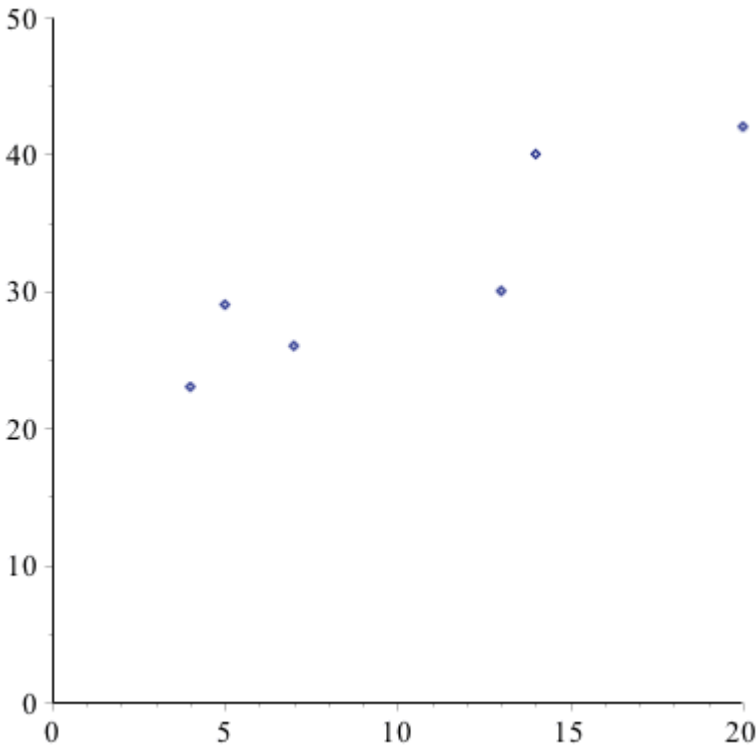# PRINTABLE VERSION

**Quiz 4**

## You scored 100 out of 100

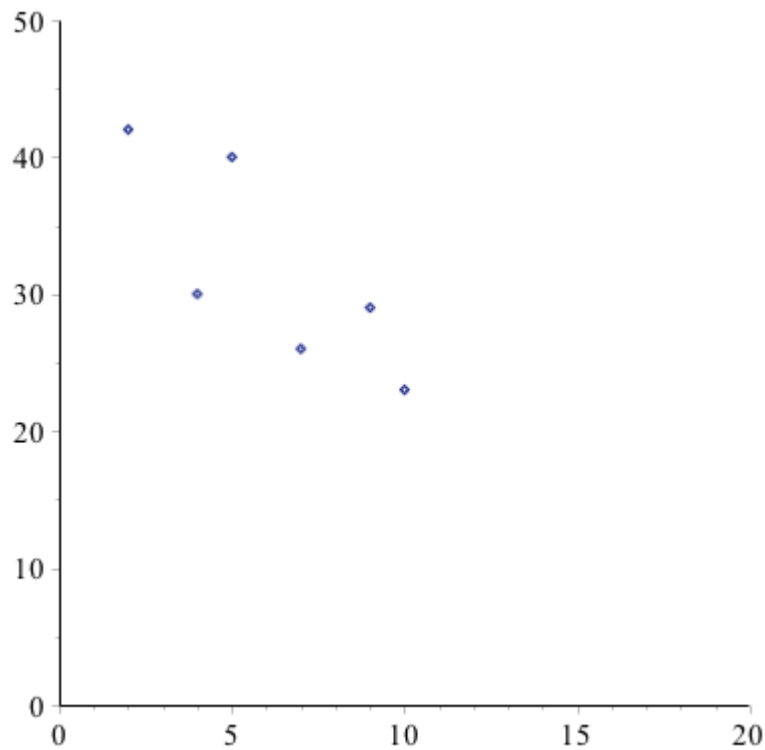**Question 1**

Your answer is CORRECT.

Which of the following would be the scatterplot for the given data?
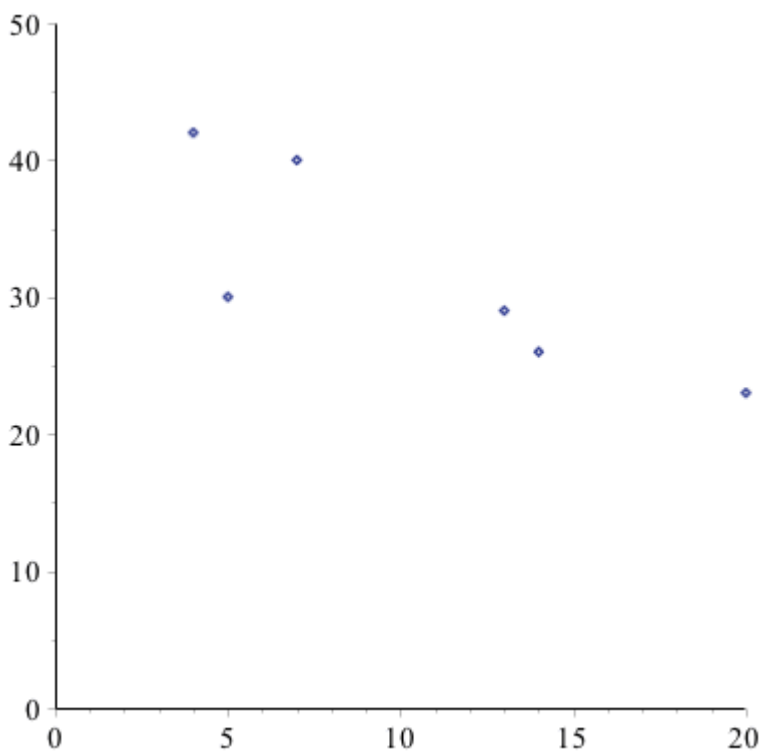
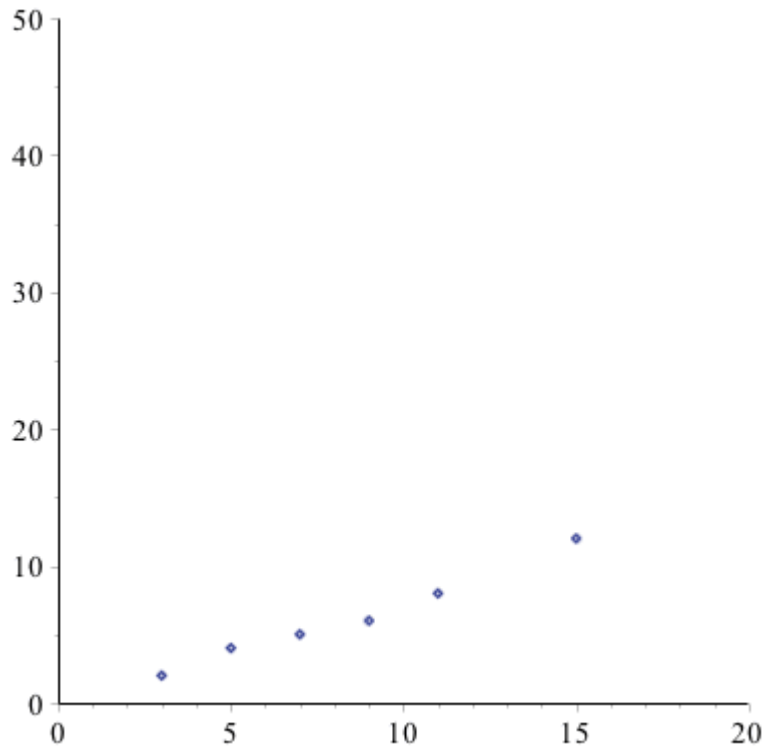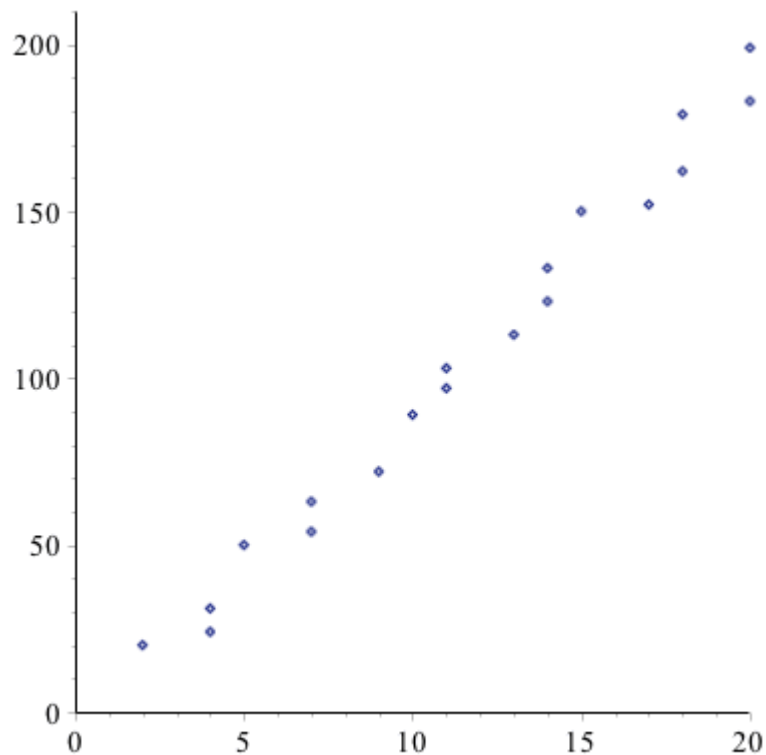| $x$ | 4 | 5 | 7 | 14 | 13 | 20 |
|---|---|---|---|---|---|---|
| $y$ | 23 | 29 | 26 | 40 | 30 | 42 |



**a)** ⊙

**b)** ◯



**c)** ◯

**d)** ○

**e)** ○ None of the above

---

**Question 2**

Your answer is CORRECT.

What can be said about the relationship between the explantory variable and the response variable in the following scatterplot?

**a)** ○ There is a weak positive linear association.

**b)** ○ The explanatory variable causes the responses.

**c)** ◉ There is a strong positive linear association.

**d)** ○ There is a strong negative linear association.

**e)** ○ None of the above

**Question 3**

Your answer is CORRECT.

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

| $x$ | 2 | 4 | 10 | 15 | 13 | 16 |
|---|---|---|---|---|---|---|
| $y$ | 22 | 29 | 28 | 40 | 34 | 43 |

**a)** ○ 0.8332

**b)** ◉ 0.9128

**c)** ○ 0.4564

**d)** ○ −0.9128

**e)** ○ −0.8332

**f)** ○ None of the above

**Question 4**

Your answer is CORRECT.

Choose the best correlation coefficient for the data shown in this scatterplot:
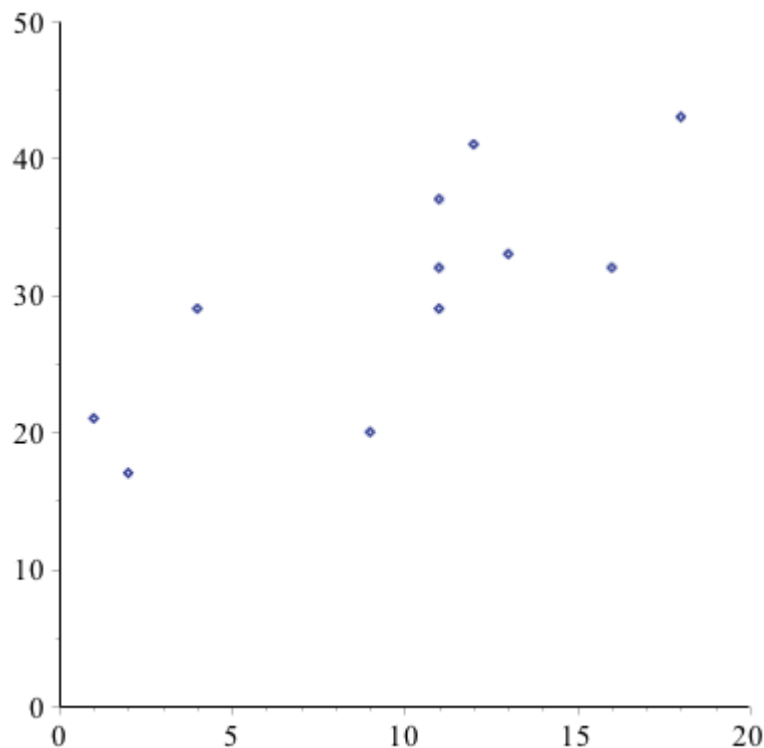
**a)** ○ 1.5809

**b)** ○ −0.3889

**c)** ○ 0.3889

**d)** ◉ 0.7779

**e)** ○ −0.7779

**Question 5**

Your answer is CORRECT.

Which of the following is a true statement?

**a)** ○ If there is no correlation between the independent and dependent variables, then the value of the correlation coefficient must be -1.

**b)** ○ The variable that is being predicted in regression analysis is the independent variable.

**c)** ◉ The correlation coefficient $r$ is always between -1 and +1.

**d)** ○ The coefficient of determination can assume negative values.

**e)** ○ A negative correlation indicates that as values of $x$ decrease, values of $y$ will decrease.

f) ⚪ None of the above

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**Question 6**

Your answer is CORRECT.

The decline of salmon fisheries along the Columbia River in Oregon has caused great concern among commercial and recreational fishermen. The paper 'Feeding of Predaceous Fishes on Out-Migrating Juvenile Salmonids in John Day Reservoir, Columbia River' (Trans. Amer. Fisheries Soc. (1991: 405-420)) gave the accompanying data on y = maximum size of salmonids consumed by a northern squaw fish (the most abundant salmonid predator) and x = squawfish length, both in mm. Use the following statistics to give the equation of the least squares regression line.

$$\bar{x} = 524.970, \quad \bar{y} = 319.417, \quad s_x = 19.943, \quad s_y = 16.100, \quad r = 0.9662$$

a) ⚪ $\hat{y} = 1.197x + 90.060$

b) ⚫ $\hat{y} = 0.780x - 90.060$

c) ⚪ $\hat{y} = 1.197x - 90.060$

d) ⚪ $\hat{y} = -90.060x + 0.780$

e) ⚪ $\hat{y} = 0.780x + 90.060$

f) ⚪ None of the above

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**Question 7**

Your answer is CORRECT.

Suppose that you are given the following results. Find the correlation coefficient of the data.

$$s_x = 1.355, \quad s_y = 12.300, \quad b = 6.100$$

a) ⚫ 0.672

b) ⚪ 0.336

c) ⚪ 0.488

d) ⚪ −0.672

e) ⚪ −0.488

f) ⚪ None of the above

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**Question 8**

Your answer is CORRECT.

Suppose you find that the correlation coefficient for a set of data is 0.814. What is the coefficient of determination and what does it mean?

**a)** ○ 0.814; This means that 81.4% of the variation of $y$ is explained by the LSRL of $y$ on $x$.

**b)** ◉ 0.663; This means that 66.3% of the variation of $y$ is explained by the LSRL of $y$ on $x$.

**c)** ○ 0.663; This means that we are 66.3% accurate with our prediction of the LSRL equation.

**d)** ○ 0.814; This means that we are 81.4% accurate with our prediction of the LSRL equation.

**e)** ○ None of the above

**Question 9**

Your answer is CORRECT.

Suppose that the LSRL for the appraised value (in thousands of dollars) and number of rooms for houses in East Meadow, New York is $\hat{y} = 19.718x + 74.80$. Predict the price of a 9 room house (in thousands of dollars).
tbl

**a)** ◉ 252.262

**b)** ○ 356.262

**c)** ○ 3027.144

**d)** ○ 360.262

**e)** ○ 257.262

**f)** ○ None of the above

**Question 10**

Your answer is CORRECT.

Select the equation of the least squares line for the data: (27.2, 1.50), (26.0, 3.75), (28.0, .75), (24.8, 7.50), (24.0, 6.75), (22.0, 9.75), (23.2, 7.50).

**a)** ○ $\hat{y}$ = -43.434 − 1.5206$x$

**b)** ○ $\hat{y}$ = 47.777 − 1.6727$x$

**c)** ○ $\hat{y}$ = 43.434 − 1.6727$x$

**d)** ◉ $\hat{y}$ = 43.434 − 1.5206$x$

**e)** ○ ŷ = 1.5206 $x$ − 43.434

**f)** ○ None of the above

## Question 11

Your answer is CORRECT.

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

| $x$ | 1 | 8 | 8 | 11 | 16 | 17 |
|---|---|---|---|---|---|---|
| $y$ | 21 | 28 | 29 | 41 | 32 | 43 |

**a)** ◉ ŷ = 1.136 x + 20.78

**b)** ○ ŷ = −1.136 x + 20.78

**c)** ○ ŷ = −20.78 x + 1.136

**d)** ○ ŷ = 20.78 x + 1.136

**e)** ○ None of the above

## Question 12

Your answer is CORRECT.

Suppose you have the following data:

| $x$ | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $y$ | 24 | 30 | 27 | 42 | 27 | 41 |

and the LSRL is ŷ = 2.600 x + 22.73 . Find the residual value for $x = 2$.

**a)** ○ 27.930

**b)** ○ -2.070

**c)** ○ 30

**d)** ◉ 2.070

**e)** ○ None of the above

## Question 13

Your answer is CORRECT.

In the least-squares regression line, the desired sum of the errors (residuals) should be

**a)** ⚪ negative

**b)** ⚪ positive

**c)** ⚪ maximized

**d)** ⚪ 1

**e)** ⦿ zero

**Question 14**

Your answer is CORRECT.

The decline of salmon fisheries along the Columbia River in Oregon has caused great concern among commercial and recreational fishermen. The paper 'Feeding of Predaceous Fishes on Out-Migrating Juvenile Salmonids in John Day Reservoir, Columbia River' (Trans. Amer. Fisheries Soc. (1991: 405-420) gave the accompanying data on y = maximum size of salmonids consumed by a northern squaw fish (the most abundant salmonid predator) and x = squawfish length, both in mm. Here is the computer software printout of the summary:

| Coefficients: | | | | |
|---|---|---|---|---|
| | Estimate | Std. Error | t value | Pr(> \|t\|) |
| (Intercept) | −91.030 | 16.703 | −5.450 | 0.000 |
| Length | 0.706 | 0.042 | 16.759 | 0.000 |

Using this information, give the equation of the least squares regression line.

**a)** ⚪ $\hat{y} = 16.703x - 91.030$

**b)** ⚪ $\hat{y} = -91.030x + 0.706$

**c)** ⦿ $\hat{y} = 0.706x - 91.030$

**d)** ⚪ $\hat{y} = 16.703x + 0.042$

**e)** ⚪ $\hat{y} = 0.706x + 16.703$

**f)** ⚪ None of the above