

**4-6 Skills Practice****Regression and Median-Fit Lines**

Write an equation of the regression line for the data in each table below. Then find the correlation coefficient.

1. **SOCCKER** The table shows the number of goals a soccer team scored each season since 2002.

Year	2002	2003	2004	2005	2006	2007
Goals Scored	42	48	46	50	52	48

2. **PHYSICAL FITNESS** The table shows the percentage of seventh grade students in public school who met all six of California's physical fitness standards each year since 2002.

Year	2002	2003	2004	2005	2006
Percentage	24.0%	36.4%	38.0%	40.8%	37.5%

Source: California Department of Education

3. **TAXES** The table shows the estimated sales tax revenues, in billions of dollars, for Massachusetts each year since 2004.

Year	2004	2005	2006	2007	2008
Tax Revenue	3.75	3.89	4.00	4.17	4.47

Source: Beacon Hill Institute

4. **PURCHASING** The SureSave supermarket chain closely monitors how many diapers are sold each year so that they can reasonably predict how many diapers will be sold in the following year.

Year	2003	2004	2005	2006	2007
Diapers Sold	60,200	65,000	66,300	65,200	70,600

- Find an equation for the median-fit line.
- How many diapers should SureSave anticipate selling in 2008?

5. **FARMING** Some crops, such as barley, are very sensitive to how acidic the soil is. To determine the ideal level of acidity, a farmer measured how many bushels of barley he harvests in different fields with varying acidity levels.

Soil Acidity (pH)	5.7	6.2	6.6	6.8	7.1
Bushels Harvested	3	20	48	61	73

- Find an equation for the regression line.
- According to the equation, how many bushels would the farmer harvest if the soil had a pH of 10?
- Is this a reasonable prediction? Explain.

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- 1. TURTLES** The table shows the number of turtles hatched at a zoo each year since 2002.

Year	2003	2004	2005	2006	2007
Turtles Hatched	21	17	16	16	14

- 2. SCHOOL LUNCHES** The table shows the percentage of students receiving free or reduced price school lunches in Marin County, California each year since 2003.

Year	2003	2004	2005	2006	2007
Percentage	14.4%	15.8%	18.3%	18.6%	20.9%

Source: KidsData

- 3. SPORTS** Below is a table showing the number of students signed up to play lacrosse after school in each age group.

Age	13	14	15	16	17
Lacrosse Players	17	14	6	9	12

- 4. LANGUAGE** The State of California keeps track of how many millions of students are learning English as a second language each year.

Year	2003	2004	2005	2006	2007
English Learners	1.600	1.599	1.592	1.570	1.569

Source: California Department of Education

- Find an equation for the median-fit line.
  - Predict the number of students who were learning English in California in 2001.
  - Predict the number of students who will be learning English in California in 2010.
- 5. POPULATION** Detroit, Michigan, like a number of large cities, is losing population every year. Below is a table showing the population of Detroit each decade.

Year	1960	1970	1980	1990	2000
Population (millions)	1.67	1.51	1.20	1.03	0.95

Source: U.S. Census Bureau

- Find an equation for the regression line.
- Find the correlation coefficient and explain the meaning of its sign.
- Estimate the population of Detroit in 2008.