

2-5 Practice

Using Linear Models

Form G

Make a scatter plot and describe the correlation.

- $\{(1, 7), (2, 11), (3, 16), (4, 20), (5, 22)\}$
- The table shows the percent of people of voting age who reported they Voted in presidential election years.

Year	1988	1992	1996	2000	2004
% of people who voted	57	61	54	55	58

SOURCE: [HTTP://WWW.CENSUS.GOV/POPULATION/WWW/SOCDEMO/VOTING.HTML#HIST](http://www.census.gov/population/www/socdemo/voting.html#hist)

Write the equation of a trend line, if possible.

- $\{(1, 2.1), (3, 3.1), (5, 4.0), (7, 5.2), (9, 5.9)\}$
- $\{(-2, 3.9), (-1, 1.8), (0, 0.1), (1, -1.9), (2, -3.8)\}$
- The table shows the number of misdirected bags and the number of late flight arrivals by week, for one airline.

Number of Misdirected Bags	37	42	25	9
Number of Late Arrivals	12	8	28	36

- The table shows the value of rice produced in Texas from 2001 to 2007.

Year	2001	2002	2003	2004	2005	2006	2007
Price per lb	\$.461	\$.416	\$.735	\$.735	\$.777	\$1.00	\$1.13

SOURCE: http://www.nass.usda.gov/Statistics_by_State/Texas/Index.asp#.html

- Use a calculator to find the line of best fit. Let x = the number of years since 2000.
- Using your linear model, predict the value of rice in Texas in 2015.
- Using your linear model, predict when the price is likely to reach \$2.60 per pound.

2-5

Practice (continued)

Form G

Using Linear Models

7. The table shows the percent of the population not covered by health insurance in selected states for the years 1997 and 2006.

Percent of Population Not Covered by Health Insurance

State	Idaho	Illinois	Michigan	Montana	New York
1997	17.7	12.4	11.6	19.5	17.5
2006	15.4	14	10.5	17.1	14

SOURCE: WWW.CENSUS.GOV

- Which variable should be the independent variable?
 - Make a scatter plot. Use a calculator to find the line of best fit.
 - In Wyoming, 15.5% of the population was not covered by health insurance in 1997. Use the equation from part (c) to predict the percent of the population that was not covered in 2006.
 - Writing** The actual percent for Wyoming in 2006 was 14.6%. Is the line of best fit accurate? Explain.
8. The table shows the numbers of countries that participated in the Winter Olympics from 1984 to 2006.

Winter Olympic Participation

Year	1984	1988	1992	1994	1998	2002	2006
Number of Countries	49	57	64	67	72	77	80

SOURCE: www.infoplease.com

- Make a scatter plot. Let x = the number of years since 1980.
 - Use a calculator to find the line of best fit and write the equation for the line.
 - Predict the number of participating countries in 2022.
9. The table shows the price per box of fresh Florida oranges from 2001 to 2006.

Florida Oranges

Year	2001	2002	2003	2004	2005	2006
Price Per Box	\$6.39	\$6.99	\$7.78	\$6.07	\$9.27	\$8.40

SOURCE: http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats/

- Make a scatter plot and find the trend line. Let x = the number of years since 2000.
- In 2007, the price per box of fresh oranges was \$16. Does this information follow the trend? Explain.
- Reasoning** Is a model invalid if new data does not fit its predictions? Explain.