given $\hat{y} = 1.2x + 7$

what is the predicted val. of y when $x = 10$, $x = 100$

what is the meaning of 7!

y = cups of coffee

x is hours awake.

---

more reasonably

$\hat{y} = 0.5x + 2$

$\hat{y} = 4x + 1$

$\hat{y} = 0.5x - 7$

$1 = \frac{1}{2}x - 7$

$8 > \frac{1}{2}x$

$16 = x$

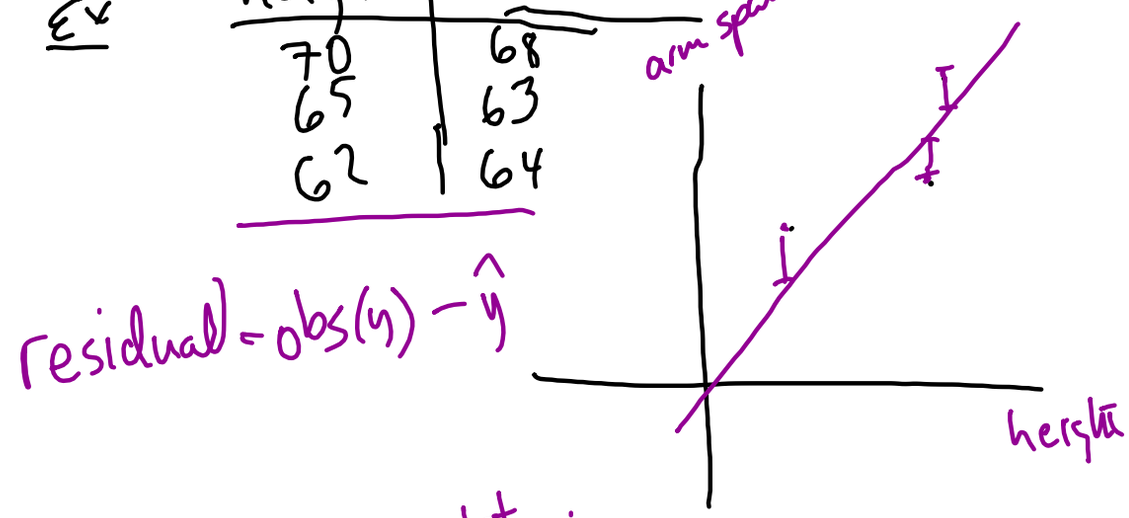
linear models of data

(1) data is linear when.
r^2 is close to 1.

(2) Look at a residual plot.

Ex

(x) height	(y) arm span
70	68
65	63
62	64

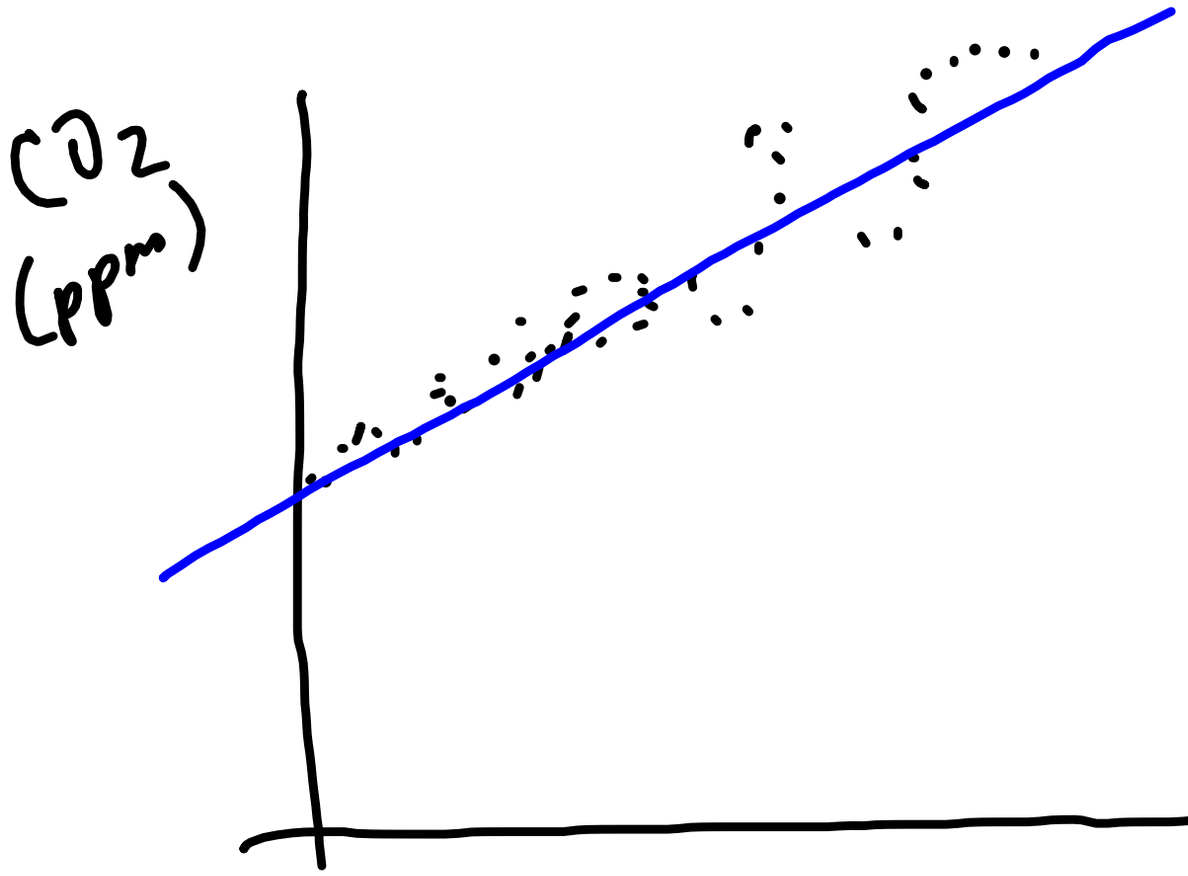


residual = obs(y) − $\hat{y}$

residual plot.

Question: How does this help determine linearity.

(i) we want residuals to be small.
(ii) spread of residuals to be small.


CO_2 (ppm)
years

$r = 0.93$

$r^2 = 0.865$


residual plot
years
randomness in the residuals

Review:

one-variable: charts: dot plots
box plots
stem and leaf plots

distribution of data.
center
spread.

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two variables: scatterplots look at them for shape direction and strength.

least-squares-regression line
or any other model fitting