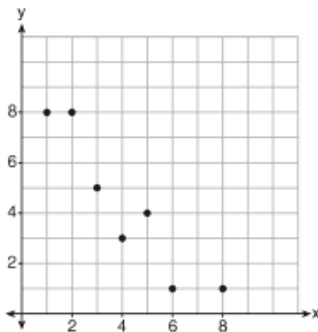


## MES44QC-Regression

1.

What is the correlation coefficient of the linear fit of the data shown below, to the *nearest hundredth*?

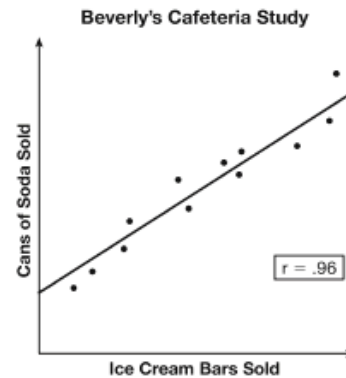


- (1) 1.00                      (3) -0.93  
 (2) 0.93                      (4) -1.00

3.

2.

Beverly did a study this past spring using data she collected from a cafeteria. She recorded data weekly for ice cream sales and soda sales. Beverly found the line of best fit and the correlation coefficient, as shown in the diagram below.



Given this information, which statement(s) can correctly be concluded?

- I. Eating more ice cream causes a person to become thirsty.  
 II. Drinking more soda causes a person to become hungry.  
 III. There is a strong correlation between ice cream sales and soda sales.

- (1) I, only                      (3) I and III  
 (2) III, only                    (4) II and III

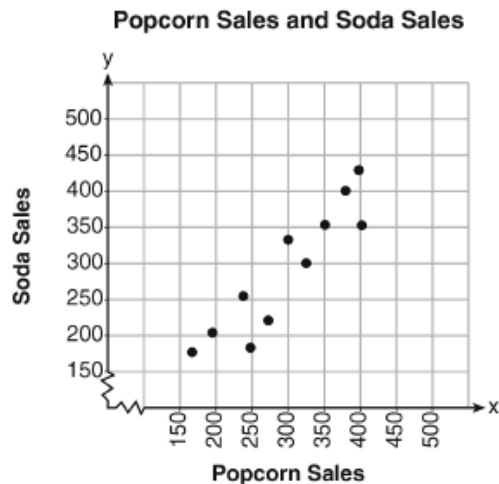
4.

Bella recorded data and used her graphing calculator to find the equation for the line of best fit. She then used the correlation coefficient to determine the strength of the linear fit.

Which correlation coefficient represents the strongest linear relationship?

- (1) 0.9                          (3) -0.3  
 (2) 0.5                          (4) -0.8

The scatterplot below compares the number of bags of popcorn and the number of sodas sold at each performance of the circus over one week.



Which conclusion can be drawn from the scatterplot?

- (1) There is a negative correlation between popcorn sales and soda sales.
- (2) There is a positive correlation between popcorn sales and soda sales.
- (3) There is no correlation between popcorn sales and soda sales.
- (4) Buying popcorn causes people to buy soda.

5.

The table below shows the number of grams of carbohydrates,  $x$ , and the number of calories,  $y$ , of six different foods.

Carbohydrates ( $x$ )	Calories ( $y$ )
8	120
9.5	138
10	147
6	88
7	108
4	62

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

- (1)  $y = 15x$
- (2)  $y = 0.07x$
- (3)  $y = 0.1x - 0.4$
- (4)  $y = 14.1x + 5.8$

7.

6.

The table below shows 6 students' overall averages and their averages in their math class.

<b>Overall Student Average</b>	92	98	84	80	75	82
<b>Math Class Average</b>	91	95	85	85	75	78

If a linear model is applied to these data, which statement best describes the correlation coefficient?

- (1) It is close to  $-1$ .
- (2) It is close to  $1$ .
- (3) It is close to  $0$ .
- (4) It is close to  $0.5$ .

The results of a linear regression are shown below.

$$y = ax + b$$

$$a = -1.15785$$

$$b = 139.3171772$$

$$r = -0.896557832$$

$$r^2 = 0.8038159461$$

Which phrase best describes the relationship between  $x$  and  $y$ ?

- (1) strong negative correlation
- (2) strong positive correlation
- (3) weak negative correlation
- (4) weak positive correlation