

# Basic Statistics Review

Тест, 9 вопроса

1

Баллы

1.

Enter the following dataset in R using concatenation operator. You may edit the code fragment below:

```
### 37, 86, 79, 95, 61, 93, 19, 98, 121, 26, 39, 11, 26, 75, 29, 130, 42, 8###
```

Obtain 5-number summary. You may edit the code fragment below. What is the sample mean?

```
1 data=c(37, 86, 79, 95, 61, 93, 19, 98, 121, 26, 39, 11, 26, 75, 29, 130, 42, 8) #  
  Edit this line  
2 summary(data) # Edit this line
```

Выполнить

Сбросить

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
8.00	26.75	51.50	59.72	91.25	130.00

☒ 59.72

☐ 51.50

1

Баллы

2.

Find the summary of the dataset given in the following code block. What is the 3rd quartile?

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```
data=c(37, 86, 79, 95, 61, 93, 19, 98, 121, 26, 39, 11, 26, 75, 29, 130, 42, 8) #
```

Edit this line

```
2 summary(data) # Edit this line
```

Выполнить

Сбросить

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
8.00	26.75	51.50	59.72	91.25	130.00

☒ 91.25

☐ 26.75

☐ 130

1

Баллы

3.

We look at the dataset titled 'cheddar' from 'faraway' package. Continue the code in the following code block to look at the description of the dataset 'cheddar' using help() routine. How many observations and variables are there in the dataset?

```
1 library(faraway)
2 help(cheddar)
```

Выполнить

Сбросить

cheddar package:faraway R Documentation

**Taste Test of Cheddar Cheese**

**Description:**

In a study of cheddar cheese from the LaTrobe Valley of Victoria, Australia, samples of cheese were analyzed for their chemical composition and were subjected to taste tests. Overall taste scores were obtained by combining the scores from several tasters.

**Usage:**

```
data(cheddar)
```

**Format:**

A data frame with 30 observations on the following 4 variables.

'taste' a subjective taste score

'Acetic' concentration of acetic acid (log scale)

'H2S' concentration of hydrogen sulfide (log scale)

'Lactic' concentration of lactic acid

**Source:**

Unknown

**Examples:**

```
data(cheddar)
## maybe str(cheddar) ; plot(cheddar) ...
```

- ☒ 30 Observations and 4 variables
- ☐ 4 observations and 30 variables
- ☐ 30 observations and 5 variables

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4.

We are still working on the dataset 'cheddar' from the package 'faraway'. Apply simple linear regression model for the bivariate data 'taste' (modeled as a random variable Y) vs 'H2S' (modeled as a random variable X) in the dataset 'cheddar' in using lm() routine in the following code block. What is the model?

```
1 library(faraway)
2 m=lm(taste~H2S, data=cheddar)
3 summary(m)
```

Выполнить

Сбросить

Call:

```
lm(formula = taste ~ H2S, data = cheddar)
```

Residuals:

```
      Min       1Q   Median       3Q      Max
-15.426  -7.611  -3.491   6.420  25.687
```

Coefficients:

```
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  -9.7868     5.9579  -1.643   0.112
H2S           5.7761     0.9458   6.107 1.37e-06 ***
```

---

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Residual standard error: 10.83 on 28 degrees of freedom

Multiple R-squared: 0.5712, Adjusted R-squared: 0.5558

F-statistic: 37.29 on 1 and 28 DF, p-value: 1.374e-06

[1] 1.332268e-15

☐  $Y = -1.643 + 6.107 * X + \epsilon$

where  $\epsilon \sim N(0, 10.83^2)$ .

☐  $Y = -9.7868 + 5.7761 * X + \epsilon$

where  $\epsilon \sim N(0, 0.5712^2)$ .

☒  $Y = -9.7868 + 5.7761 * X + \epsilon$

where  $\epsilon \sim N(0, 10.83^2)$ .

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5.

What is the sum of the residuals in the simple linear regression model of Question 4?

```
1 library(faraway)
2 m=lm(taste~H2S, data=cheddar)
3 sum(resid(m))
```

Выполнить

Сбросить

```
[1] 1.332268e-15
```



0



736

1

Баллы

6.

What is the sum of the fitted values in the simple linear regression model of Question 4? We can get the fitted values by using `lm()$fitted` routine.

```
1 library(faraway)
2 sum(lm(taste~H2S, data=cheddar)$fitted)
3
```

Выполнить

Сбросить

```
[1] 736
```



736



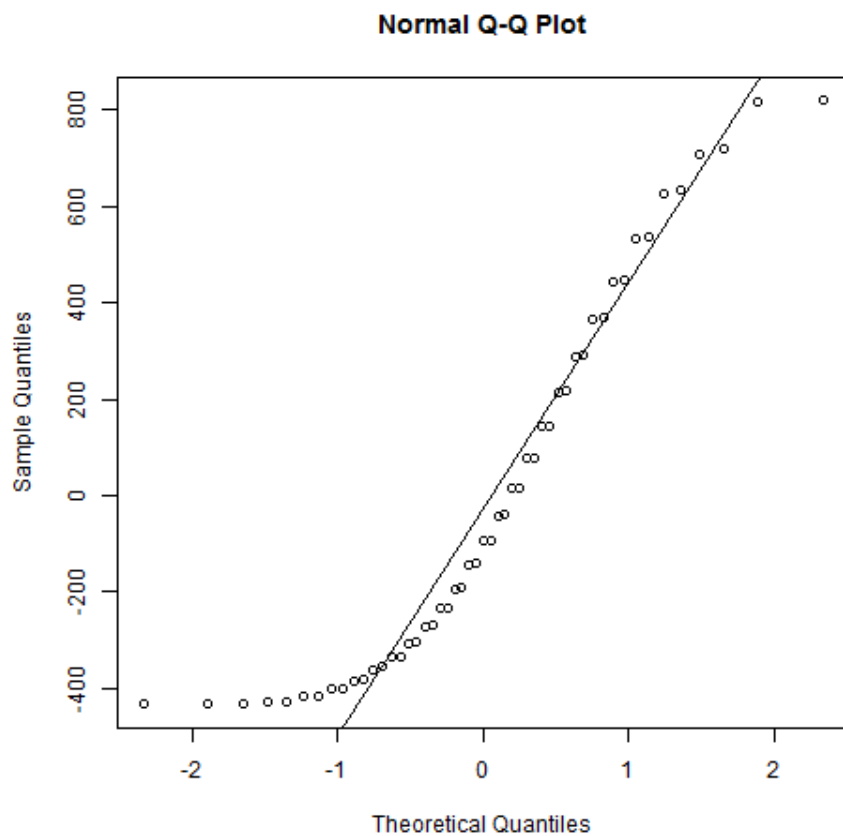
0

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7.

Does this data set appear to be normally distributed?



☒ No.

☐ Yes.

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Баллы

8.

Suppose you are testing the null hypothesis that a population mean is 0 against the alternative that it is not 0. The p-value is 0.0003342. Is the result significant?

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Given the following function call and printout, can you reject your null hypothesis?

```
1 data = c(7, 5, 1, 7, 2, 5, 2, 4, 10, 6);  
2 t.test(data, alternative = "two.sided", paired=FALSE)
```

Выполнить

Сбросить

One Sample t-test

```
data: data  
t = 5.6003, df = 9, p-value = 0.0003342  
alternative hypothesis: true mean is not equal to 0  
95 percent confidence interval:  
 2.920702 6.879298  
sample estimates:  
mean of x  
      4.9
```

☐ No.

☒ Yes.

1

Баллы

9.

Do you believe the R printout matches the regression in the figure?

Call:

lm(formula = y ~ x)

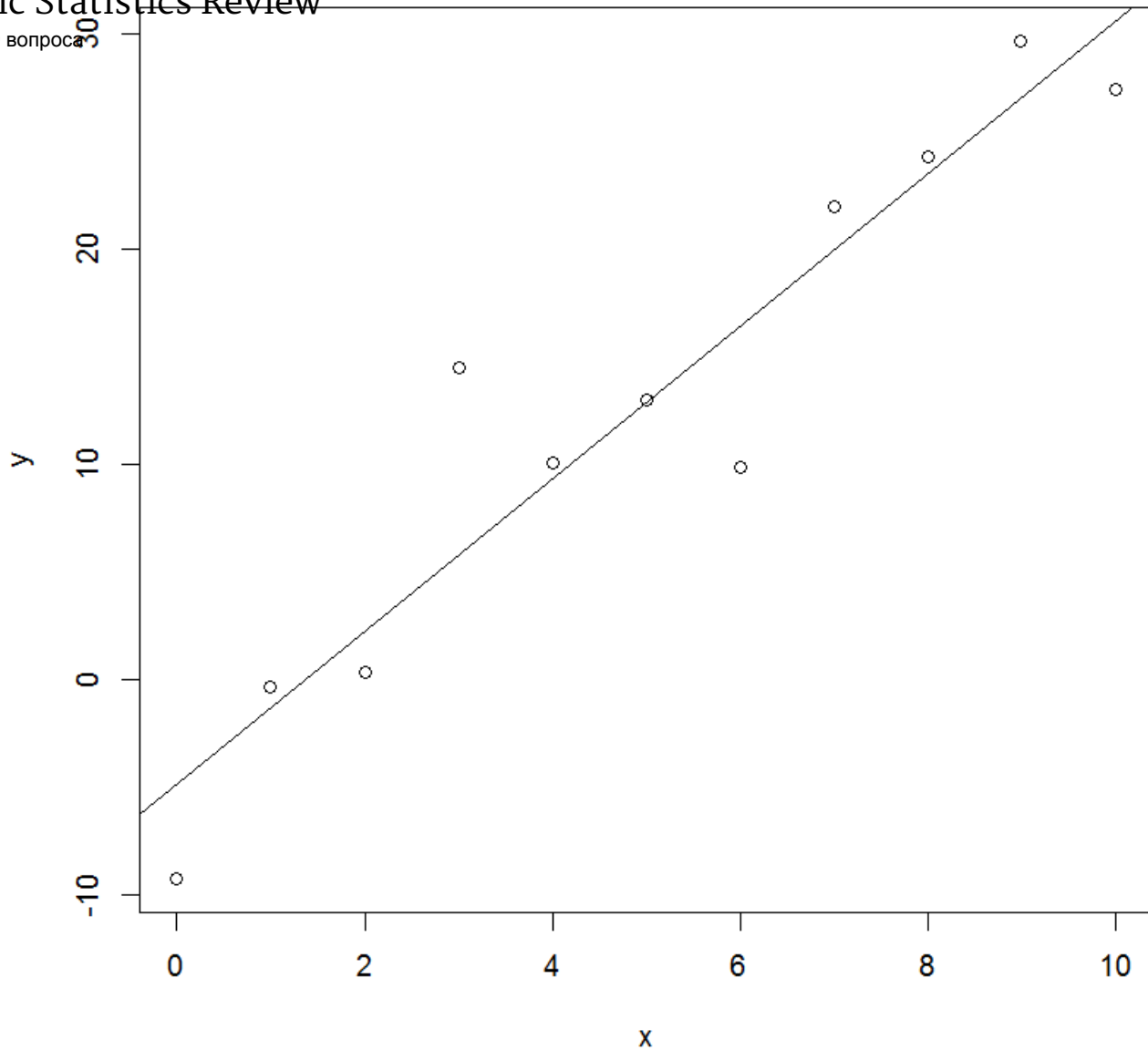
Coefficients:

(Intercept) x

-4.48 -2.82

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☒ No

☐ Yes.

☐ Я понимаю, что отправка работы, выполненной не мной, может привести к тому, что курс не будет засчитан, а аккаунт Coursera заблокирован.

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