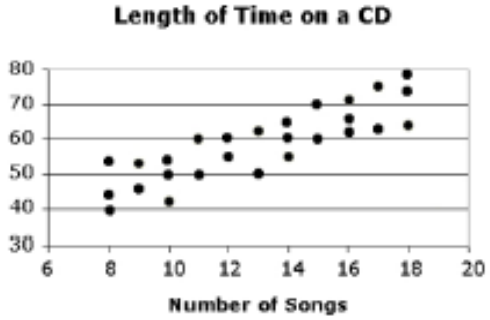
Week 2 Monday Course 3 Warm-up

What is an appropriate label for the y - axis or vertical axis?



A) Number of Songs

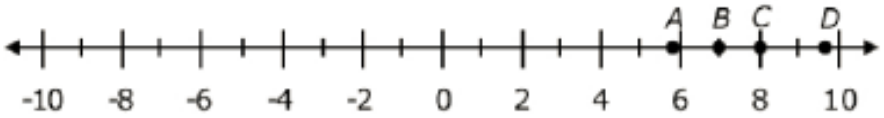
B) Length of a Song

C) Number of Hours

D) Number of Minutes

According to the number line below, which letter best represents the location of the number?

$\sqrt{35}$



A) A

B) B

C) C

D) D

Which of the following is equivalent to the expression below?

$(6^2)^3$

A) 6^1

B) 6^5

C) 6^6

D) 6^{23}

Which transformation could be used to describe the symmetry shown in this octagon?

A) dilation

B) reflection

C) rotation

D) translation

Lesson 10.2 Scatter Plots Day 1

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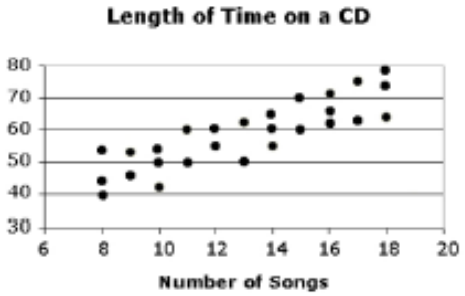

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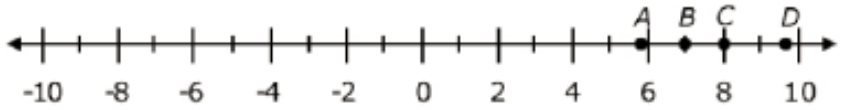

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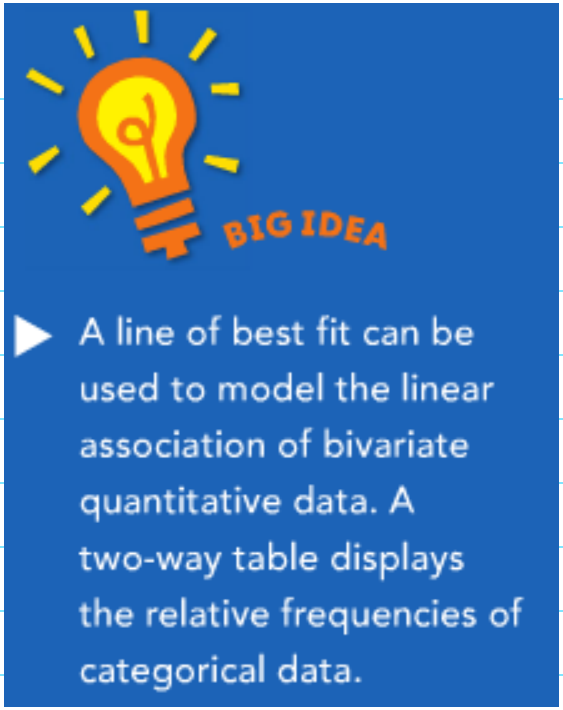
Lesson 10.2 Scatter Plots Day 1

Objective

TSW

- Understand line of best fit.
- Write a linear equation for a line of best fit.
- Use and equation for a line of best fit.



Common Core State Standards

8SP.2– Know that straight lines are widely used to model relationship between two quantitative variable 8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data

Mathematical Practices 1. Solve problems/persevere. 2. Reason. 4. Model mathematics

Lesson 10.2 Scatter Plots Day 1

TSW

- Understand line of best fit.
- Write a linear equation for a line of best fit.
- Use and equation for a line of best fit

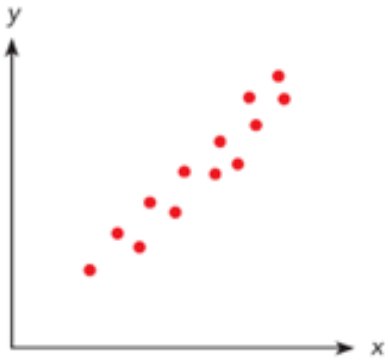
Vocabulary

Line of best fit-

Lesson 10.2 Scatter Plots Day 1

Understand a Line of Best Fit.

Consider a scatter plot with a strong linear association shown in a set of bivariate data. In order to describe the association quantitatively, you can estimate a line of best fit for the scatter plot. A line of best fit closely follows the linear pattern of the data points.



Caution

The line of best fit is **not** the line that connects the most or all points. Also, it does not have to cut through the first and last points of the given data.

Draw a line of best fit with about the same number of data points above and below the line. Outliers are ignored

STEP 1 Plot the points.

STEP 2 Use a ruler to divide the points equally into two sets, ignoring the outliers. About half of the data points should be above the line and about half of the data points should be below the line. It is possible to have some points lying on the ruler line.

STEP 3 Select two points that your line of best fit goes through, and use them to draw a line through the data points.

Lesson 10.2 Scatter Plots Day 1

Understand a Line of Best Fit.

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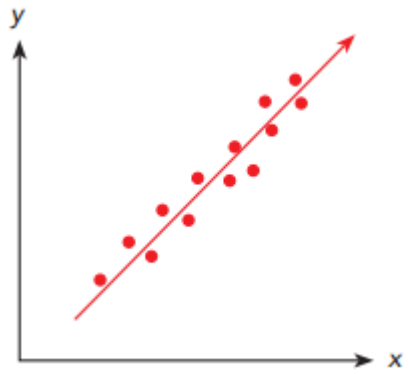

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Lesson 10.2 Scatter Plots Day 1

Example 4 **Graph a line of best fit given bivariate data with a linear association.**

Data from a study of the association between the amount of rainfall, x inches, and the number of car accidents, y, along a particular stretch of highway are shown below.

Rainfall (in.)	2	3	4	6	6	5	4	7	8
Accidents	3	8	9	12	11	9	7	14	16

Rainfall (in.)	6	7	2	8	5	3	4	8	7
Accidents	1	15	6	17	10	6	8	14	13

a) Construct the scatter plot and draw a line of best fit to represent the data. Use 1 centimeter on the horizontal axis to represent 1 inch. Use 1 centimeter on the vertical axis to represent 2 car accidents.

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Solution

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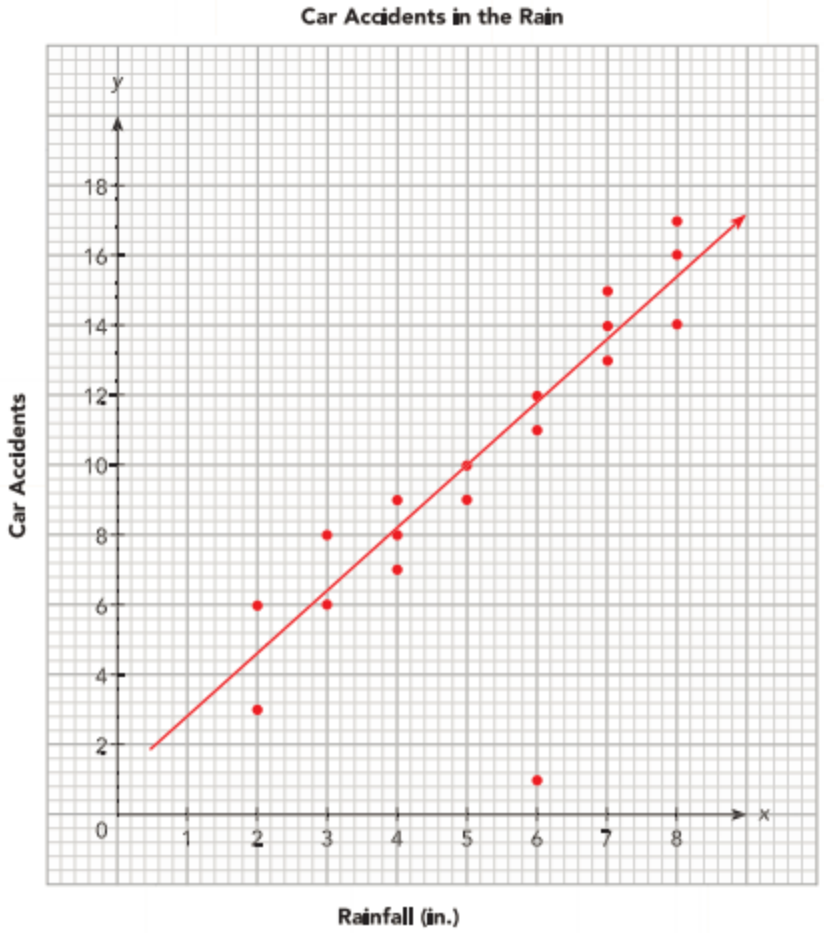

Use a ruler to draw a line of best fit that has about half of the data points above and half of the points below the line. Ignore any outliers when sketching a line of best fit.

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Solution

There is a strong, positive, and linear association between the number of car accidents and the amount of rainfall. In other words, more rainfall is associated with more car accidents.

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Solution

The data point (6, 1) is an outlier representing only 1 accident when there was 6 inches of rain.

Guided Practice

Use graph paper. Solve.

1 A city collected data over the course of a week to find the association between the number of waste bins per acre, x, in their parks and the pounds of litter collected, y pounds, in each bin. The data are shown below.

Waste Bins Per Acre	12	24	16	10	18	20	26	16
Litter (lb/bin)	70	18	50	66	42	32	12	44

Waste Bins Per Acre	22	16	14	22	10	20	12	18
Litter (lb/bin)	26	58	62	30	74	40	62	4

a) Draw a scatter plot for this data. Use 1 centimeter on the horizontal axis to represent 2 waste bins per acre for the x interval from 8 to 26. Use 1 centimeter on the vertical axis to represent 5 pounds of litter per week. Draw a line of best fit for the given table of data.

b) Identify the association and describe the meaning of the association in context.

There is a ___?___, ___?___, and ___?___ association between the number of waste bins per acre and the pounds of litter collected per bin.

c) Identify the outlier and describe the outlier in context.

The data point (___?___, ___?___) is an outlier representing only ___?___ pounds of litter collected per bin when there were ___?___ waste bins per acre in the park.

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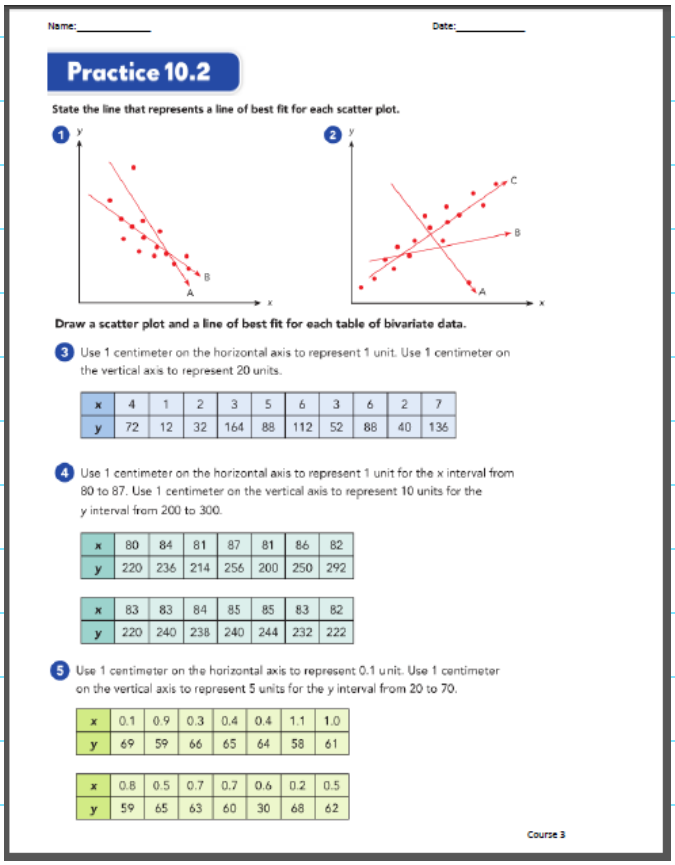
There is a ___?___, ___?___, and ___?___ association between the number of waste bins per acre and the pounds of litter collected per bin. strong; negative; linear

c) Identify the outlier and describe the outlier in context.

The data point (___?___, ___?___) is an outlier representing only ___?___ pounds of litter collected per bin when there were ___?___ waste bins per acre in the park. 18; 4; 4; 18

Lesson 10.2 Scatter Plots Day 1

Practice 10.2 #1-2



Name:_____ Date:_____

Practice 10.2

State the line that represents a line of best fit for each scatter plot.

1.

2.

Draw a scatter plot and a line of best fit for each table of bivariate data.

3. Use 1 centimeter on the horizontal axis to represent 1 unit. Use 1 centimeter on the vertical axis to represent 20 units.

x	4	1	2	3	5	6	3	6	2	7
y	72	12	32	164	88	112	52	88	40	136

4. Use 1 centimeter on the horizontal axis to represent 1 unit for the x interval from 80 to 87. Use 1 centimeter on the vertical axis to represent 10 units for the y interval from 200 to 300.

x	80	84	81	87	81	86	82
y	220	236	214	256	200	250	292

x	83	83	84	85	85	83	82
y	220	240	238	240	244	232	222

5. Use 1 centimeter on the horizontal axis to represent 0.1 unit. Use 1 centimeter on the vertical axis to represent 5 units for the y interval from 20 to 70.

x	0.1	0.9	0.3	0.4	0.4	1.1	1.0
y	69	59	66	65	64	58	61

x	0.8	0.5	0.7	0.7	0.6	0.2	0.5
y	59	65	63	60	30	68	62

Course 3

Challenge-

*MangaHigh provides additional challenge

*Pick a Problem

*BuzzMath

Lesson Check #1 & 3-can identify and draw line of best fit

Ticket Out the Door-

Ticket Out the Door

A scatter plot shows a strong, negative, and nonlinear association in a set of bivariate data. Describe what the clustering of data points in the plot looks like.