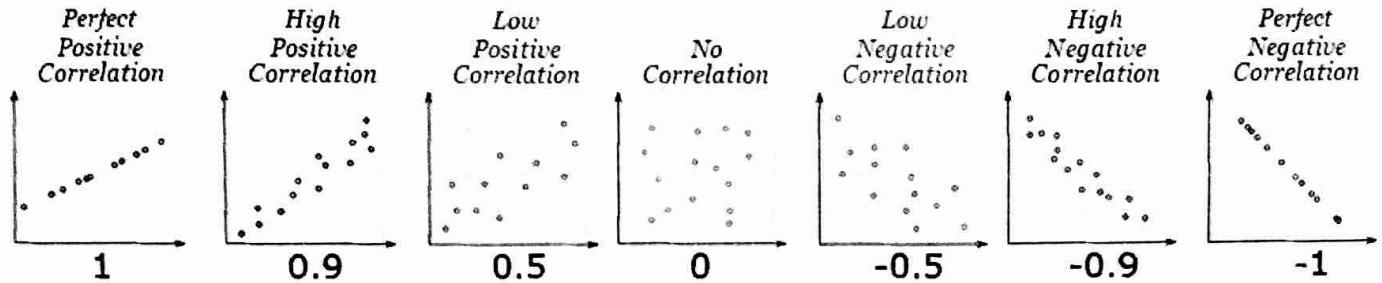
Match the correlation coefficients with the scatterplots.

Ex 1:

Correlation Coefficient

$r = 0.63$

$r = -0.41$

$r = 0.87$

$r = -0.75$

Ex 2:

Correlation Coefficient

$r = 0.94$

$r = -0.77$

$r = -0.92$

$r = 0.31$

Scatterplot A   Scatterplot B
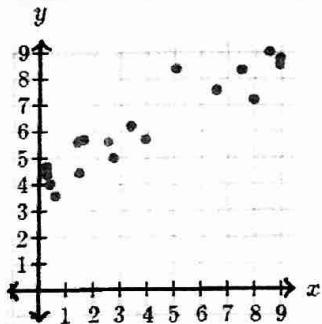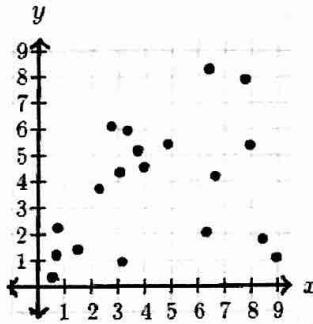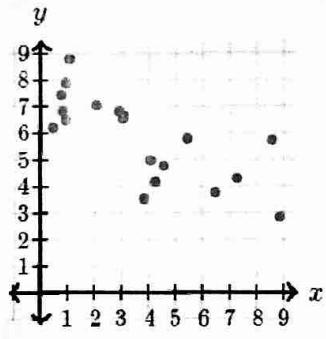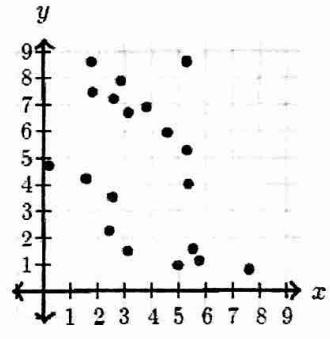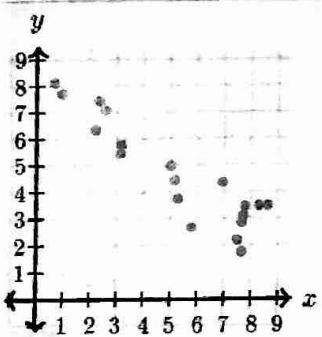
Scatterplot C   Scatterplot D

Scatterplot A   Scatterplot B

Scatterplot C   Scatterplot D