Name: _____

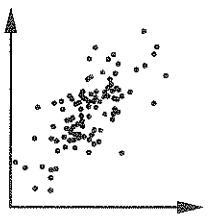
Group: _____ Date: _____

SUPPORT 1.1

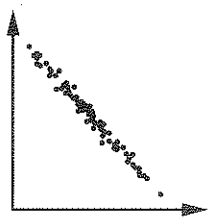
The qualitative estimation of a correlation

1 Observe the following scatter plots. In each case, indicate if the correlation is:

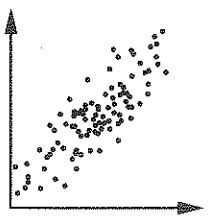
1) positive or negative
2) perfect, strong, moderate, weak or zero

a) 

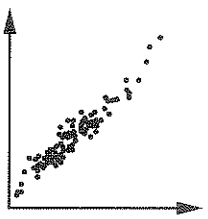
1) _____
2) _____

b) 

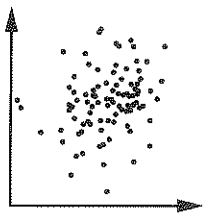
1) _____
2) _____

c) 

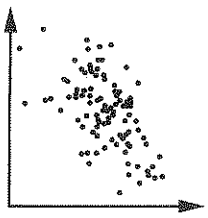
1) _____
2) _____

d) 

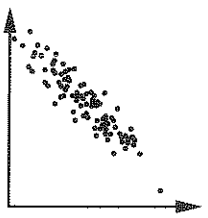
1) _____
2) _____

e) 

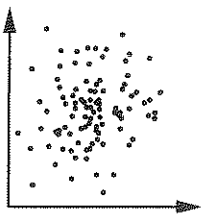
1) _____
2) _____

f) 

1) _____
2) _____

g) 

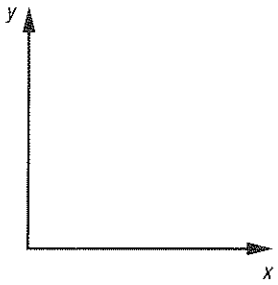
1) _____
2) _____

h) 

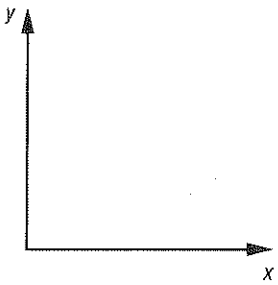
1) _____
2) _____

2 Draw a scatter plot that could correspond to the correlation indicated below.

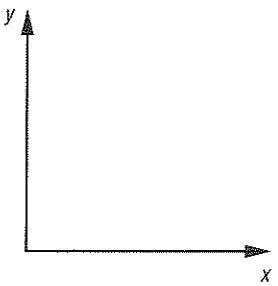
a) Perfect positive correlation



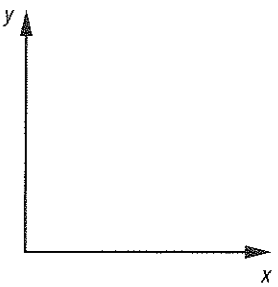
b) Strong negative correlation



c) Weak negative correlation



d) Zero correlation



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Name: _____

Group: _____ Date: _____

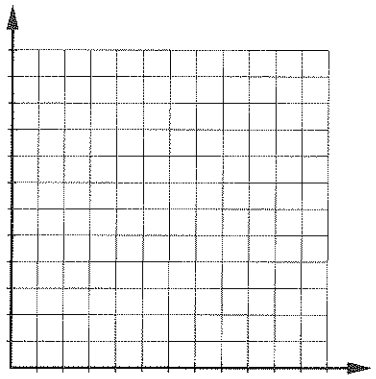
CONSOLIDATION 1.1

The qualitative estimation of a correlation

1 Can temperature affect the physical properties of certain substances? To respond to this question, a group of students dissolved a salt, potassium nitrate, in 100 mL of water at various temperatures. According to the results of this experiment, what conclusions can you reach? Justify your answer.

Solubility of potassium nitrate at various temperatures

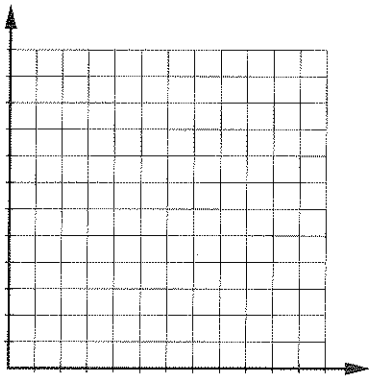
Water temperature (°C)	40	40	42	43	44	44	45	46	47	48
Mass of solute (g)	62	64	67	68	68	73	75	79	78	79



2 The student council committee of your school conducts a survey with 20 students. After analyzing the results, they created the following slogan: **"Less TV means success!"** Draw the scatter plot associated with this situation. Do you agree that the slogan is representative of the results of the survey? Justify your answer.

Television and academic success

Time spent watching television (h/week)	0	0.5	2	2	3	3.5	4.5	5	5.5	6
Academic success (%)	73	62	93	84	85	62	60	72	87	67
Time spent watching television (h/week)	7	7	8	8	9	9.5	10	11	11.5	12
Academic success (%)	51	80	71	70	50	68	75	79	60	74



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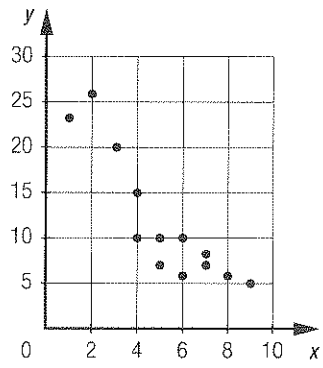
4 Refer to the scatter plot below to answer the following questions.

a) Fill in the contingency table.

x \ y	[0, 5[	[5, 10[	[10, 15[	[15, 20[	[20, 25[	[25, 30[
[0, 2[						
[2, 4[						
[4, 6[						
[6, 8[						
[8, 10[						



b) Are both the contingency table and the scatter plot equally effective at qualitatively estimating the linear correlation? Justify your answer.

_____

_____

_____

5 A correlation exists between the variables described below. State whether you think the correlation is due to a relation of cause and effect between the variables. Justify your answer.

a) The mass of a solid block of tin and the length of the wire that can be produced from it.

_____

_____

b) The distance covered by a car travelling at a constant speed and the duration of time that the car was in motion.

_____

_____

c) The number of hours worked each week and a person's leisure time.

_____

_____

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Name: _____

Group: _____ Date: _____

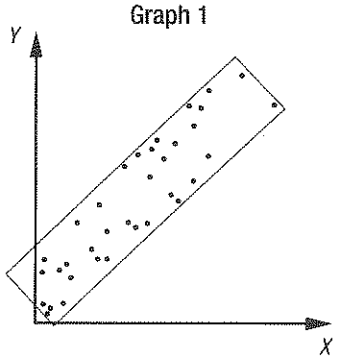
ACTIVITY 1 1.2

Student Book, p. 24

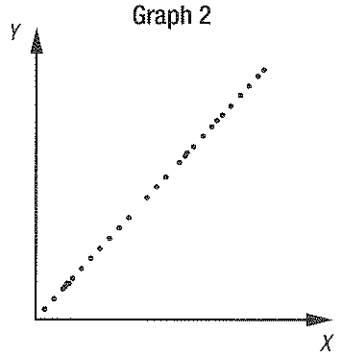
Estimate using the rectangle method

Below are six scatter plots representing correlations of different strengths between two variables. A rectangle containing all the points has been drawn in Graph 1.

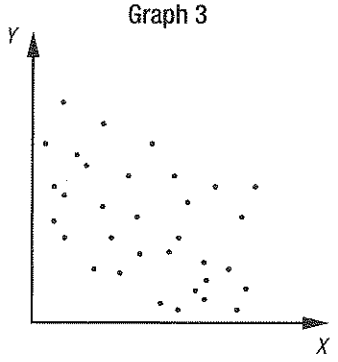
Graph 1



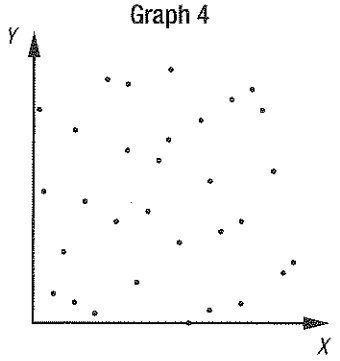
Graph 2



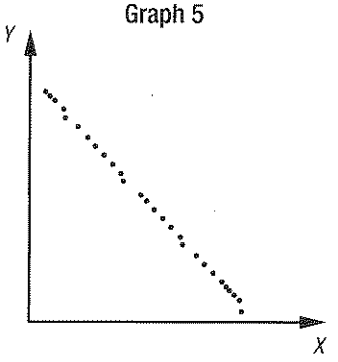
Graph 3



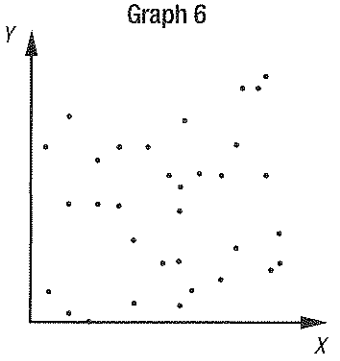
Graph 4



Graph 5



Graph 6



a. For each of these graphs, do the following:
   1) Draw the smallest rectangle that can contain all of the points.
   2) Measure the dimensions of the rectangle.

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Match each graph to one of the linear correlation coefficients r in the table below, and add the dimensions of the corresponding rectangle to the table.

Graph Number	r	Width of rectangle (mm)	Length of rectangle (mm)
	1		
	0.8		
	0.2		
	0		
	-0.5		
	-1		

b. Is there a relationship between the dimensions of the rectangle and the strength of the correlation between the two variables? Justify your answer.

_____

_____

_____

_____

c. Using the information you collect, find a rule that allows you to estimate the value of the correlation coefficient based on the dimensions of the rectangle.

_____

_____

_____

_____

d. Compare your rule to the rule found by other students, and together decide on the best method to estimate a linear correlation coefficient.

_____

_____

_____

_____

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Name: _____

Group: _____ Date: _____

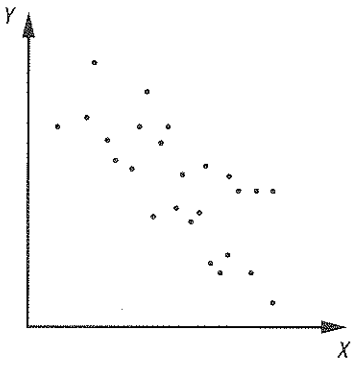
PRACTICE 1.2

Student Book, p. 31

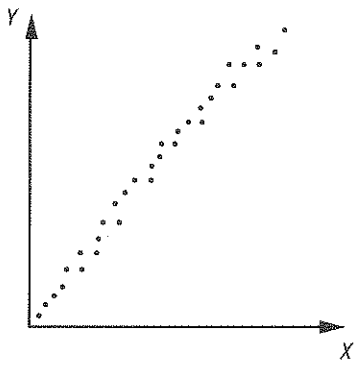
Number 3

3 Use the rectangle method to approximate the linear correlation coefficient associated with each of the following scatter plots.

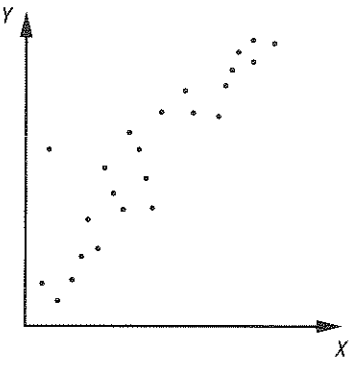
a)



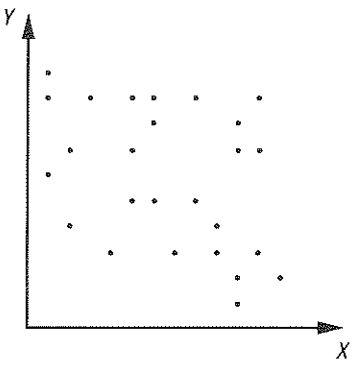
b)



c)



d)



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