PRINTABLE VERSION

Quiz 8

You scored 100 out of 100

Question 1

Your answer is CORRECT.

Which of the following would be the LSRL for the given data?

x	1	4	8	12	15	19
y	43	37	26	20	24	11

```
x=c(1,4,8,12,15,19)
> y=c(43,37,26,20,24,11)
> lm(y~x)

Call:
lm(formula = y ~ x)

Coefficients:
(Intercept)          x
     42.815      -1.625
```

a) $\hat{y} = 42.82 + 1.625\,x$

b) $\hat{y} = 42.82 - 1.625\,x$

c) $\hat{y} = -1.625 + 42.82\,x$

d) $\hat{y} = -1.625 - 42.82\,x$

e) None of the above

Question 2

Your answer is CORRECT.

Determine the correlation coefficient for the data shown in this table:

x	3	6	11	13	16	18
y	22	28	27	40	27	43

```
x=c(3,6,11,13,16,18)
> y=c(22,28,27,40,27,43)
> cor(x,y)
[1] 0.7018695
```

a) -0.7019

b) 0.7019

c) 0.3509

d) -0.4926

e) 0.4926

f) None of the above

Question 3

Your answer is CORRECT.

Suppose you have the following data:

Residual = $y - \hat{y}$

x	1	2	3	4	5	6
y	24	29	28	42	33	41

and the LSRL is $\hat{y} = 21.73 + 3.171\,x$. Find the residual value for $x = 1$.

$y(1) - \hat{y}(1) = 24 - 24.091 = -0.901$

a) 24

b) -0.901

$\hat{y}(1) = 21.73 + 3.171 = 24.901$

c) 24.901

d) 0.901

e) None of the above

Question 4

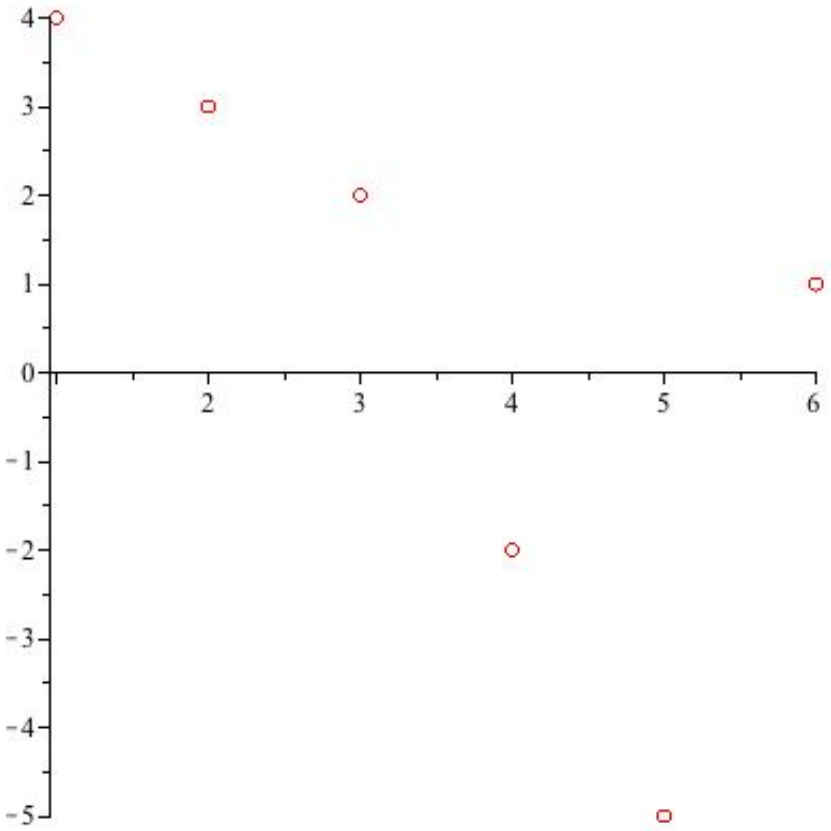
Your answer is CORRECT.

Which of the following is the residual plot for the data in the given table?

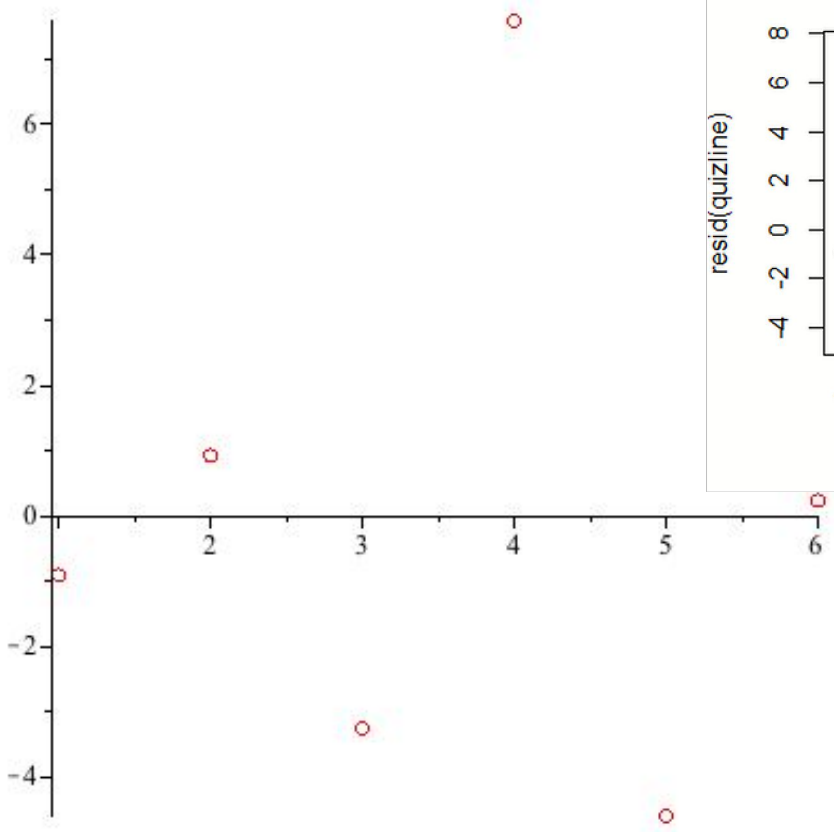
x	1	2	3	4	5	6
y	14	19	18	32	23	31

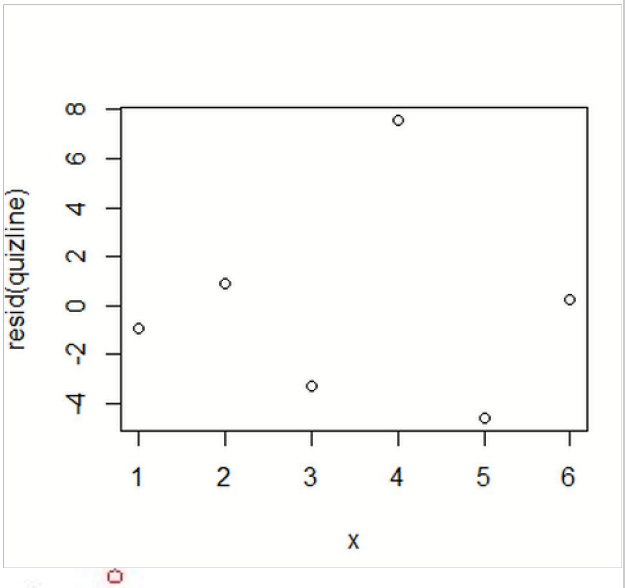
```
x=c(1,2,3,4,5,6)
> y=c(14,19,18,32,23,31)
> quizline=lm(y~x)
> plot(x,resid(quizline))
```

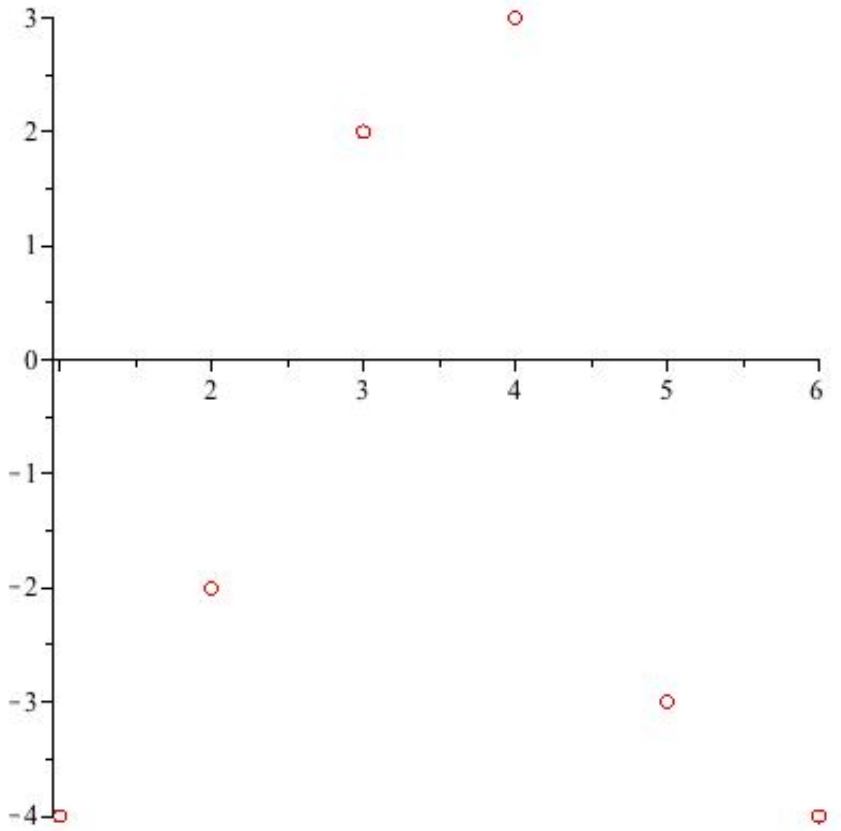
a)

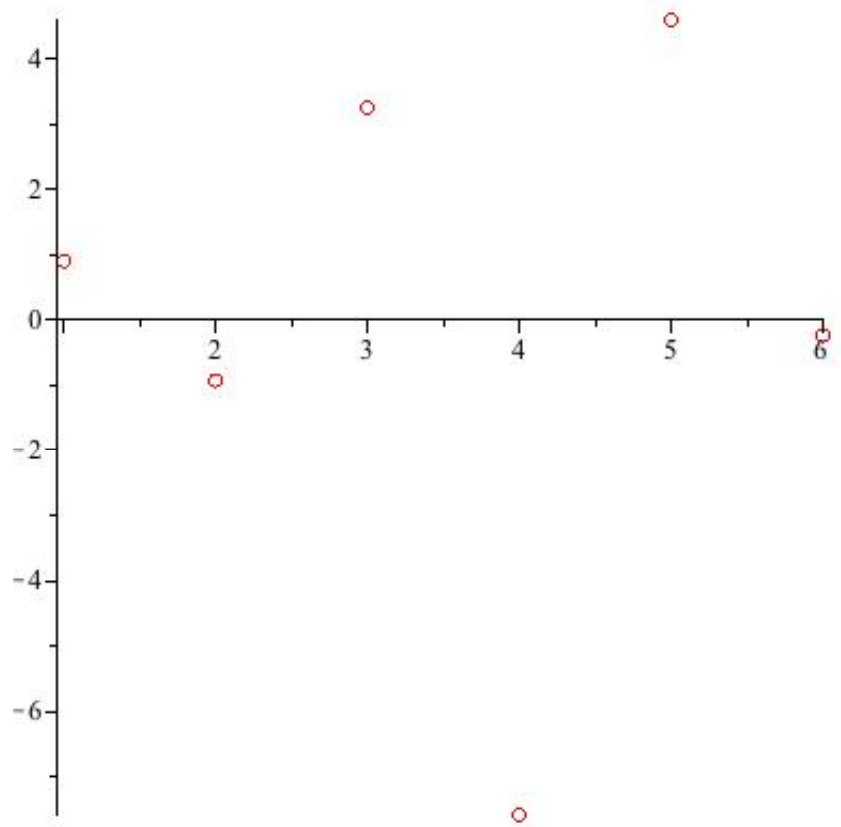

4
3
2
1
0
-1
-2
-3
-4
-5
2
3
4
5
6

b)


6
4
2
0
-2
-4
2
3
4
5
6


resid(quizline)
8
6
4
2
0
-2
-4
1
2
3
4
5
6
x

c) 

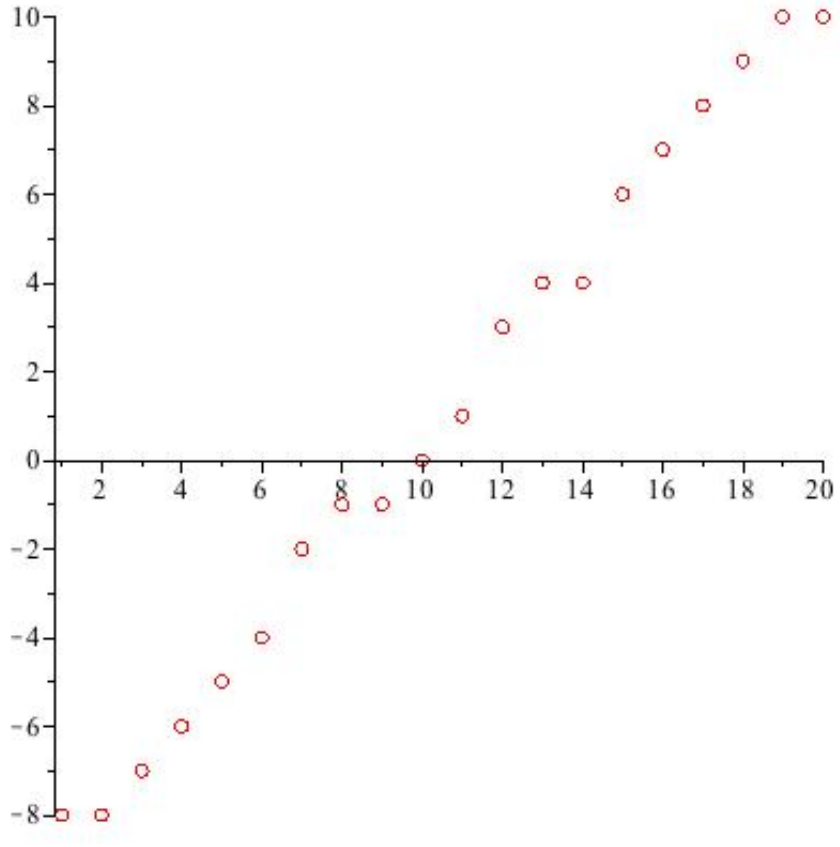
d) 

e) None of the above

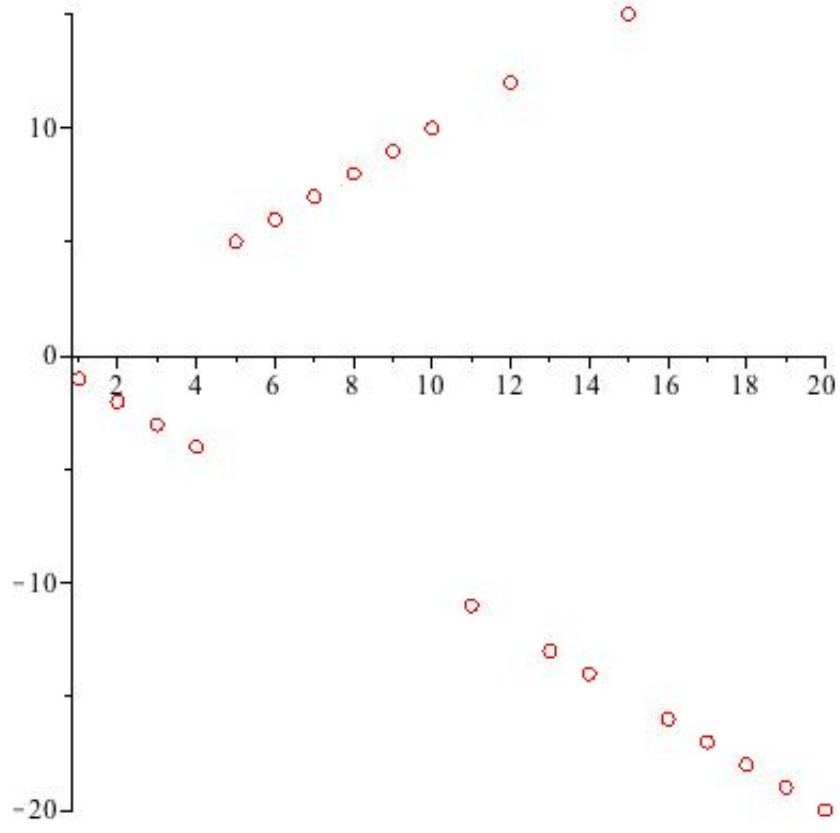
Question 5

Your answer is CORRECT. → no pattern

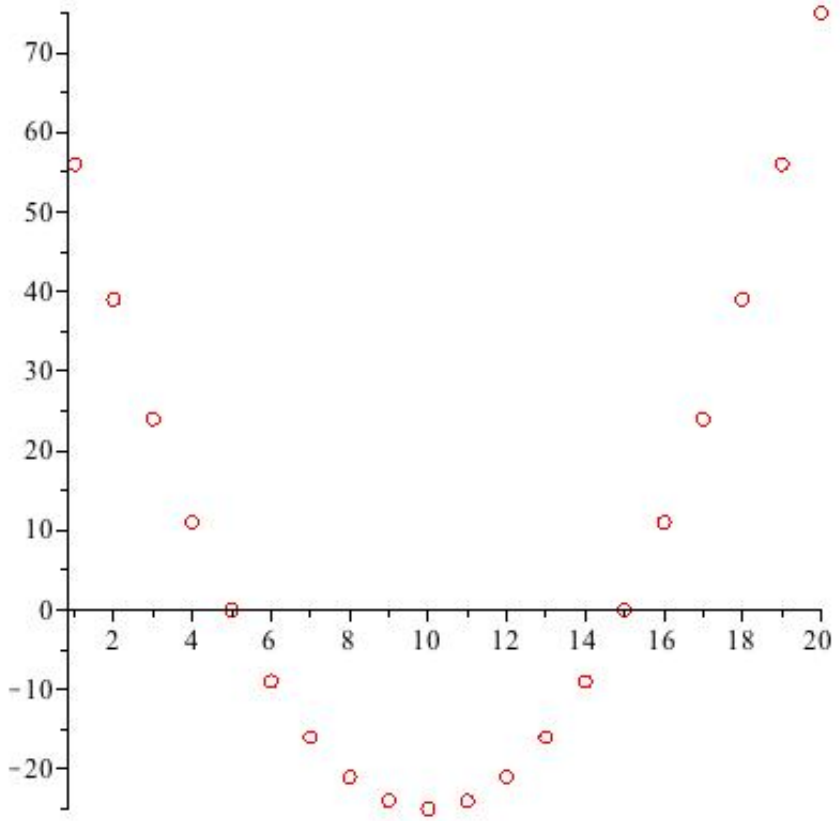
Which of the following residual plots would indicate a good LSRL model?



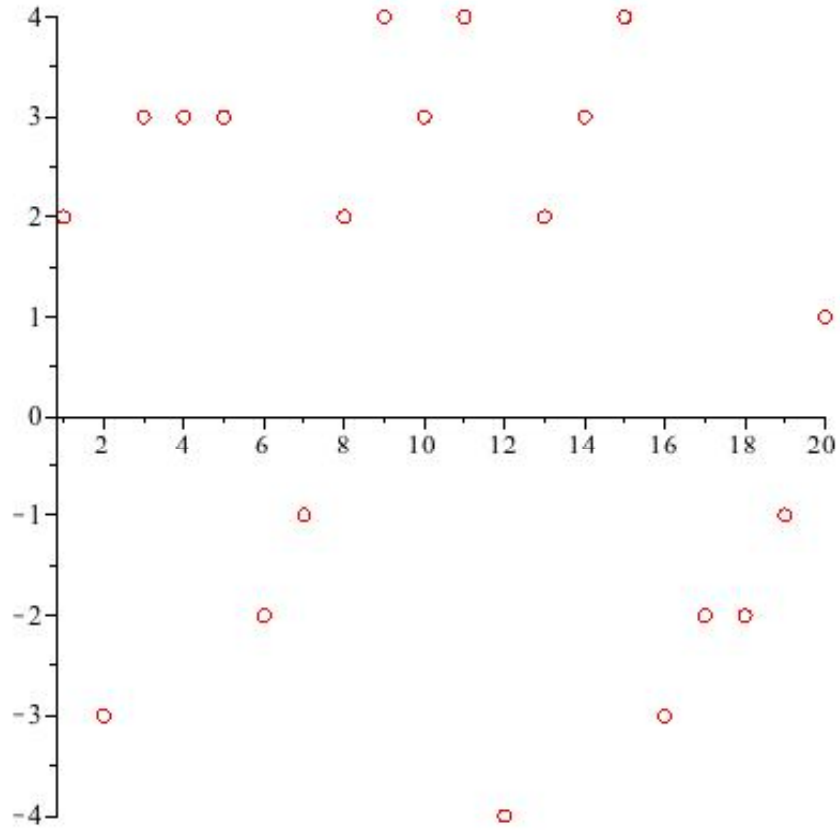
a)



b)



c)



no pattern

d)

Question 6

Your answer is CORRECT.

For children between the ages of 18 months and 29 months, there is approximately a linear relationship between *height* and *age*. The relationship can be represented by $\hat{y} = 61.05 + 0.63x$ where y represents height (in centimeters) and x represents age (in months). Joseph is 23.5 months old and is 82 centimeters tall. What is Joseph's residual?

Residual = $y - \hat{y}$

$y(23.5) - \hat{y}(23.5) = 82 - 75.855 = 6.145$

$\hat{y}(23.5) = 61.05 + 0.63(23.5)$

$= 75.855$

a) 75.855

b) 7.145

c) -30.710

d) 112.710

e) 6.145

f) None of the above

Question 7

Your answer is CORRECT.

If the LSRL relating the independent variable x and the dependent variable y for a given problem is $\hat{y} = 3x + 4$, then an increase of 1 unit in x is associated with an increase of how many units in y?

$\hat{y} = 3x + 4$

↑ slope

for every x increase there is a 3 unit increase in y

a) 4

b) 1

c) 0

d) 3

e) 7

Question 8

Your answer is CORRECT.

If the correlation between body weight and annual income were high and positive, we could conclude that:

never say causation

body weight ↑

annual income ↑

never say causation

a) high incomes cause people to gain weight.

b) high incomes cause people to eat more food.

c) high-income people tend to spend a greater proportion of their income on food than low-income people.

d) high-income people tend to be heavier than low-income people.

never say causation

e) low incomes cause people to eat more food.

Question 9

Your answer is CORRECT.

The following two-way table describes the preferences in movies and fast food restaurants for a random sample of 100 people.

	McDonalds	Taco Bell	Wendy's
Iron Man	20	12	8
Dispicable Me	10	11	7
Harry Potter	5	15	12

What percent of people in the sample like the movie Iron Man?

a) 28%

$\frac{20+12+8}{100} = \frac{40}{100} = 40\%$

b) 27%

c) 35%

d) 38%

e) 40%

Question 10

Your answer is CORRECT.

The following two-way table describes the preferences in movies and fast food restaurants for a random sample of 100 people.

	McDonald's	Taco Bell	Wendy's	
Iron Man	20	13	7	40
Dispicable Me	10	11	7	28
Harry Potter	9	11	12	32
	39	35	26	

What percent of the Iron Man lovers also like Taco Bell?

a) 40%

$\frac{13}{40} = 32.5\% \approx 33\%$

b) 11%

c) 19%

d) 24%

e) 33%