USING AN LSRL AS A LINEAR MODEL
(Sec 3.3)

1. The table below shows the average daily energy requirements for male children and adolescents:

Age (Years)	1	2	5	8	11	14	17
Energy Needed (Calories)	1100	1300	1800	2200	2500	2800	3000

a) Graph the data and state the correlation.

b) Model the data with a linear equation

c) Estimate the daily requirement for a 16 year old male.

d) Do you think your model also applies to adult males? Explain.

2. The table below shows the relationship between Calories and fat in various fast-food hamburgers:

Hamburger	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Calories	720	530	510	500	305	410	440	320	598
Fat (g)	46	30	27	26	13	20	25	13	26

a) Graph the data and state the correlation

b) Model the data with a linear equation

c) How much fat would you expect a 330-Calorie hamburger to have?

d) A student reports these estimates: 10 g of fat for a 200-Calorie hamburger and 36 g of fat for a 660-Calories hamburger. Which is estimate is *not* reasonable? Explain**.**

3. The table below shows population and licensed driver statistics from a recent year:

State	Alabama	Florida	Louisiana	S. Carolina	Virginia	W. Virginia
Population (millions)	4.3	14.7	4.4	3.8	6.7	1.8
Licensed Drivers (millions)	3.2	11.6	2.7	2.6	4.7	1.3

a) What variable should be the independent variable?

b) Graph the data and state the correlation.

c) Model the data with a linear equation

d) The population of Oregon was approximately 3 million that year. About how many licensed drivers lived in Oregon?

e) Is the correlation between population and number of licensed drivers strong or weak? Explain.

4. The table below shows expenditures for national health care from 1992 through 1997:

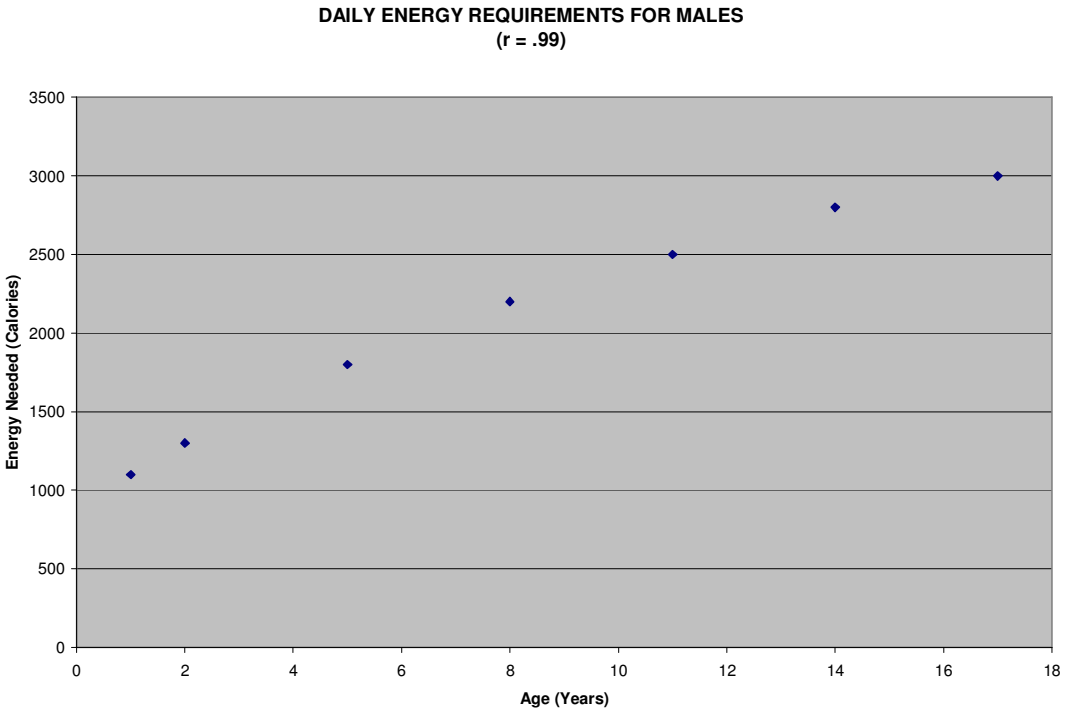
Year	1997	1998	1999	2000	2001	2002
National Heath Care Expenditures (billions of dollars)	1,142.6	1,209.0	1,286.6	1,377.2	1,494.1	1,636.4

a) Graph the data and state the correlation.

b) Model the data with a linear equation

c) Based on your model, predict how much money was spent on health care in 2010.

1a)

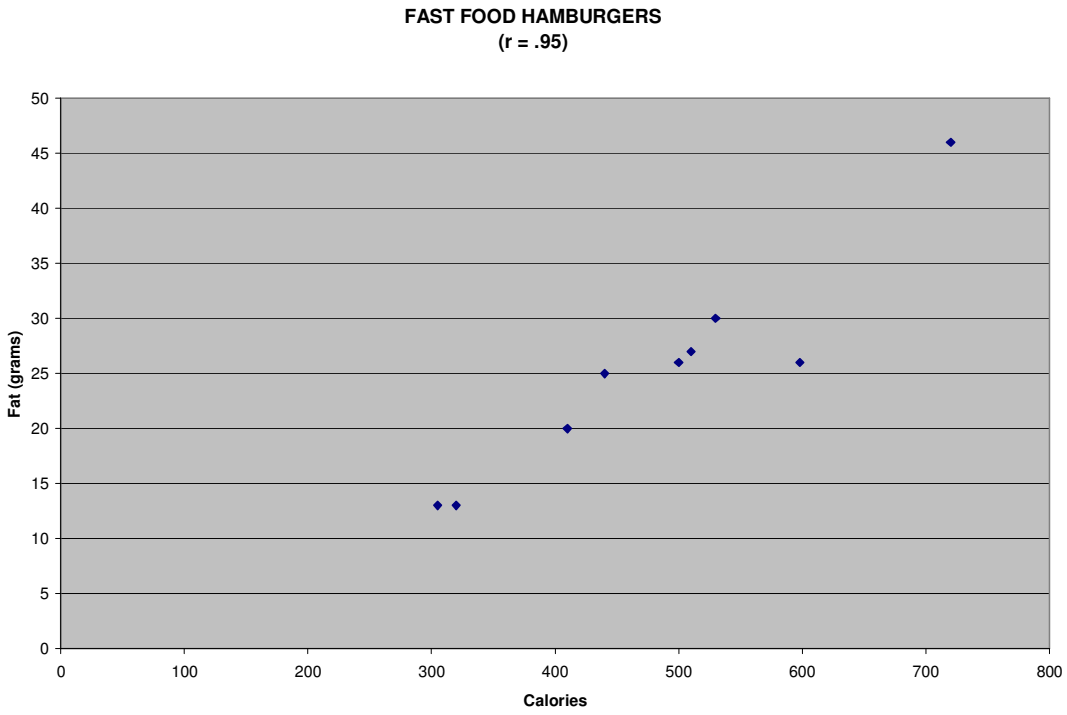


b) Energy Needed = 1110.68 + 119.40(Age)

c) 3021.09 calories

d) No- adults need fewer calories (not more)

2a)



b) Fat Grams = – 9.2682 + .0714(Calories) – 9.2682

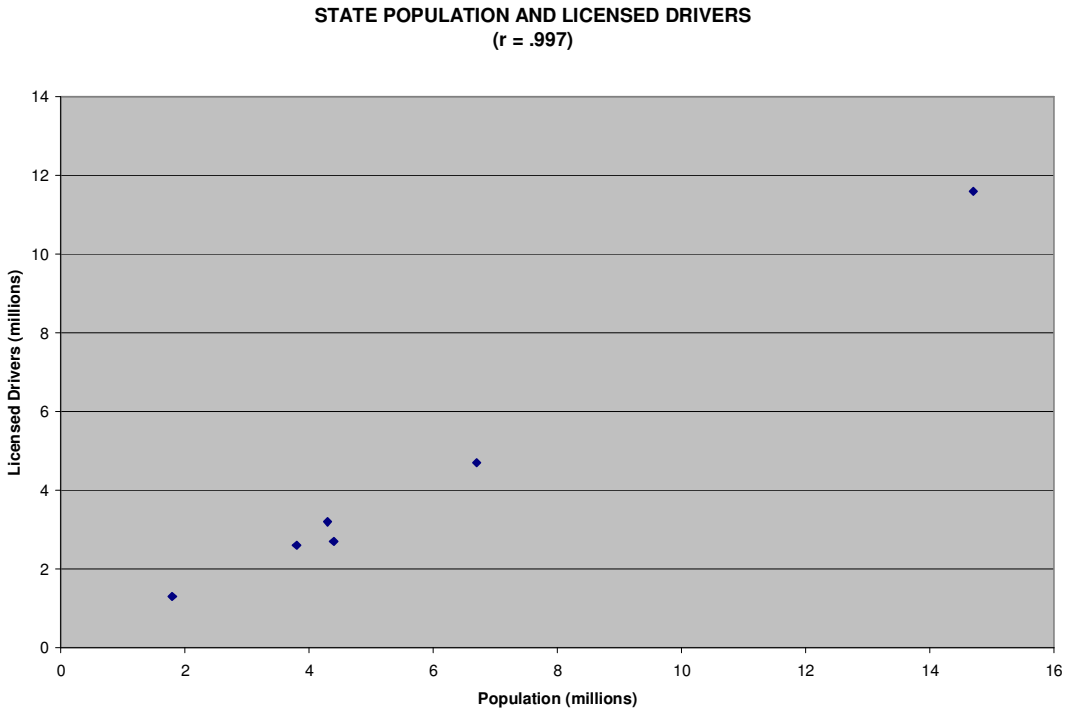
c) 14.30 grams

d) 200 calorie burger ---> 5.01 fat grams ---> 10 fat grams **not** reasonable

660 calorie burger ---> 37.86 fat grams ---> 36 fat grams reasonable

3a) Population (use to predict licensed drivers)

b)

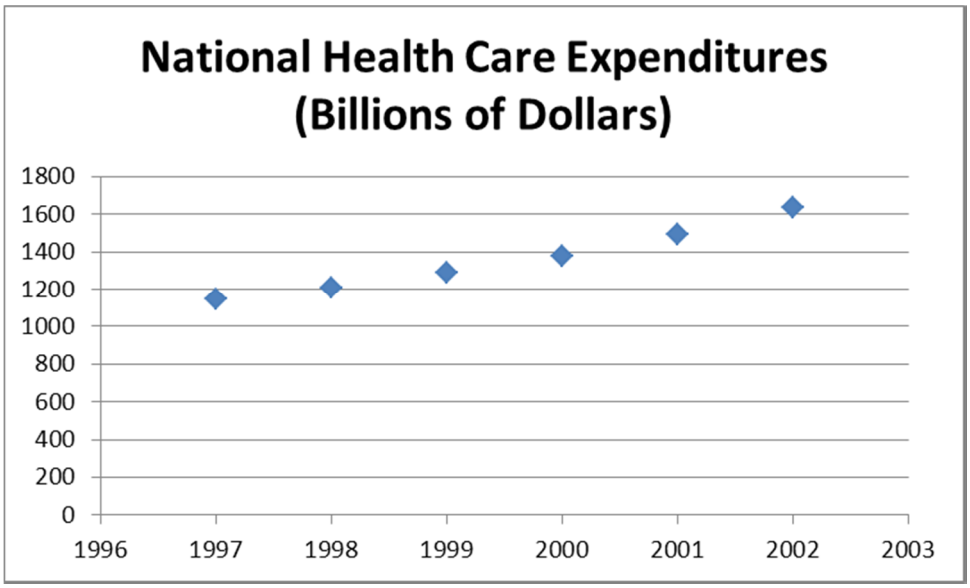


c) Licensed Drivers = – .4842 + .8125(Population)

d) 1.95 million

e) Strong correlation (99.7)… all points fall close to a straight line

4a) r = .9896



b) Health Expenditures = – 19373.71 + 97.57(Year)

↑

1997, 1998…

Health Expenditures = – 8350.42 + 97.57(Year)

↑

97, 98…

Health Expenditures = 430.75 + 97.57(Year)

↑

7, 8…

c) $2382.12 Billion (Actual was $2593.6 Billion)