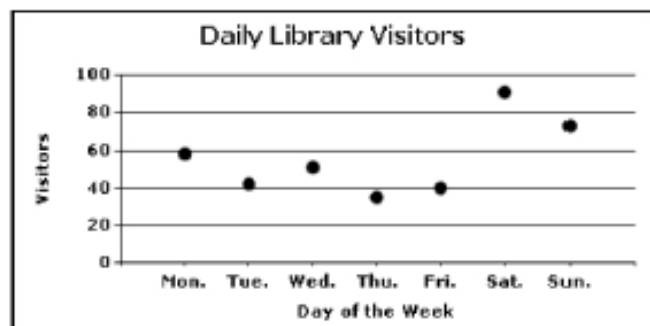


## Week 2 Wednesday Course 3 Warm-up

On what day did the library have 42 visitors?

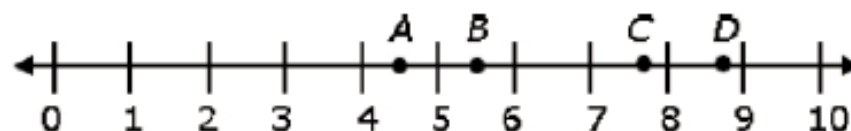


- A) Monday
- B) Tuesday
- C) Thursday
- D) Friday

$$4^2 \times 4^6 =$$

- A)  $4^3$
- B)  $4^4$
- C)  $4^8$
- D)  $4^{12}$

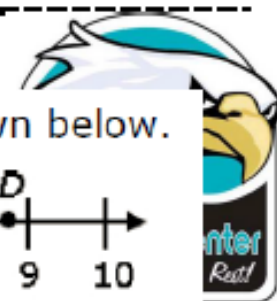
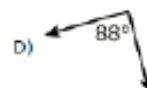
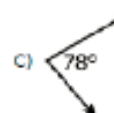
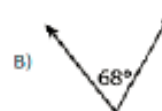
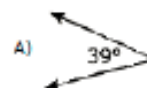
A part of the real number line is shown below.



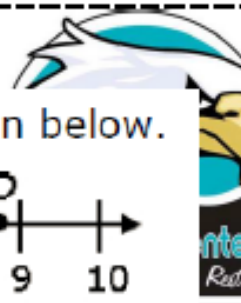
Which letter best represents the location of  $\sqrt{60}$ ?

- A) *A*
- B) *B*
- C) *C*
- D) *D*

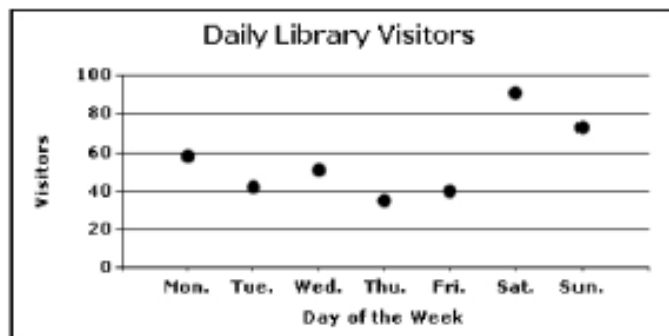
Which of the following figures can be the outcome of a rotation of the angle below?



## Week 2 Wednesday Course 3 Warm-up



On what day did the library have 42 visitors?

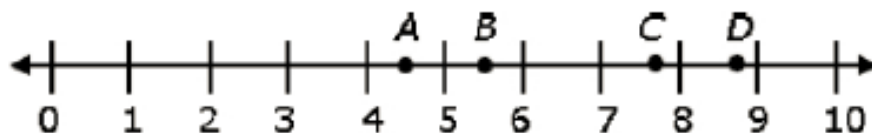


- A) Monday
- ✓ B) Tuesday
- C) Thursday
- D) Friday

$$4^2 \times 4^6 =$$

- A)  $4^3$
- B)  $4^4$
- ✓ C)  $4^8$
- D)  $4^{12}$

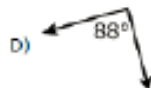
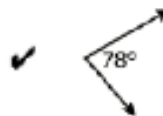
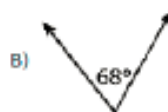
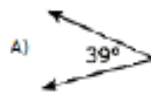
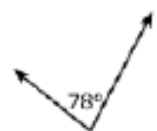
A part of the real number line is shown below.



Which letter best represents the location of  $\sqrt{60}$ ?

- A) A
- B) B
- ✓ C) C
- D) D

Which of the following figures can be the outcome of a rotation of angle below?



## Lesson 10.2 Scatter Plots Day 3

# Objective


## TSW

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

## Common Core State Standards

*8.SP.2– Know that straight lines are widely used to model relationships between two quantitative variables. 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



▶ A line of best fit can be used to model the linear association of bivariate quantitative data. A two-way table displays the relative frequencies of categorical data.

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

**Example 5** Write a linear equation for a line of best fit.

The table below gives the percent of adults,  $y$  percent, that get their news from newspapers compared to television or online sites for  $x$  years since 1990.

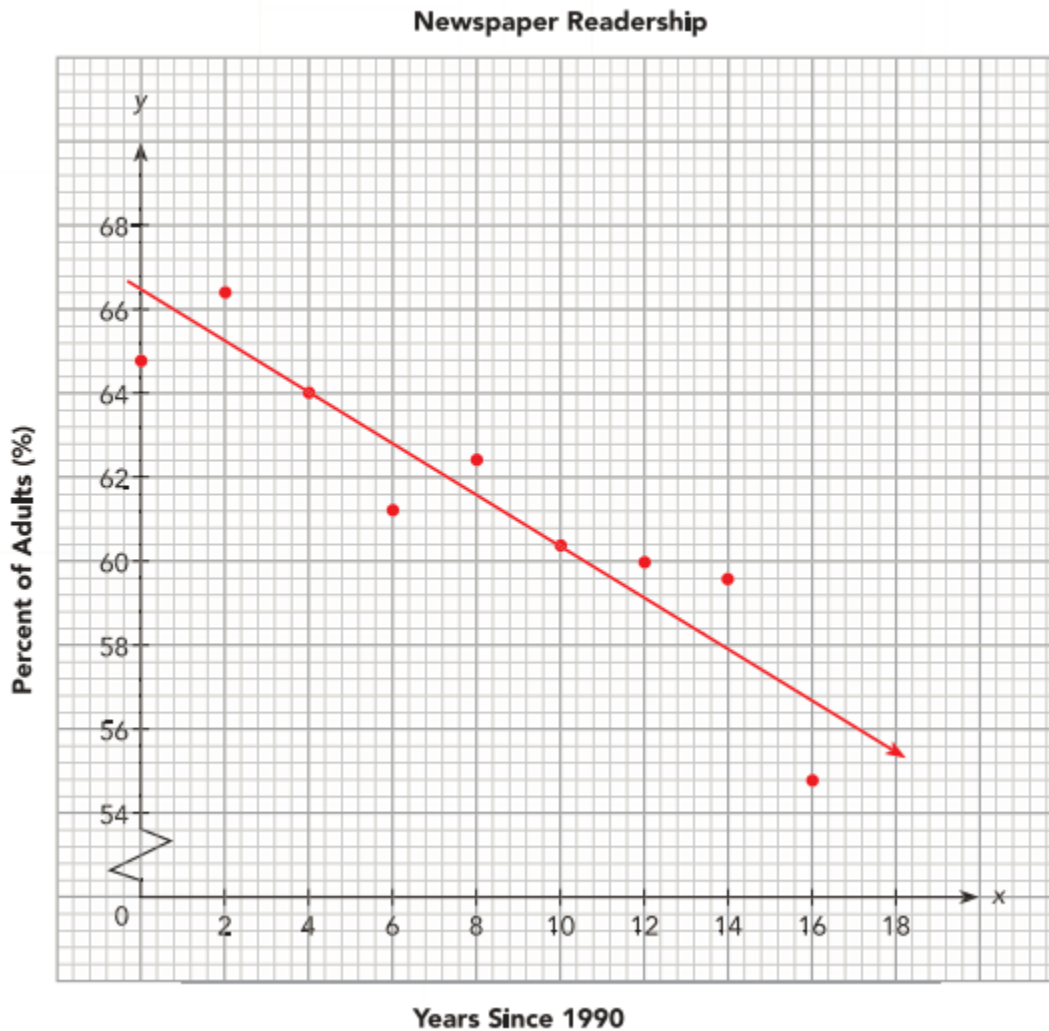
<b>Years Since 1990</b>	0	2	4	6	8	10	12	14	16
<b>Percent of Adults</b>	64.8	66.4	64.0	61.2	62.4	60.4	60.0	59.6	54.8

- a) Construct the scatter plot for the given table of bivariate data. Use 1 centimeter on the horizontal axis to represent 2 years. Use 1 centimeter on the vertical axis from 54 to 68 to represent 2%. Draw a line of best fit and write its equation.
- b) Use the line of best fit to interpret the meaning of the slope and the  $y$ -intercept in context.

Use Decimal  
Grid Paper to  
Represent  
data

- a) Construct the scatter plot for the given table of bivariate data. Use 1 centimeter on the horizontal axis to represent 2 years. Use 1 centimeter on the vertical axis from 54 to 68 to represent 2%. Draw a line of best fit and write its equation.

**Solution**



**Example 5** Write a linear equation for a line of best fit.

The table below gives the percent of adults,  $y$  percent, that get their news from newspapers compared to television or online sites for  $x$  years since 1990.

Years Since 1990	0	2	4	6	8	10	12	14	16
Percent of Adults	64.8	66.4	64.0	61.2	62.4	60.4	60.0	59.6	54.8

- a) Construct the scatter plot for the given table of bivariate data. Use 1 centimeter on the horizontal axis to represent 2 years. Use 1 centimeter on the vertical axis from 54 to 68 to represent 2%. Draw a line of best fit and write its equation.

First find the slope of the line of best fit that passes through the points (4, 64) and (14, 58).

$$m = \frac{58 - 64}{14 - 4} = \frac{-6}{10} = -0.6$$

Next find the  $y$ -intercept using the equation in slope-intercept form.

$$y = mx + b$$

$$64 = -0.6(4) + b$$

$$64 = -2.4 + b$$

$$64 + 2.4 = -2.4 + b + 2.4$$

$$66.4 = b$$

Use slope-intercept form.

Substitute for  $m$ ,  $x$ , and  $y$ .

Multiply.

Add 2.4 to both sides.

Simplify.

Finally, write an equation.

$$y = mx + b$$

$$y = -0.6x + 66.4$$

Substitute  $-0.6$  for  $m$  and  $66.4$  for  $b$ .

The equation of the line of best fit is  $y = -0.6x + 66.4$ .

**Math Note**

You can pick any two points on the line of best fit to calculate the value of  $m$ . Only use data values if they happen to lie on the line.

## Lesson 10.2 Scatter Plots Day 2

- b) Use the line of best fit to interpret the meaning of the slope and the  $y$ -intercept in context.

### Solution

The slope  $m$  represents the decreasing percent of adults that acquire their news from newspapers. Specifically, the data show an average decrease by 0.6% per year.

The intercept  $b$  represents the percent of adults that get their news from newspapers at the beginning of the study in 1990. Specifically, the data show that about 66.4% of adults got their news from newspaper in 1990.





## Guided Practice

Use graph paper. Solve.

- 2 A city collected data to find the association between the daily high temperature,  $x^{\circ}\text{F}$ , and the number of pool visitors,  $y$ , that day. The data is shown below.

Daily High Temperature ( $^{\circ}\text{F}$ )	96	92	86	90	98	88	94	96
Daily Pool Visitors	312	304	256	284	352	272	320	336

Daily High Temperature ( $^{\circ}\text{F}$ )	90	98	86	92	98	92	94	98
Daily Pool Visitors	276	340	248	296	360	324	300	316

Draw a scatter plot for these data. Use 1 centimeter on the horizontal axis to represent  $2^{\circ}\text{F}$  on the  $x$  interval from 84 to 98. Use 1 centimeter on the vertical axis to represent 10 pool visitors on the  $y$  interval from 220 to 360. Draw a line that appears to best fit the data and write its equation. **See margin; Answers vary. Sample:**  
 $y = 7.25x - 368$

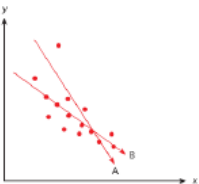
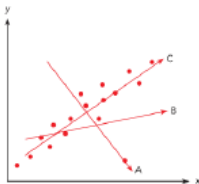
# Lesson 10.2 Scatter Plots Day 3

## Practice 10.2 #6-7

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 #3-can find the equation of the 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.