

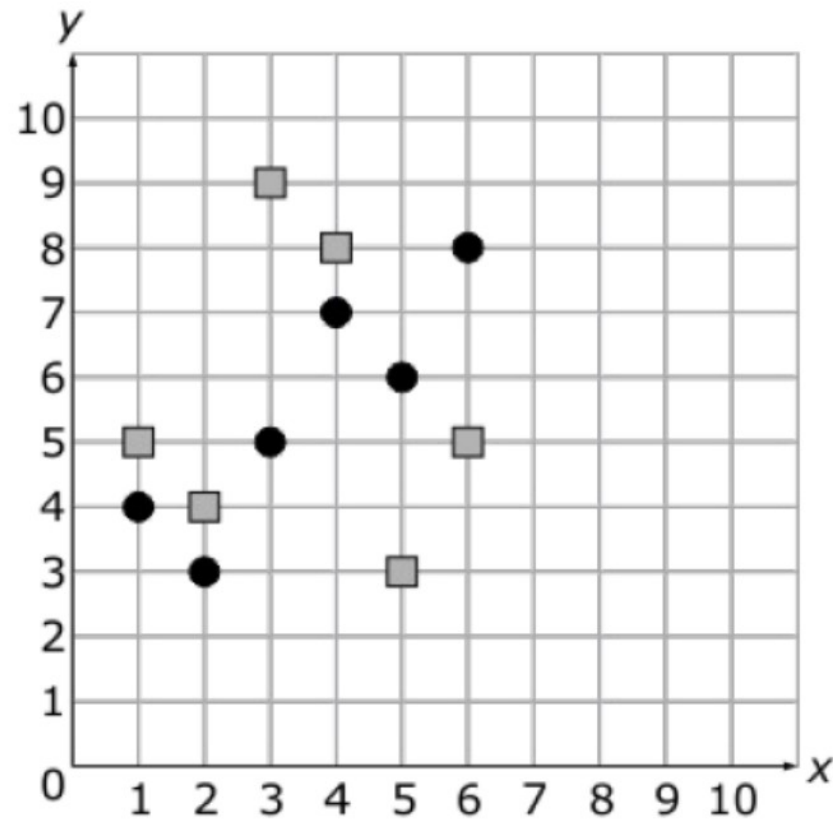
Jim compared the number of songs on six of his CDs to the length of the CDs in minutes. The table below shows the results.

<b>Number of Songs (<math>x</math>)</b>	<b>Length of CD (<math>y</math>)</b>
5	14.2 minutes
15	42.6 minutes
12	34.5 minutes
13	39.5 minutes
12	34.2 minutes
14	42.4 minutes

Which conclusion can be made based on the correlation coefficient of the line of best fit for the data?

- A. There is a strong positive correlation between the number of songs and the length of the CD.
- B. There is a strong negative correlation between the number of songs and the length of the CD.
- C. There is a weak positive correlation between the number of songs and the length of the CD.
- D. There is a weak negative correlation between the number of songs and the length of the CD.

Two unique sets of data are represented by either circles or squares on the graph below.



Which statement is true about the best-fit linear model for each set of data?

- A. The circle data set has a strong, negative correlation.
- B. The square data set has a strong, positive correlation.
- C. The circle data set has a strong, positive correlation.
- D. The square data set has a strong, negative correlation.

The table below shows the value of a car over two years.

Year	Value
0	\$15,500.00
0.5	\$14,560.00
1	\$13,911.20
1.5	\$12,969.66
2	\$12,204.09

Which equation **best** models the value of the car,  $y$ , after  $x$  years?

- A.  $y = -1,636.4x + 15,465.4$
- B.  $y = -1,647.9x + 12,204.09$
- C.  $y = 15,465.4x - 1,636.4$
- D.  $y = 12,204.09x - 1,647.9$

The table below shows the charge for different numbers of shirts from an online website. The company charges a cost per shirt and a setup fee per order.

<b>Shirts Ordered</b> ( $x$ )	<b>Total Cost</b> ( $y$ )
100	\$345
125	\$363
150	\$354
175	\$339

What does the  $y$ -intercept of the equation of the line of best fit for the data represent?

- A the cost per shirt
- B the setup fee
- C the number of shirts ordered
- D the maximum cost of an order



The table below shows the number of hours per week six students spend online and their current grades in math.

<b>Hours Online</b> (per week)	12	8	15	25	4	1	9
<b>Current Math Grade</b>	78	82	73	68	90	93	85

Using a line of best fit, which statement **best** describes the  $y$ -intercept of the equation?

- A. the number of hours spent online if a student's grade were zero
- B. the average change in the grade of a student per hour spent online
- C. the grade a student should expect when no time is spent online
- D. the point at which a student's grade is the lowest

The table below shows the scores of two classes on a science project.

<b>Class A</b>	<b>Class B</b>
78	65
65	78
90	80
77	76
88	70
80	65
94	81
89	78
75	73
80	80

What is the difference between the two classes' mean scores?

- A. 3
- B. 4
- C. 7
- D. 13

The table below shows the size and the selling price of several homes in a housing development.

<b>Size</b> (square feet)	<b>Selling Price</b>
2,000	\$169,500
2,234	\$180,000
2,305	\$185,000
2,398	\$189,000
2,420	\$190,000

What is the meaning of the slope of the line of best fit for the data?

- A the average increase in square feet for each additional dollar in price
- B the average increase in price for each additional square foot
- C the average number of square feet in a house
- D the minimum price of a house

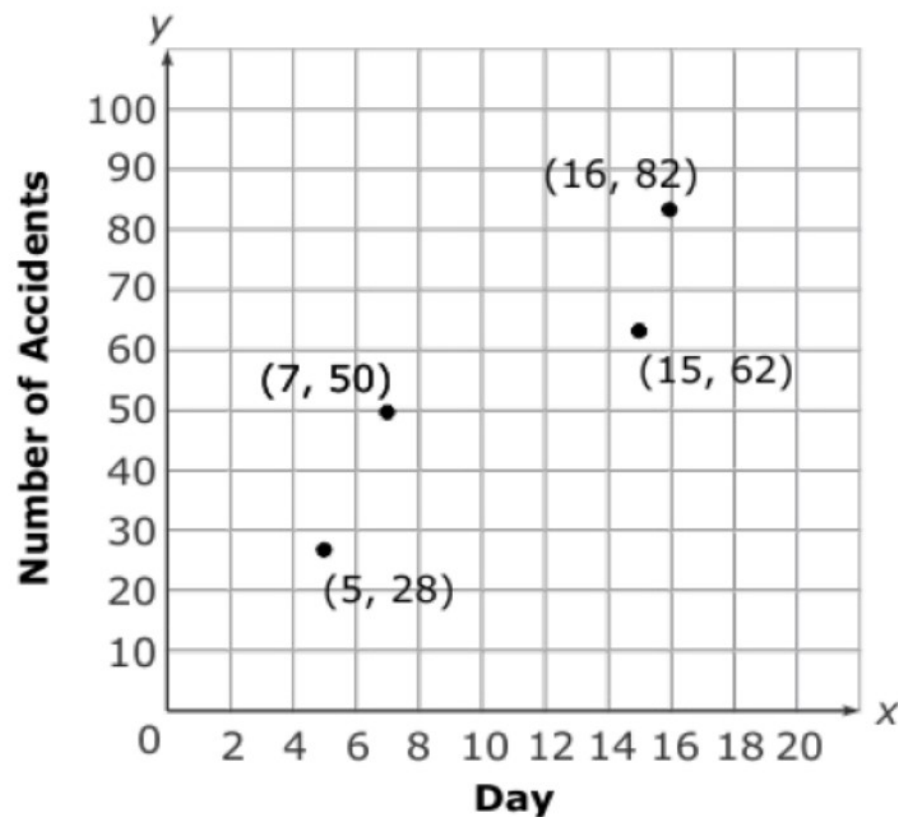
Which equation **best** models the data in the table below?

<b><i>x</i></b>	<b><i>y</i></b>
-1	3
2	5
4	7
7	9
11	12

- A.  $y = 0.76x + 3.72$
- B.  $y = 1.32x - 4.90$
- C.  $y = 3.72x + 0.76$
- D.  $y = 4.90x + 1.32$



The scatterplot below shows the number of days the temperature was below  $20^{\circ}$  in 4 different cities and the number of weather-related car accidents in those cities during the month of January.



Which equation **best** fits the data?

- A  $y = 2.13x + 14.7$
- B  $y = 2.73x + 12.55$
- C  $y = 3.73x + 15.4$
- D  $y = 4.38x + 10.4$

The table below shows per capita consumption of bottled water for selected years, 1980–2005.

Year	Gallons Per Capita
1980	2.7
1985	5.1
1990	8.8
1995	11.6
2000	16.7
2005	25.4

Based on a line of best fit of the data, ***about*** how fast is the consumption of bottled water growing each year?

- A 0.59 gallon per capita per year
- B 0.86 gallon per capita per year
- C 0.91 gallon per capita per year
- D 1.09 gallons per capita per year

Which correlation coefficient would have the strongest correlation between variables?

- A. 0.8
- B. 0.3
- C.  $-0.2$
- D.  $-0.9$

The table shows the number of hours spent studying and the exam grade earned.

Hours Studied	Exam Grade
0.5	70
1	80
1.5	82
2	85
2.5	88

Using a linear model, ***approximately*** how many hours would a student study to earn a 97?

- A. 3 hours
- B. 3.5 hours
- C. 4 hours
- D. 5 hours

The table below shows the times of the men's gold medal winners in the 100-meter dash at the Olympics for different years.

<b>Years since 1980</b>	<b>Time (seconds)</b>
0	10.25
4	9.99
8	9.92
12	9.96
16	9.84
20	9.87
24	9.85
28	9.69

Which is true about the data set?

- A. There is a strong positive correlation between time and years since 1980.
- B. There is a strong negative correlation between time and years since 1980.
- C. There is a weak positive correlation between time and years since 1980.
- D. There is a weak negative correlation between time and years since 1980.



What is the **approximate** correlation coefficient of the linear best-fit model for the data set shown below?

<b><i>x</i></b>	<b><i>y</i></b>
5	25
10	80
7	90
20	220
30	440
40	520
50	630
60	730
70	900
35	400
55	820
45	790

A. 0.9083

B. 0.9468

C. 0.9577

D. 0.9707

The table below shows the time in minutes and the distance a person ran on different days.

<b>Time</b> (minutes)	50	89	96	114
<b>Distance</b> (miles)	6.5	11	12.25	14.5

What does the rate of change for this data represent?

- A. An average increase of 0.12 miles in distance for every minute longer a person runs
- B. An average decrease of 0.12 miles in distance for every minute longer a person runs
- C. An average increase of 0.18 miles in distance for every minute longer a person runs
- D. An average decrease of 0.18 miles in distance for every minute longer a person runs

- Which **best** describes the relationship between  $x$  and  $y$  for the values in the table below?

$x$	$y$
0	-3
2	-2
3	0
5	3
6	5

- A. weak negative correlation
- B. weak positive correlation
- C. strong negative correlation
- D. strong positive correlation

A scatterplot has a line of best fit with a correlation coefficient of 0.18. Which statement **best** describes the data?

- A. The data has a weak negative correlation.
- B. The data has a strong positive correlation.
- C. The line of best fit is a good representation for the set of data.
- D. The line of best fit is not closely aligned to the data set.

The table below shows the number of apples an orchard harvested in different years.

<b>Years Since 1985</b> ( $x$ )	<b>Thousands of Apples Harvested</b> ( $y$ )
5	875
7	1,065
11	1,445
15	1,825
17	2,015

What is the meaning of the  $y$ -intercept of the line of best fit for the data?

- A The farm harvested about 95,000 apples each year.
- B The orchard harvested about 95,000 apples in 1985.
- C The orchard harvested about 400,000 apples in 1985.
- D The farm harvested about 400,000 apples the year it opened.



The table below shows the amount of water in a bucket after different amounts of time.

<b>Time</b> (minutes)	<b>Amount of Water</b> (ml)
1	29.94
2	29.9
3	29.83
4	29.79
5	29.75

What is the meaning of the slope of the line of best fit for the data?

- A The bucket is predicted to lose 0.05 ml of water per minute.
- B The bucket is predicted to lose 5% of its water per minute.
- C The bucket is predicted to gain 0.05 ml of water per minute.
- D The bucket is predicted to gain 5% of its water per minute.

2. The Smith family wants to rent a house at the beach. The cost of each house varies by the number of bedrooms it has. The chart below shows the price of several of the houses they are considering renting.

<b>Number of Bedrooms</b>	2	3	4	3	6	6	5
<b>Cost per Night</b>	\$560	\$725	\$785	\$850	\$1,200	\$1,450	\$960

Using the correlation coefficient, what conclusion can be made about the linear relationship of the data?

- A. Since the correlation coefficient is 0.92, it shows that having more bedrooms causes the price to go up.
- B. Since the correlation coefficient is 0.92, it shows that there is a strong linear relationship between cost and the number of bedrooms.
- C. Since the correlation coefficient is 0.84, it shows that having more bedrooms causes the price to go up.
- D. Since the correlation coefficient is 0.84, it shows that there is a strong linear relationship between cost and the number of bedrooms.

The table below shows the number of calories burned per hour by a person running at different speeds.

<b>Speed</b> (mph)	2	3	4	5	6
<b>Calories Burned</b>	213	345	460	510	675

Using a line of best fit, what does the slope represent?

- A. the average number of calories burned per hour as the speed increases by 1 mph
- B. the average number of calories burned per hour as the speed decreases by 1 mph
- C. the average number of calories burned per hour as the speed remains constant
- D. the average number of calories burned per hour if no exercise takes place

The table below shows the arm span and heights 6 vertical jump contestants reached during a track and field competition.

<b>Arm Span</b> (cm)	<b>Vertical Jump</b> (cm)
130	302
140	285
154	290
185	310
190	280
210	300

Using the line of best fit for the data, what type of correlation exists between arm span and vertical jump height?

- A strong positive correlation
- B. strong negative correlation
- C. weak positive correlation
- D. weak negative correlation



A realtor earns a base salary and a commission based on a percentage of the value of the properties sold. The data below show the value of the property sold and the monthly earnings for the realtor.

<b>Value of Property</b>	\$102,000	\$227,000	\$75,200	\$52,000
<b>Monthly Earnings</b>	\$3,807	\$6,930	\$3,134	\$2,556

Which statement ***most accurately*** describes the  $y$ -intercept of the line of best fit?

- A. The  $y$ -intercept of 0.025 represents the commission rate.
- B. The  $y$ -intercept of 0.025 represents the base salary.
- C. The  $y$ -intercept of 1,255 represents the commission rate.
- D. The  $y$ -intercept of 1,255 represents the base salary.



- The table below shows the height of a tree after different amounts of time since it was planted.

<b>Time</b> (months)	<b>Height</b> (inches)
0	24
1	27
2	31
3	35
4	40

What is the meaning of the slope of the line of best fit for the data?

- A The tree grew about 4 inches every month.
- B The tree grew about 1 inch every 4 months.
- C The tree grew about 3 inches every month.
- D The tree grew about 1 inch every 3 months.

The table below shows the height of a plant, in inches, over 5 weeks.

Week ( $x$ )	Height ( $y$ )
0	0
1	1
2	3
3	6
4	8
5	11

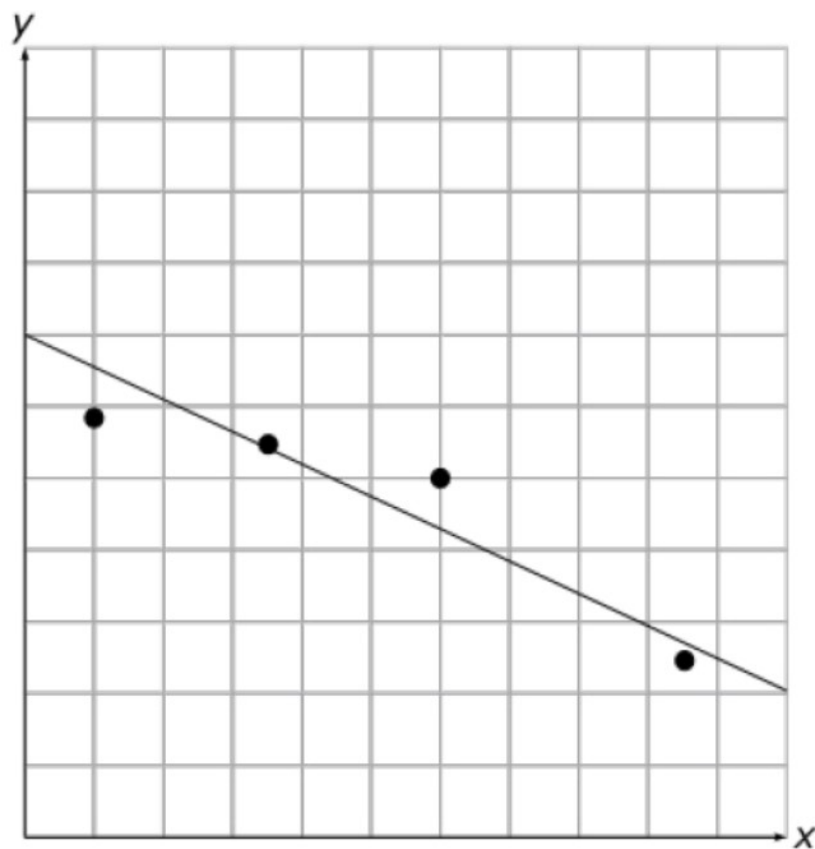
Which is an **approximate** equation of the line of best fit for the data?

- A  $y = 2x - 0.5$
- B  $y = 2.2x$
- C  $y = 2.25x - 0.8$
- D  $y = 2.5x - 0.4$

The equation,  $C = 0.15(x - 200) + 9.95$ , represents a cell phone company's monthly charge,  $C$ , for a text messaging service, where  $x$  represents the number of text messages per month. What is the **best** interpretation of the slope?

- A. The company charges \$9.95 for each text message over 200 per month.
- B. The company charges \$0.15 for each text message over 200 per month.
- C. The initial fee for text messaging is \$9.95.
- D. The cost for each text is \$0.15.

A scatterplot and line of best fit are shown below.



Which correlation coefficient **best** fits the scatter plot?

- A 0.9470
- B 0.3406
- C  $-0.3406$
- D  $-0.9470$

- j. Laurie painted birdhouses. The table below shows the total number of birdhouses she has painted after different amounts of time.

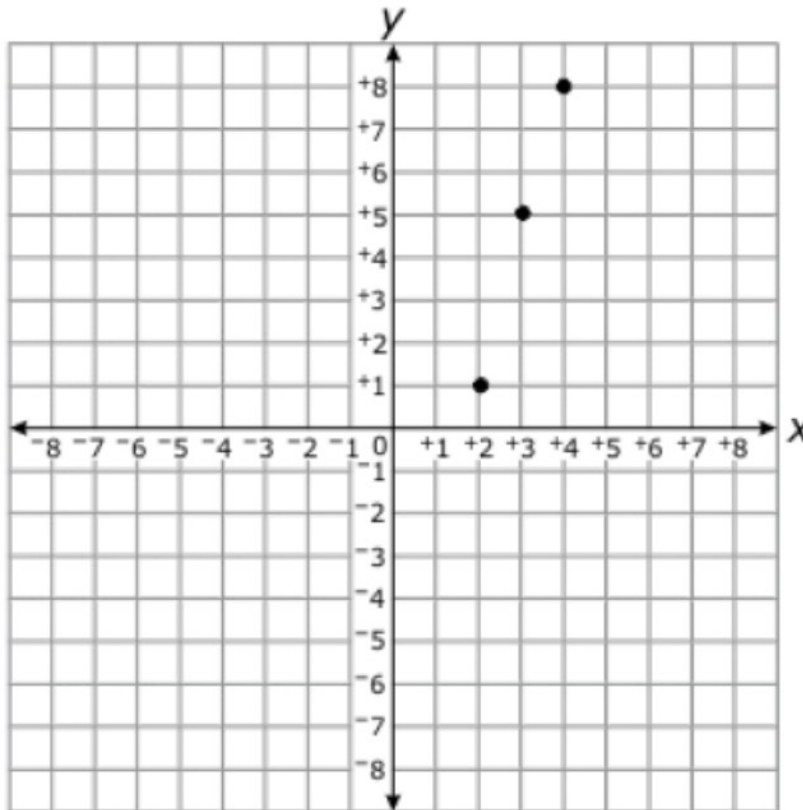
<b>Time (hours)</b>	<b>Houses Painted</b>
1	12
2	21
3	33
4	42
5	55

What is the meaning of the slope of the line of best fit for the data?

- A. the total number of birdhouses painted
- B. the total amount of time spent painting birdhouses
- C. the approximate amount of time it takes to paint each birdhouse
- D. the approximate number of birdhouses painted each hour



Using the graph, which is the **approximate** line of best fit for these data?



- A.  $y = 3x - 4$
- B.  $y = 3.5x - 5.8$
- C.  $y = 4x - 7$
- D.  $y = 4.5x - 10.2$

Anna is studying body proportions for a science project. She measured the height and head circumference of 10 people in her class. The results are shown in the table below.

<b>Height</b> (inches)	<b>Head Circumference</b> (inches)
60	8.5
67	9.5
68	9.5
62	9.0
71	10.5
70	10.0
61	8.5
70	10.0
65	9.0
66	9.5

What is the meaning of the slope of the line of best fit for the data?

- A For every 1 inch increase in height, there is about a 6 inch increase in head circumference.
- B For every 1 inch increase in head circumference, there is about a 6 inch increase in height.
- C For every 1 inch increase in head circumference, there is about a 1 inch increase in height.
- D For every  $\frac{1}{6}$  inch increase in height, there is about a 6 inch increase in head circumference.

The table below shows ticket prices for the years 2000 to 2006.

Year ( $x$ )	Ticket Price ( $y$ )
2000	\$3.00
2001	\$3.00
2002	\$4.00
2003	\$5.00
2004	\$5.50
2005	\$6.00
2006	\$6.00

Using the line of best fit for the data, which choice is the **best** prediction of the price of a ticket in 2010?

- A    \$7.50
- B.    \$7.70
- C.    \$8.25
- D.    \$8.80

The cost for several phone calls made are given in the table.

<b>Number of Minutes</b>	<b>Cost of Phone Call (\$)</b>
5	0.21
10	0.31
12	0.35
20	0.51
24	0.59
33	0.77

Using a linear model, what is the cost for a 40 minute phone call?

- A. \$1.24
- B. \$0.91
- C. \$0.87
- D. \$0.11

The table below shows the population (in millions) of several states and the number of electoral votes those states have.

Population	Electoral Votes
8.4	15
4.1	8
17.0	27
8.7	15

Using the line of best fit for the data, ***about*** how many electoral votes should a state with a population of 7.4 million have?

- A    11
- B.   12
- C.   13
- D.   14



The table below shows the height and weight of the five players in the starting lineup of a basketball team.

<b>Height</b> (inches)	<b>Weight</b> (pounds)
60	120
64	135
67	142
70	160
71	167

Based on the line of best fit, what does the residual value for the 71 inch player represent?

- A. The predicted weight is approximately 3.1 pounds less than the player's actual weight.
- B. The predicted weight is approximately 3.1 pounds more than the player's actual weight.
- C. The predicted weight is approximately 2.4 pounds less than the player's actual weight.
- D. The predicted weight is approximately 2.4 pounds more than the player's actual weight.

Two teachers recorded test scores for a small group of students.

<b>Teacher A</b>	69	73	79	83	93	97	98	100
<b>Teacher B</b>	65	70	73	75	90	93	94	95

What is the ***approximate*** difference in the standard deviation of the two teachers' test scores?

- A 0.06
- B 0.14
- C 0.22
- D 0.48

The table shows the number of hours spent studying and the exam grade earned.

Hours Studied	Exam Grade
0.5	70
1	80
1.5	82
2	85
2.5	88

Using a linear model, ***approximately*** how many hours would a student study to earn a 97?

- A. 3 hours
- B. 3.5 hours
- C. 4 hours
- D. 5 hours

A town conducted a survey to determine which sport lessons community members would most be interested in. Community members were only permitted to vote for one choice. The results of the survey are shown below.

	<b>Golf</b>	<b>Tennis</b>	<b>Ice-Skating</b>
<b>Women</b>	107	214	127
<b>Men</b>	315	72	138

***Approximately*** what percent of the women surveyed are interested in ice-skating lessons?

- A. 48%
- B. 40%
- C. 28%
- D. 13%

The table below shows the height and weight of 6 students in Mrs. Kale's class.

Height (inches)	Weight (pounds)
50	75
51	75
52.5	76
52	77
52	78
54	80

Using a linear model, what is the **approximate** value of the residual of the student 51 inches tall?

- A.  $-3.3$
- B.  $-0.7$
- C.  $+0.7$
- D.  $+3.3$



The table below shows the average value of gold per troy ounce in different years.

Years Since 2000	Value
0	\$279
2	\$310
4	\$410
6	\$603
8	\$872
10	\$1,225

Using a linear model, what is the **approximated** difference in the actual and predicted value for 2004?

- A. \$112
- B. \$171
- C. \$239
- D. \$522

A set of data is shown below.

<b><i>x</i></b>	-1	0	1	2	3	4	5
<b><i>y</i></b>	3	7	5	6	7	8	8

Using a line of best fit, what is the ***approximate*** value of the residual for the data at  $x = 2$ ?

- A. -0.815
- B. -0.286
- C. 0.286
- D. 0.815

The table below shows the amount a banquet hall charges to feed different sized groups of people.

Number of People	Cost
10	\$200
14	\$252
21	\$441
23	\$471

Using a linear model, what is the ***approximate*** residual value of the cost to feed 21 people?

- A. \$9
- B. \$12
- C. \$15
- D. \$21

The starting salaries for the employees at a company from 1996 to 2002 are shown in the table below.

<b>Year</b>	<b>Salary</b>
1996	\$28,680
1998	\$29,255
2000	\$29,882
2002	\$30,719

Using the line of best fit for the data, in what year is the starting salary predicted to be about \$35,000?

- A. 2008
- B. 2011
- C. 2012
- D. 2015