A1 SOL Packet #4b

Algebra 1 SOL Released Questions:

Line of Best Fit, Scatterplots, Data Predictions

Which equation represents the pattern shown in the table?

x	y
−3	−10
−2	−7
−1	−4
0	−1

A $y = {}^-3x - 19$

B $y = {}^-x - 13$

C $y = x - 1$

D $y = 3x - 1$

Look at the data in this table.

x	y
1	2
2	4
3	5
4	7
5	9
6	11

Which equation most closely represents the line of best fit for this data?

A $y = 1.77x + 0.13$

B $y = 0.56x - 0.05$

C $y = 0.5x$

D $y = 2x$

The number of complaints a company received at the end of each of six weeks is shown in this table.

Company's Complaints

Week	Number of Complaints
1	225
2	205
3	187
4	169
5	147
6	130

Based on the line of best fit, how many complaints should the company expect at the end of week 8 ?

A 75

B 91

C 96

D 110

Which equation represents the relationship between time, t, and distance, d ?

Distance Traveled

Time (hours)	Distance (miles)
2	90
3	135
4	180
5	225

F $d = t + 45$

G $d = 45t$

H $t = 45d$

J $t = \dfrac{45}{d}$

The table shows the cost of a 12-inch pizza for different numbers of toppings.

Pizza Pricing

Number of toppings	Cost of pizza
0	$15.50
1	$17.35
2	$19.20
3	$21.05
4	$22.90

Which equation gives C, the cost of a pizza with t toppings?

A $C = 1.85t$

B $C = 17.35t$

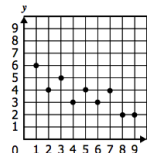C $C = 15.50 + 1.85t$

D $C = 22.90 - 1.85t$

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Which equation *most* closely represents the line of best fit for the data in this table?

x	y
1	4
2	6
3	7
4	9
5	10
6	10

A $y = \dfrac{^-5}{4}x + 3$

B $y = \dfrac{^-4}{5}x + 3$

C $y = \dfrac{4}{5}x + 3$

D $y = \dfrac{5}{4}x + 3$

2010

Which is most likely the equation of the line of best fit for the set of data points?

F $y = \dfrac{5}{2}x + 6$

G $y = \dfrac{2}{5}x + 6$

H $y = \dfrac{^-2}{5}x + 6$

J $y = \dfrac{^-5}{2}x + 6$

2010

The table gives the cost for different numbers of 100-sheet notebooks. The cost, C, varies directly as the number of notebooks, n.

Number of notebooks (n)	Cost (C)
2	$4.30
4	$8.60
6	$12.90
8	$17.20

Which equation represents the relationship shown in the table?

F $C = \dfrac{2.15}{n}$

G $C = 4.30n$

H $C = 2.15n$

J $C = 2.15 + n$

2009

This table shows the wind chill at 40°F for various wind speeds.

Wind Speed (miles per hour), s	5	10	15	20	25	30	40	50	60
Wind Chill (°F), t	36	34	32	30	29	28	27	26	25

Which equation most closely represents a line of best fit for the data?

A $t = {^-0.2}s + 35$

B $t = 0.2s - 35$

C $t = {^-35}s + 0.2$

D $t = 35s - 0.2$

2009

To train for a bicycle road race, Enrique needs to ride 150 miles per week at an average rate of 25 miles per day. The equation $M = 150 - 25d$ gives the number of miles, M, left to ride after d days. Which graph shows the number of miles Enrique has left to ride after d days?
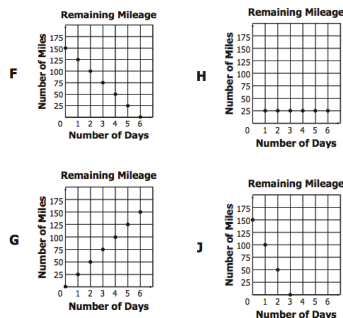
2008

Which equation fits the pattern in the table?

x	y
2	3
4	4
6	5
8	6

A $y = \dfrac{1}{3}x + 3$

B $y = \dfrac{1}{2}x + 2$

C $y = x + 1$

D $y = 2x - 1$

2008

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The points in the table lie on the graph of a linear function.

x	1	2	3	4	5
y	1	4	7	10	13

Which could be the function?

F $y = x$

G $y = 2x - 1$

H $y = 3x - 2$

J $y = 4x - 3$

Sally believes that the more time she spends in the grocery store, the more money she spends. Her recent purchases are recorded in the table.

Minutes in Store, x	Dollars Spent, y
5	8
12	29
15	31
18	45
22	73
26	68

Which linear equation best fits the data?

F $y = {}^-3 + 10x$

G $y = {}^-10 + 3x$

H $y = 10 + 3x$

J $y = {}^-10 - 3x$

Debbie recorded the time it took seven children of different ages to run one lap around the track.

Age of Child (years)	Time (seconds)
4	225
8	185
10	138
11	130
14	112
14	106
18	52

Using a linear equation of best fit, which is closest to the length of time it should take Debbie's 6-year-old niece to run one lap?

A 200 sec

B 185 sec

C 170 sec

D 140 sec

The following chart is used to calculate the price, P, in cents per color brochure for a certain bulk number of brochures, n, ordered by a company.

n	100	500	1,000	2,000
P	49	45	40	30

Which equation best represents this relationship?

A $P = \left(\dfrac{{}^-1}{100}\right)n + 50$

B $P = \left(\dfrac{1}{10}\right)n + 39$

C $P = \left(\dfrac{{}^-1}{10}\right)n + 59$

D $P = \left(\dfrac{1}{100}\right)n + 48$

The table shows the clothing purchases Jenny made last month and the tax charged for each purchase.

Clothing Purchases (in dollars), c	Tax (in dollars), t
35	3.15
40	3.60
22	1.98
68	6.12
74	6.66
31	2.79

Which equation represents the line that *best* fits the data?

A $t = 0.09c + 2.89$

B $t = 0.91c$

C $t = 0.09c$

D $t = 1.09c$

The graph represents the relationship between the bags of popcorn sold and the amount of profit made during the Newton Honor Society's popcorn sale.
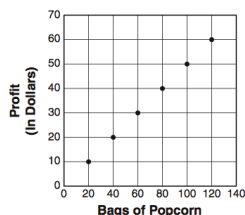
Which is closest to the minimum number of bags that must be sold to make a $200 profit?

F 250

G 300

H 350

J 400

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The numbers in the table follow a linear pattern.

x	y
2	14
4	26
6	38
8	50
28	170
30	?

What is the missing y value?

A 182

B 180

C 176

D 172

The table below shows the relation between the number of members in a club selling cookies and the predicted number of boxes sold.

Club Cookie Sales

Number of Members, g	Number of Boxes Sold, b
5	350
10	650
15	950
20	1,250

Using the data shown above, which equation could be used to predict the number of boxes of cookies that the club will sell?

F $b = 60g$

G $b = 70g$

H $b = 60g + 50$

J $b = 50g + 50$

The table shows the life expectancy of a person related to the year of birth.

Year of Birth, x	Life Expectancy in Years, y
1900	47.3
1910	50.0
1920	54.1
1930	59.7
1940	62.9
1950	68.2
1960	69.7

Which equation would give the best estimate of life expectancy, given the year of one's birth?

F $y = 0.45x + 919$

G $y = 0.45x - 819$

H $y = 0.40x + 893$

J $y = 0.40x - 716$

Which scatterplot most likely has a line of best fit represented by $y = 3x + 1$?
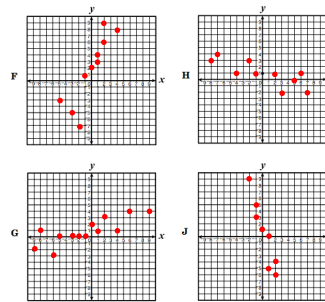
The table shows the relationship between a, the area of a rectangle, and h, its height, when the base remains constant.

h	2	5	7	12
a	8	20	28	48

Which equation represents the relationship between h and a?

F $a = h + 6$

G $a = 3h + 2$

H $a = 4h$

J $a = 2h + 4$

The total number, n, of employees at a company depends on the company's yearly gross profits according to the equation $n = 10p + 20$, where p is the yearly gross profit in millions of dollars. If the yearly gross profit declined from 20 million dollars to 15 million dollars, what was the decrease in the number of employees?

A 50

B 70

C 120

D 220

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A delivery service company maintains several vehicles. The table summarizes the cost for auto insurance related to the number of vehicles insured.
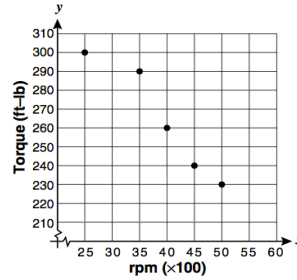
Number of Vehicles	Cost ($)
1	1,700
2	2,200
3	2,700
4	3,200
5	3,700
6	4,200

Using the equation of a line of best fit for the data, which is the closest estimate of the total cost of insuring eight vehicles?

F $5,050
G $5,200
H $5,500
J $5,950

An engine is tested for torque output at different revolutions per minute.

Which equation most closely defines the line of best fit for the data?

A $y = 4.1x + 414$
B $y = {}^-4.1x + 414$
C $y = 3.1x + 383$
D $y = {}^-3.1x + 383$

x	y
70	4
75	7
80	8.5
85	12
90	11
95	13.5
100	15

Which equation defines the linear line of best fit for the data in the table?

F $y = 19.5x - 0.35$
G $y = {}^-0.35x + 19.5$
H $y = {}^-19.5x + 0.35$
J $y = 0.35x - 19.5$

The table gives the average per capita income, d, in a region of the country as a function of the percent unemployed, u.

u	1	2	3	4
d	22,500	22,000	21,500	21,000

Which equation represents this data algebraically?

A $d = 20,000 + 1,000u$
B $d = 22,000 + 500u$
C $d = 23,000 - 500u$
D $d = 25,000 - 1,500u$
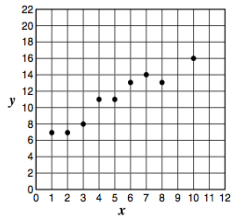
Using the data plotted on the scatterplot, which equation most closely describes a line of best fit for the data?

F $y = x + 6$
G $y = 2x - 4$
H $y = 2x + 5$
J $y = 3x - 4$

The chart shows how the wholesale price of an item, p, depends on the cost of the materials needed to produce the item, m. Which equation represents this linear relationship?
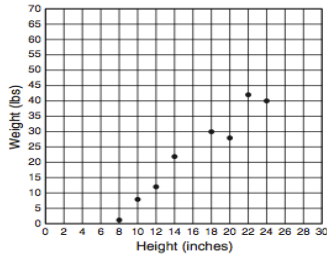
m	$0.50	$1.00	$1.50	$2.00
p	$4.00	$5.00	$6.00	$7.00

A $p = m + 3.5$
B $p = 2m + 3$
C $p = 3m + 2.5$
D $p = 4m + 2$

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Connie made a scatterplot comparing the shoulder heights of her friends' dogs to their weights. Connie's dog stands 28 inches to his shoulder.
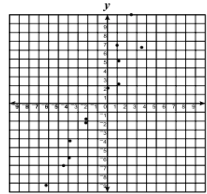

Using a line of best fit for the plot, which is the best prediction for her dog's weight?
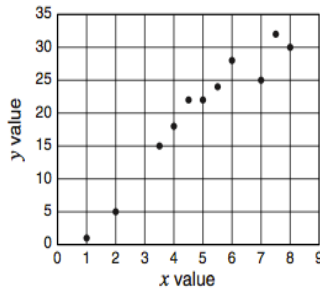
F   40 pounds
G   55 pounds
H   65 pounds
J   70 pounds

Which equation best represents the data shown in the scatterplot?

F $y = 2x - 2$

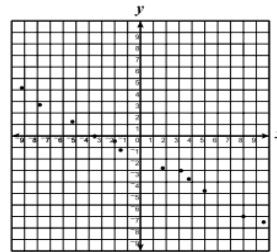G $y = \dfrac{x}{2} - 2$

H $y = 2x + 2$

J $y = x - 1$

Based on the scatter plot, which x value would best match $y = 12$?

A   3
B   4
C   48
D   56

Which equation best represents the data shown on the scatterplot?

F $y = \dfrac{-3}{5}x - 2$

G $y = \dfrac{x}{2} + 2$

H $y = \dfrac{-3}{5}x$

J $y = \dfrac{3}{5}x + \dfrac{10}{3}$

The table shows the relationship between the cost, c, in dollars of a taxi ride and the number, t, of minutes the ride lasts.
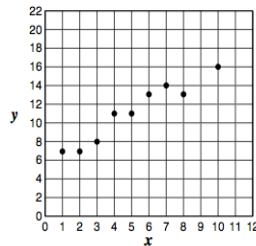
t	5	10	15	20
c	4.75	6.5	8.25	10

Which equation algebraically represents this data?

A $c = 3 + 0.35t$
B $c = 2.75 + 0.5t$
C $c = t - 0.25$
D $c = 4 + 0.15t$

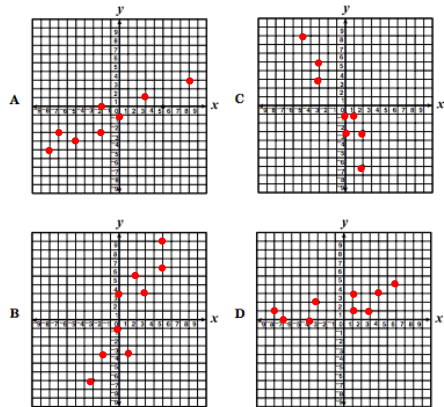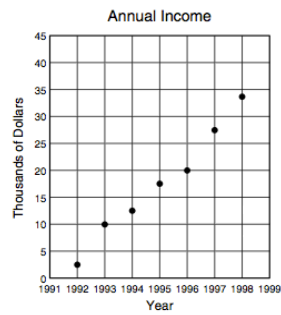Based on the scatterplot, which x value would best match $y = 17$?

A   8
B   11
C   14
D   17

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**Using the median fit method, which scatterplot most likely has a line of best fit represented by $y = 2x - 1$?**

A

C

B

D

Annual Income

(scatterplot: Thousands of Dollars vs. Year, 1991–1999)

Using the data plotted on the scatterplot, which is the *best* prediction for income in the year 2000?
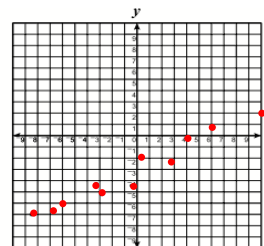
F   35,000

G   43,000

H   50,000

J   57,000

Using the median fit method, which scatterplot most likely has a line of best fit represented by $y = {}^-x + 5$?

A

C

B

D
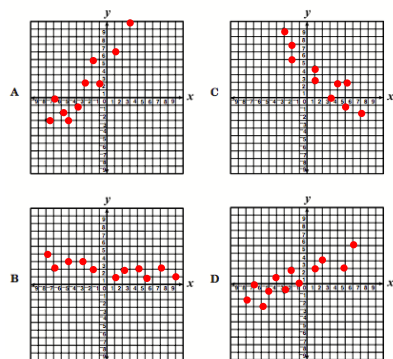
(scatterplot)

Which equation best represents the data shown on the scatterplot?

F $y = \dfrac{x}{2} - 1$

G $y = \dfrac{1}{2}x - 3$

H $y = x - 3$

J $y = 2x - 5$