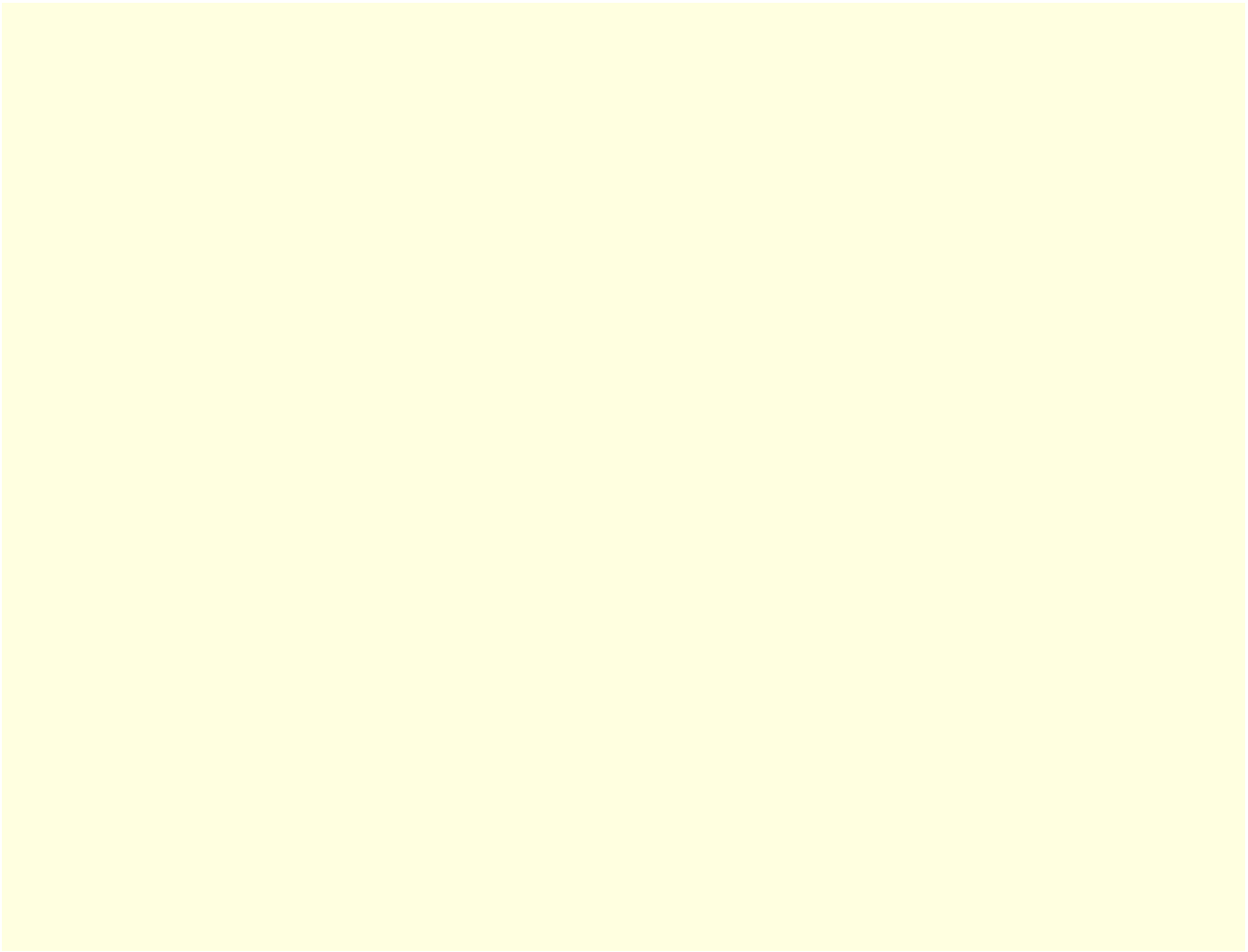
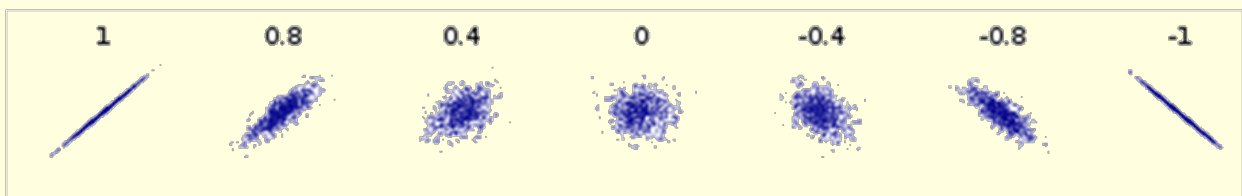


5.2b Drawing and Interpreting Regression Lines



Correlation Coefficient



perfect positive correlation
 Strong positive
 weak positive
 no correlation
 weak neg.
 Strong negative
 perfect negative

Example A:

Eight students in Mr. O'Neil's Physical Education class did pushups and sit-ups. Their results are shown in the following table.

Student	1	2	3	4	5	6	7	8
number of pushups (x)	24	18	32	51	35	42	45	25
number of situps (y)	32	28	38	40	30	52	48	52

$$a) r = 0.439$$

Weak positive correlation b/w # of pushups + # of situps

$$b) y = 0.373x + 27.3$$

$x \rightarrow$ pushups

$y \rightarrow$ sit ups

$$c) x = 60$$

$$y = 0.373(60) + 27.3$$

$$y = 49.7$$

≈ 50 situps

d) too far from data set - extrapolation

Example B:

In an experiment, a vertical spring was fixed at its upper end. It was stretched by hanging different weights on its lower end. The length of the string was then measured. The following readings were obtained.

Load (kg) x	0	1	2	3	4	5	6	7	8
Length (cm) y	23.5	25	26.5	27	28.5	31.5	34.5	36	37.5

a) $r = 0.986$ very strong positive correlation

b) $y = 1.825x + 22.7$

$x \rightarrow$ load kg

$y \rightarrow$ length, cm

c) $x = 10$, $y = 40.95$ cm

d) $30 = 1.825x + 22.7$

$x = 4$ kg

Example C:

A shopkeeper wanted to investigate whether or not there was a correlation between the prices of food in 1992 and 2002. He chose 8 everyday items. Their prices are given in the table below.

	sugar	milk	eggs	rolls	tea bags	coffee	potatoes	flour
1992 price	\$ 1.44	\$ 0.80	\$ 2.16	\$ 1.80	\$ 0.92	\$ 3.16	\$ 1.32	\$ 1.12
2002 price	\$ 2.20	\$ 1.04	\$ 2.64	\$ 3.00	\$ 1.32	\$ 2.28	\$ 1.92	\$ 1.44

Homework:
page 227-228:1-8 all; 230-231:1-4 all