Math Virtual Learning

Math 8
Making Predictions with Scatter Plot Trend Lines

April 30, 2020

Lesson: April 30th, 2020

Objective/Learning Target:
Students will use a trend line for a scatter plot to make predictions.

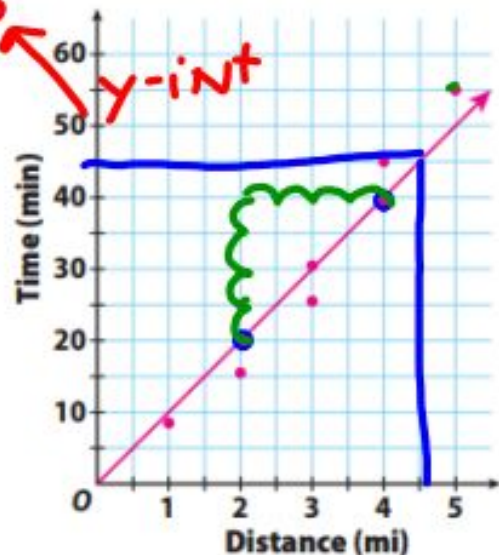# Warm-Up:

Write an equation for the trend line.

Predict how long it would take for someone to run 4.5 miles.

45 MIN

$y = mx + b$

slope

$y = 10x$

$\dfrac{rise}{run} = \dfrac{20}{2} = 10$

y-int

$y = 10x$
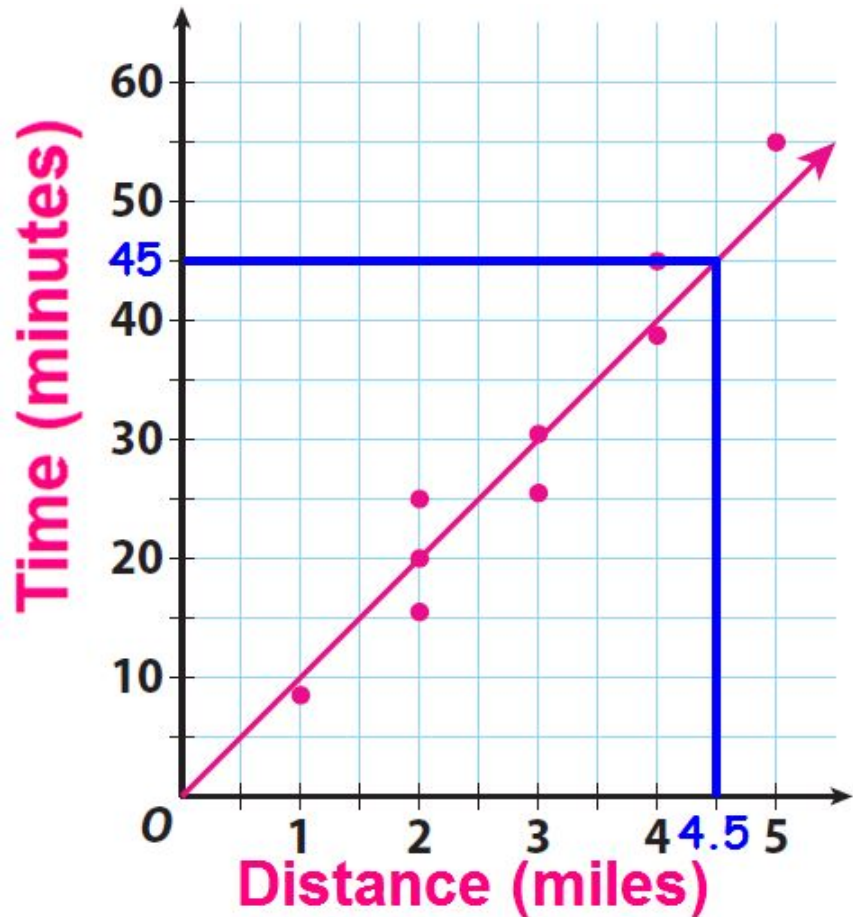$y = 10(4.5)$
$y = 45 \text{ MIN}$

Guided Practice

Make a scatter plot of Lily's running data.

To draw a trend line, use a straightedge to draw a line that has about the same number of points above and below it. Ignore any outliers.

Use the above trend line to predict how long it would take for Lily to run 4.5 miles.

Time taken for Lily to run 4.5 miles is about 45 minutes.

Guided Practice

The scatter plot and trend line show the relationship between the number of chapters and the total number of pages for several books. Use the trend line to predict the number of pages for 18 chapters.

Draw the vertical line from 18 on the horizontal axis to the trend line. Then, draw horizontal line to the vertical axis from the trend line as shown below.

Number of pages for 18 chapters is about 180.
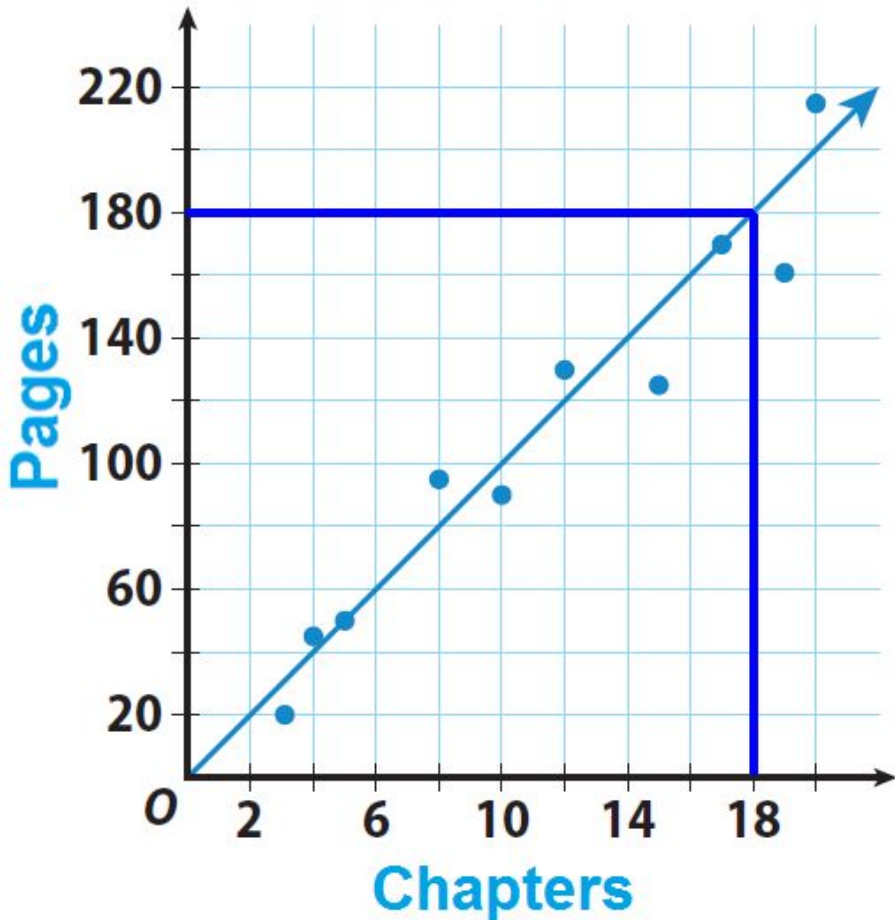
Guided Practice

Draw the vertical line from 10 on the horizontal axis to the trend line. Then, draw horizontal line to the vertical axis from the trend line as shown below.
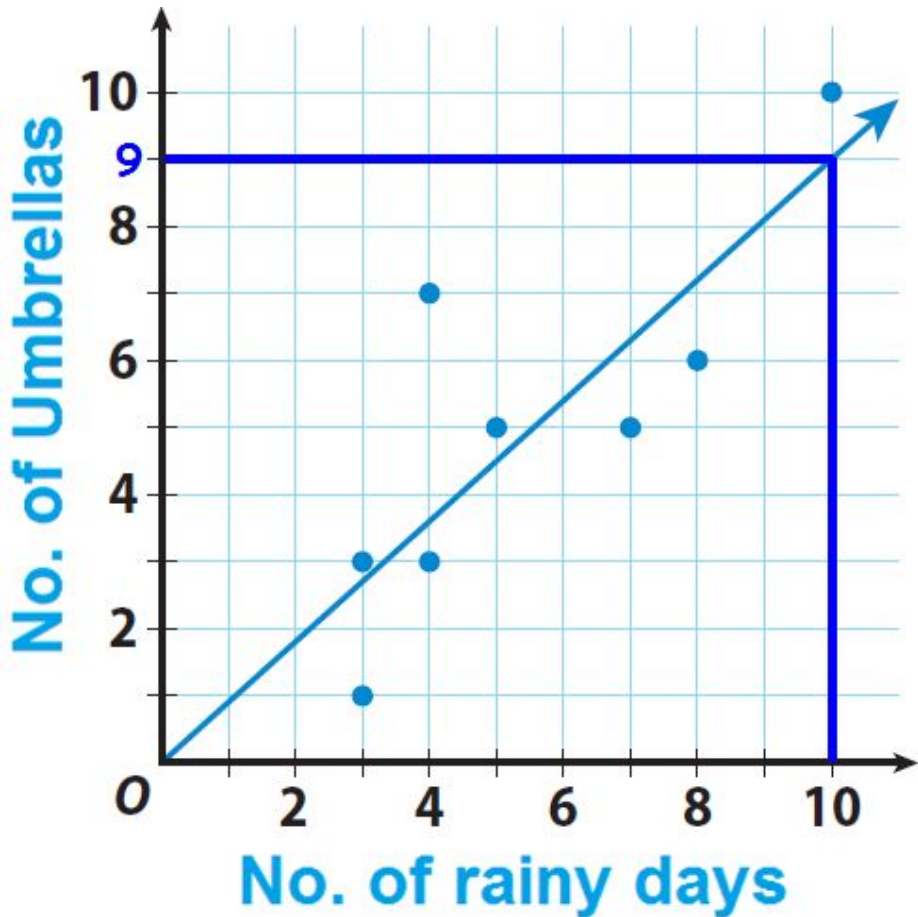
Number of Umbrellas sold in the month is about 9, if there were 10 rainy days.
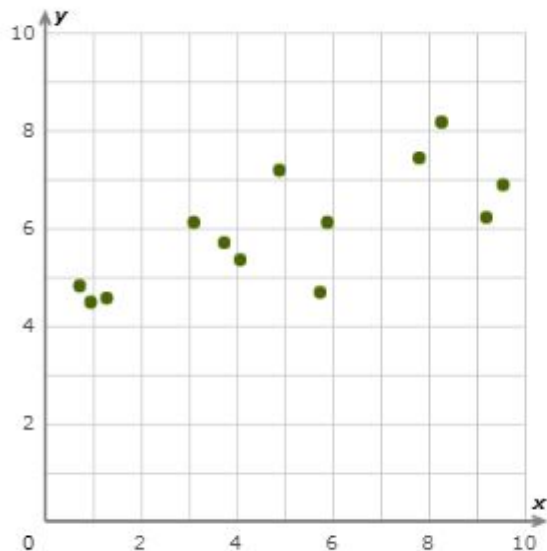
Practice:
Click the link below for additional practice on:
IXL Practice: Make Predictions with Scatter Plots

1. Use what you have learned about trend lines to make a prediction about the given scatter plot.
2. Choose the best answer.
3. Once you have chosen your answer, click submit to check your understanding.

Based on the scatter plot below, which is a better prediction for y when $x = 2$?

1

5

Submit

Press here to check your work

Independent Practice: Problem 1
Work through the following example on a seperate piece of paper.

1. The scatter plot shows the number of CDs (in millions) that were sold from 1999 to 2005. If the trend continued, about how many CDs were sold in 2006?
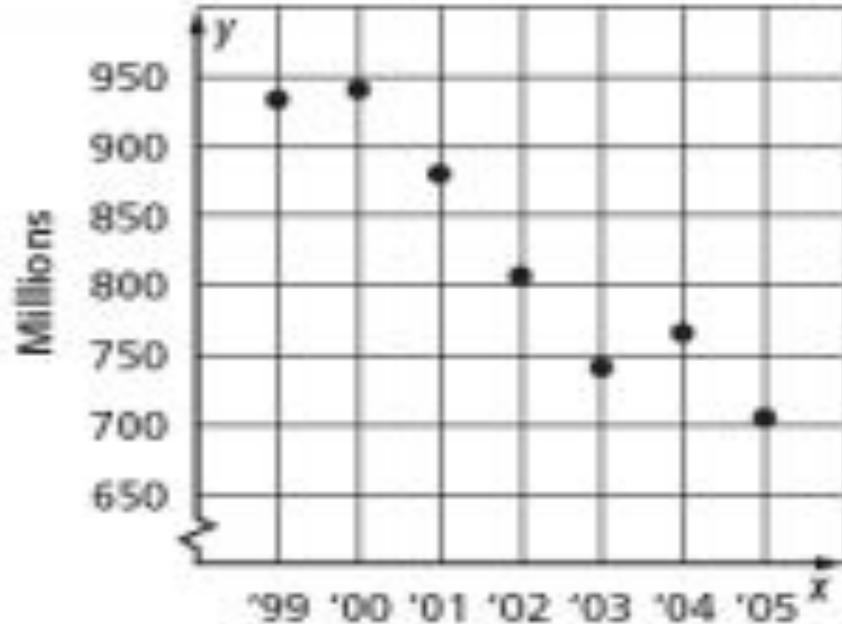
Independent Practice Answer Key: Problem 1

Once you have completed problem 1, check your answers here before going on to the next practice problems.

1. The scatter plot shows the number of CDs (in millions) that were sold from 1999 to 2005. If the trend continued, about how many CDs were sold in 2006?
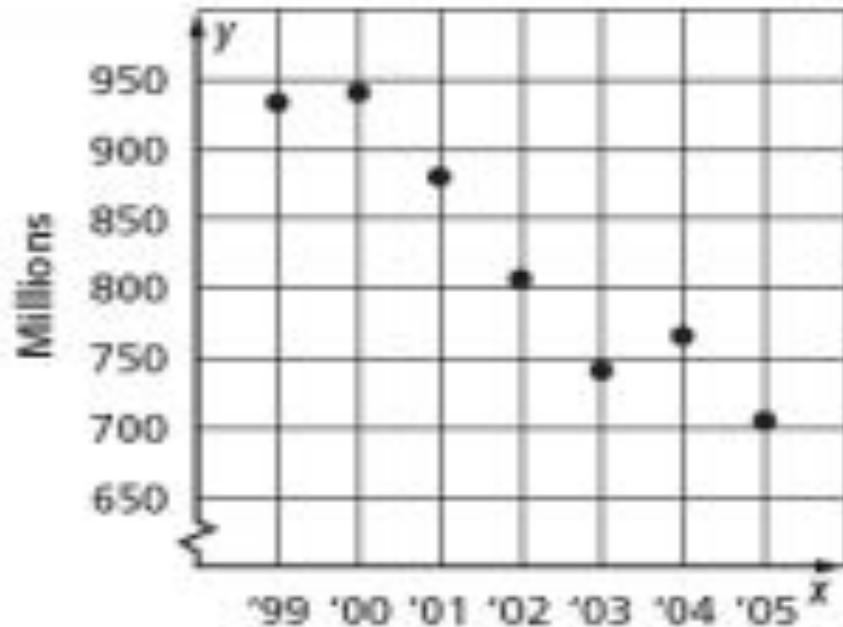
Based on the scatter plot and the negative correlation between cd sales and years, by 2006 one could estimate cd sales to be about 680 million. *Remember this is just an estimate so your prediction could have been slightly higher or lower than that!!*
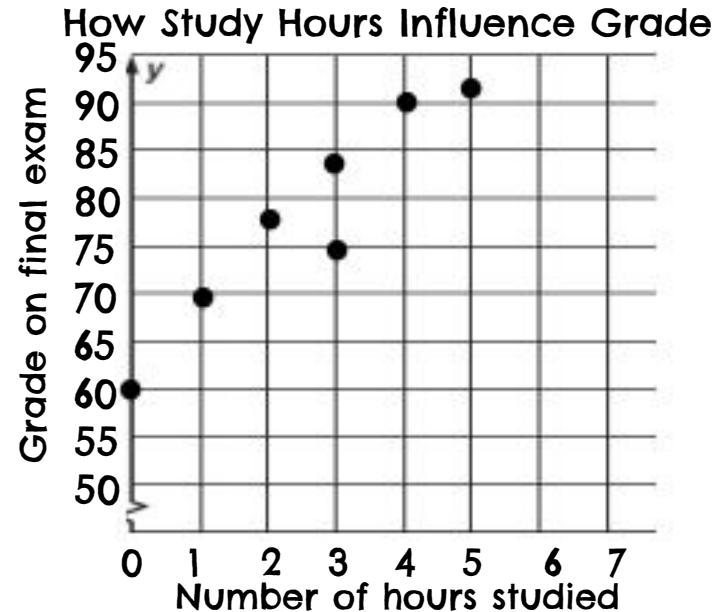
Independent Practice: Problem 2

Work through the following example on a seperate piece of paper.
(Answer key on next slide.)

2. The table at the right gives the number of hours spent studying for a science exam and the final exam grade.

Study Hours	3	2	5	1	0	4	3
Grade	84	77	92	70	60	90	75

Predict the grade for a student who studied for 6 hours.
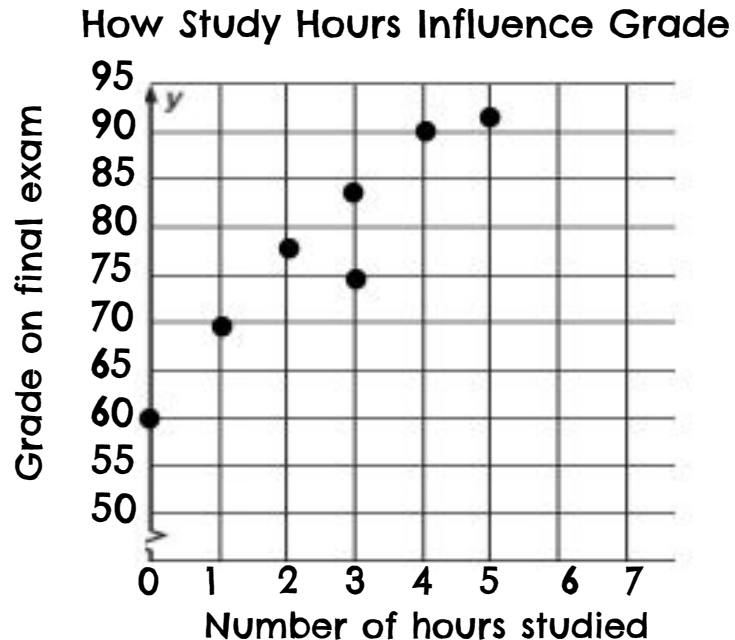

How Study Hours Influence Grade

Independent Practice Answer Key: Problem 2

Once you have completed problem 2, check your answers here before going on to the next practice problems.

2. The table at the right gives the number of hours spent studying for a science exam and the final exam grade.

Study Hours	3	2	5	1	0	4	3
Grade	84	77	92	70	60	90	75

If a student students for 6 hours, based on the positive correlation between the numbers of hours studied and the grade on the exam, one could predict a student to receive a 94% on the final exam. **Remember that this is an estimate so your prediction could be slightly above or below this percentage!*

How Study Hours Influence Grade

Independent Practice: Problem 3
Work through the following example on a seperate piece of paper.

3. The scatter plot shows the average price of a major-league baseball ticket from 1997 to 2006. Use the points (2001, 17.60) and (2002, 18.75) to write the slope-intercept form of equation for the line the following equation was created:

y= 1.15x - 2283.55

Using this equation, tell whether the price of a ticket in 2009 is an extrapolation or interpolation?

Baseball Ticket Prices
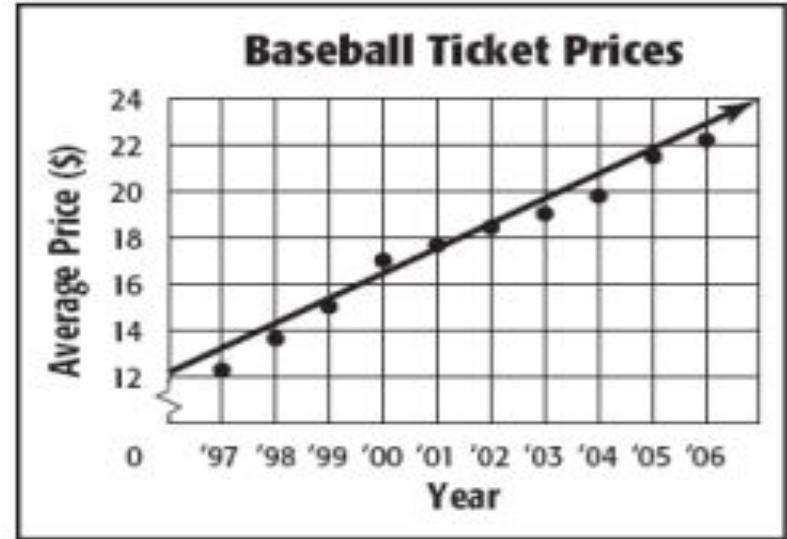
Source: Team Marketing Report, Chicago

Independent Practice Answer Key: Problem 3

Once you have completed problem 3, check your answers here before going on to the next practice problems.

3. The scatter plot shows the average price of a major-league baseball ticket from 1997 to 2006. Use the points (2001, 17.60) and (2002, 18.75) to write the slope-intercept form of equation for the line the following equation was created:
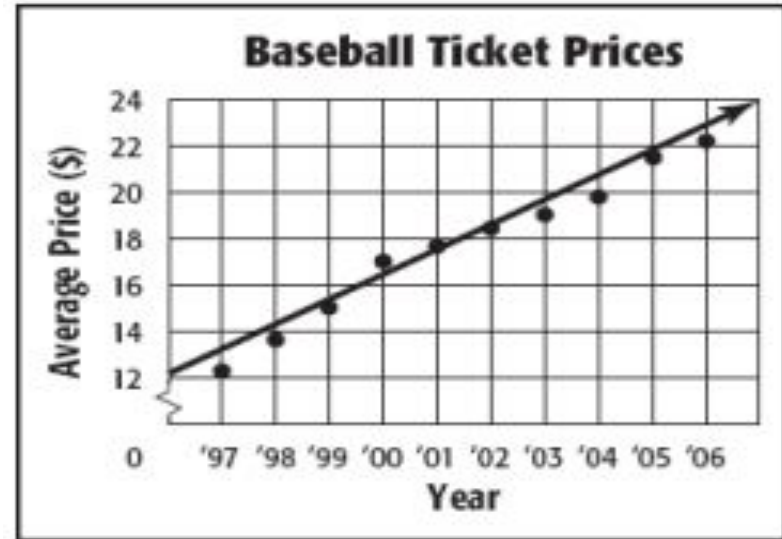
$y= 1.15x - 2283.55$ when x=2009
$y=1.15(2009)-2283.55$
$y=2310.35-2283.55$
$y=26.8$

Based on the equation, the average price of a baseball ticked in 2009 will be $26.80. This estimate is an extrapolation.

Baseball Ticket Prices
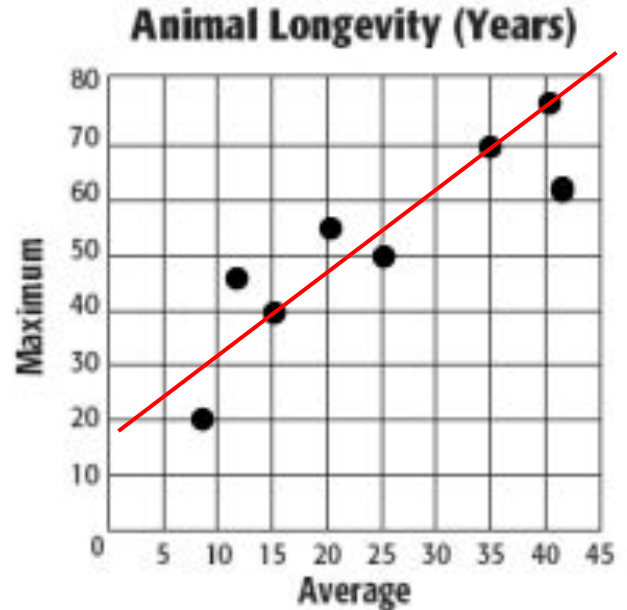
Source: Team Marketing Report, Chicago

Independent Practice: Problem 4

Work through the following example on a seperate piece of paper.

4. The table shows the average and maximum longevity of various animals in captivity.

Longevity (years)								
Avg.	12	25	15	8	35	40	41	20
Max.	47	50	40	20	70	77	61	54

Using the equation y=1.5x+17.5 for the line of best fit, predict the maximum longevity for an animal with an average longevity of 33 years.
Is this an example of Extrapolation or Interpolation?

Animal Longevity (Years)

Independent Practice Answer Key: Problem 4

Once you have completed problem 4, check your answers here before going on to the next practice problems.

4. The table shows the average and maximum longevity of various animals in captivity.
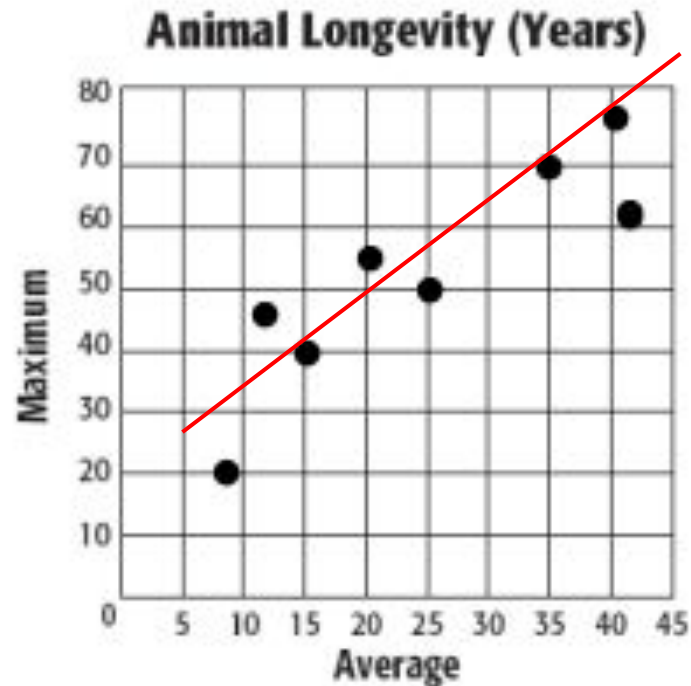
y=1.5x+17.5   when x=33
y=1.5(33)+17.5
y=49.5+17.5
y=67 years

The maximum longevity for an animal with an average longevity of 33 years Is about 67 years. This is an example of interpolation.

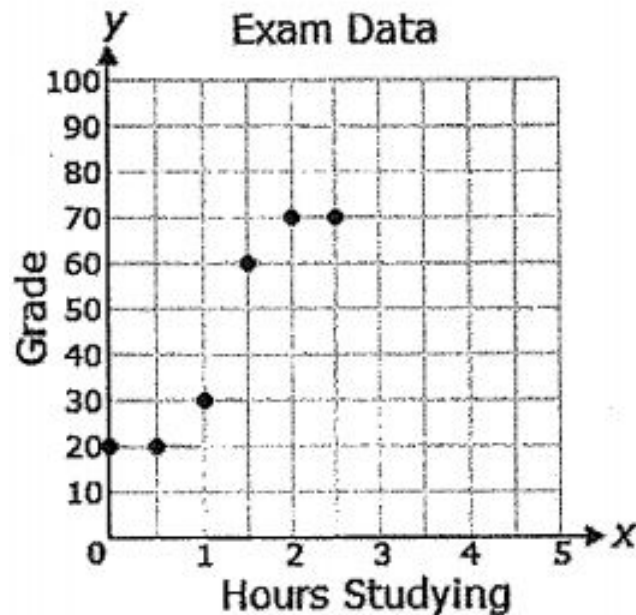Animal Longevity (Years)

Independent Practice: Problem 5
Work through the following example on a seperate piece of paper.
(Answer key on next slide.)

5. A teacher made the following graph showing the number of hours that a student studied for an exam versus their exam grade.

Predict the grade of a student if they studied for four hours.

A. 100
B. 90
C. 60
D. 75

Once you have completed problem 5, check your answers here before going on to the next practice problems.

5. A teacher made the following graph showing the number of hours that a student studied for an exam versus their exam grade.

Predict the grade of a student if they studied for four hours.
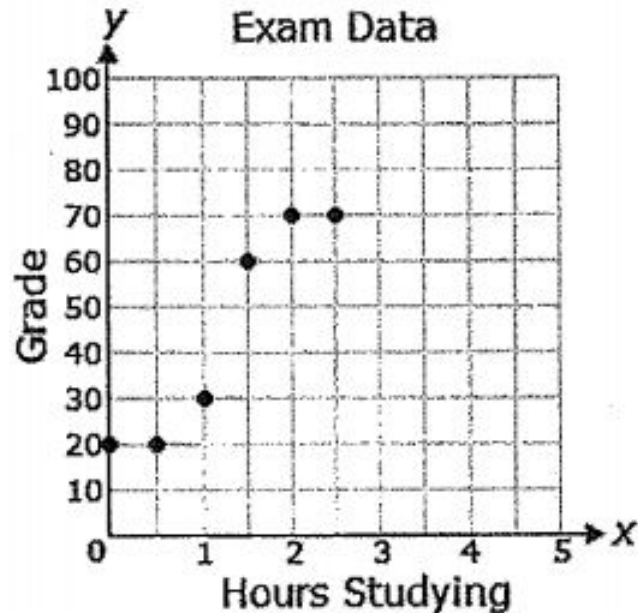

A.   100
B.   90
C.   60
D.   75
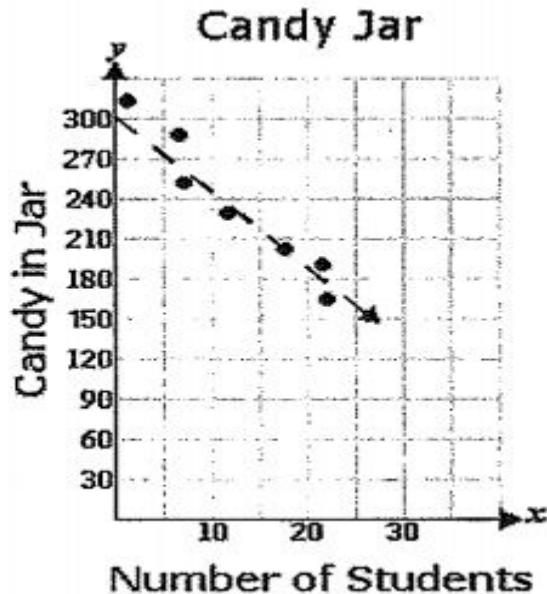
Independent Practice: Problem 6
Work through the following example on a seperate piece of paper.

6. The school counselor keeps a candy jar in her office for students. During one week, she kept count of how many students came to visit her and the number of candies in the jar, as shown in the scatter plot.

Based on the trend line, what is the best prediction for the number of candies in the jar when 30 students visit her?
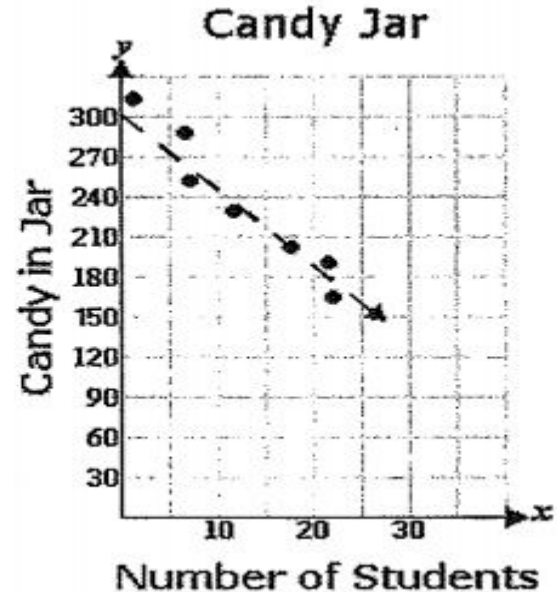
A.   90
B.   150
C.   135
D.   180

Independent Practice Answer Key: Problem 6

Once you have completed problem 6, check your answers here before going on to the next practice problems.

6. The school counselor keeps a candy jar in her office for students. During one week, she kept count of how many students came to visit her and the number of candies in the jar, as shown in the scatter plot.

Based on the trend line, what is the best prediction for the number of candies in the jar when 30 students visit her?

Candy Jar

A.   90
B.   150
C.   135
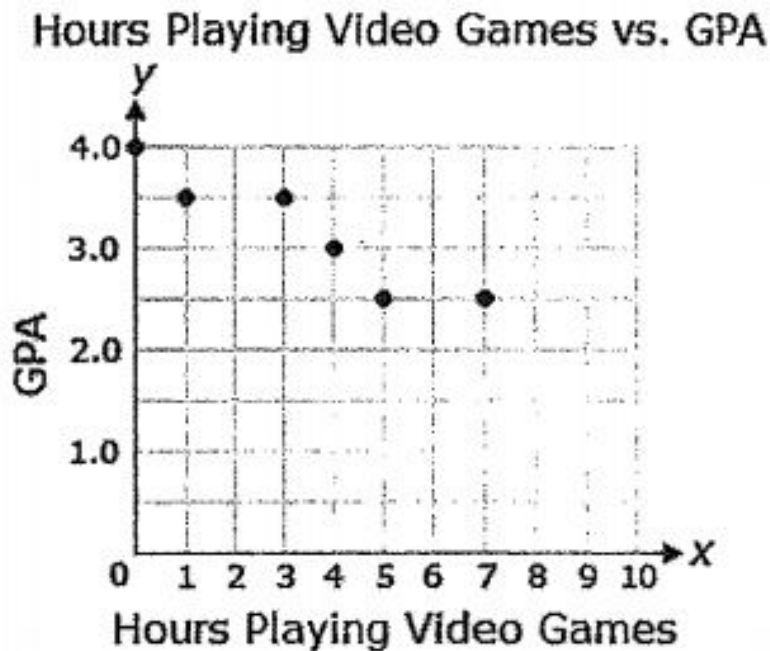D.   180

Independent Practice: Problem 7

Work through the following example on a seperate piece of paper.

7. A teacher made the following graph showing the number of hours her students spend playing video games per week versus their grade point average.

Predict the GPA of a student who plays video games for 10 hours every week.

A.   1.5
B.   2.5
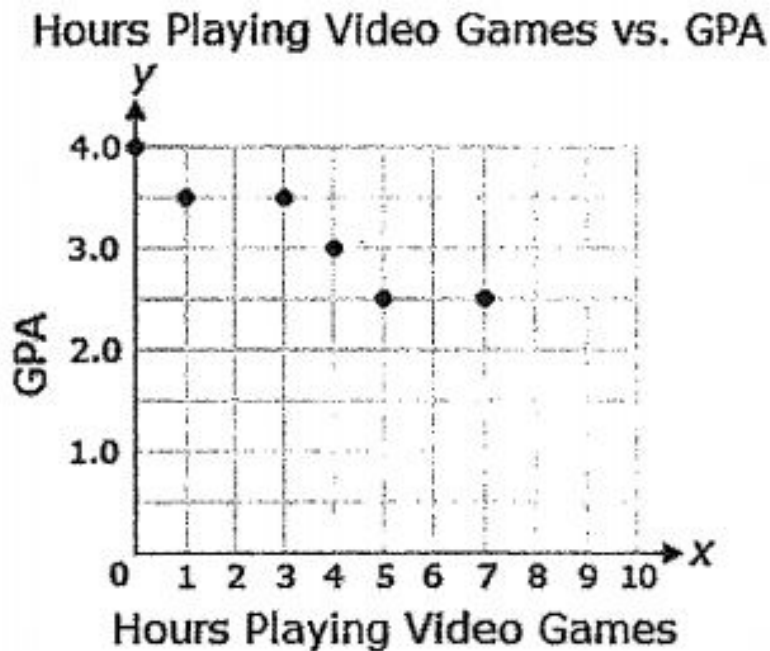C.   1.0
D.   3.0

Hours Playing Video Games vs. GPA

Independent Practice Answer Key: Problem 7

Once you have completed problem 7, check your answers here before going on to the next practice problems.

7. A teacher made the following graph showing the number of hours her students spend playing video games per week versus their grade point average.

Predict the GPA of a student who plays video games for 10 hours every week.

A.   1.5
B.   2.5
C.   1.0
D.   3.0


Hours Playing Video Games vs. GPA

Independent Practice: Problem 8

Work through the following example on a seperate piece of paper.

8. The local animal shelter showed commercials about adopting pets on one of the local television stations. The scatter plot below shows the number of pet adoptions and the number of commercials aired over one a one week period.

Based on the trend line, which is the expected number of adoptions if seven commercials aired?

A.   40

B.   50

C.   60

D.   55

Pet-A-Thon
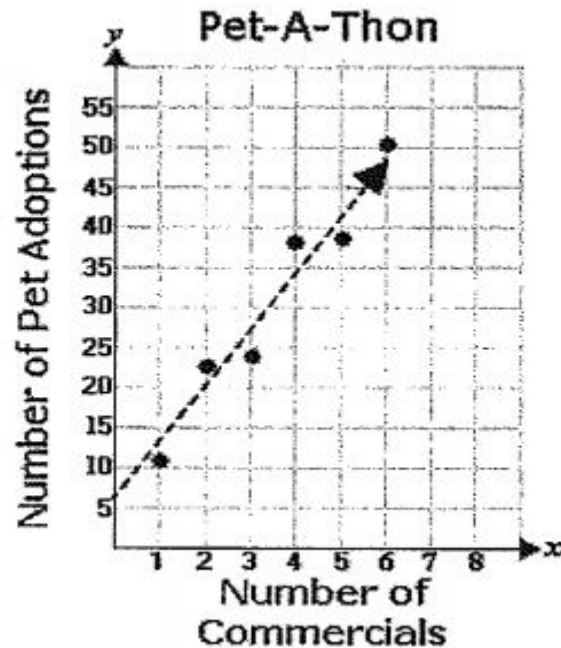
Independent Practice Answer Key: Problem 8

Once you have completed problem 8, check your answers here before going on to the next practice problems.

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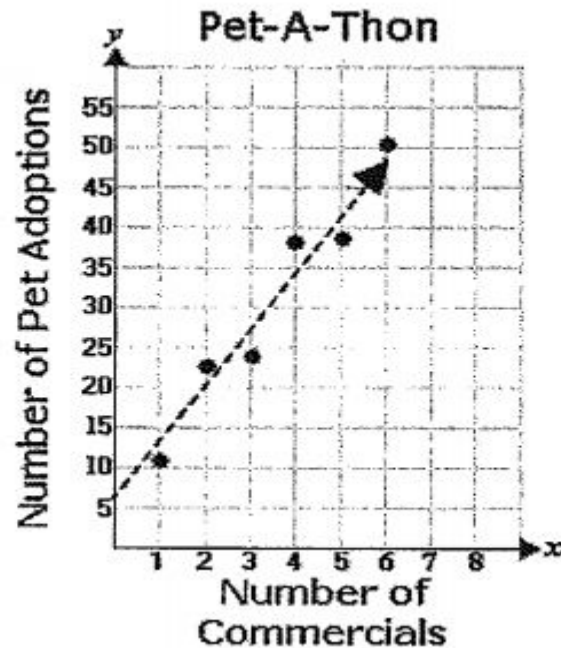
A.   40
B.   50
C.   60
D.   55

Pet-A-Thon

Number of Pet Adoptions

Number of Commercials

Additional Practice:
Choose from the links below for additional practice and to check your understanding!

Khan Academy: Interpreting Trend Lines Video and Practice

Quizizz: Scatter Plots and Trend Lines Practice

Math Games: Scatter Plots

Math is Fun: Scatter Plots Guided Notes and Practice